ORIGINAL

TENDER NO. 178Q/2016/17

CITY OF CAPE TOWN
ISIXEKO SASEKAPA
STAD KAAPSTAD

CONTRACT DOCUMENT

FOR THE

DESIGN – BUILD OF MECHANICAL AND ELECTRICAL WORKS FOR THE CONSTRUCTION OF AN MBR PLANT AND BOTTLENECK ALLEVIATION AT ZANDVLIET WASTEWATER TREATMENT WORKS

VOLUME 2

(RETURNABLE DOCUMENT)

(SEE VOLUMES 2A AND 2B FOR SCOPE OF WORK, PART C3.6 ANNEXES: SPECIFICATIONS)

NOTE:

- The Form of Offer and Acceptance (C1.1) is on **page 101** of this document (see also Clause F.4.4 Invalid tenders on **page 24**)
- Table 1: Tender preference claim (B-BBEE contribution) is on **page 95** of this document

ISSUED BY:

DIRECTOR: WATER AND SANITATION
CITY OF CAPE TOWN
Tower Block, Civic Centre
12 Hertzog Boulevard
CAPE TOWN
8001

COMPILED BY:

FOR OFFICIAL USE.
Tender Serial No.:
Signatures of City Officials at Tender Opening
1.
2.
3.

DECEMBER 2016

NAME OF TENDERING ENTITY	

AGREEMENT

THIS AGREEMENT made between **THE CITY OF CAPE TOWN** (hereinafter referred to as "the Employer") of the one part and _____ (hereinafter referred to as "the Contractor") of the other part.

WHEREAS the Employer is desirous that certain Works should be constructed, viz. **CONTRACT NO. 178Q/2016/17: DESIGN-BUILD OF MECHANICAL AND ELECTRICAL WORKS FOR THE CONSTRUCTION OF AN MBR PLANT AND BOTTLENECK ALLEVIATION AT ZANDVLIET WASTEWATER TREATMENT WORKS** and has accepted a Tender by the Contractor for the construction, completion and defects correction of such Works by signing the acceptance.

NOW THIS AGREEMENT WITNESSES that:

1. In this agreement words and expressions shall have the same meanings as are respectively assigned to them in the General and contract specific Conditions of Contract.

2. The following documents shall be deemed to form and be read and construed as part of this agreement, viz.:

Volume1:

(a) **All documents listed in the Schedule of Documents**
(b) **Employer's letter dated 6 June 2019**
(c) **The signed acceptance, schedule of deviations and confirmation of receipt**
(d) **Tender Clarifications**
(e) **Addenda to Tender Documents (blue)**

3. In consideration of the payments to be made by the Employer to the Contractor as hereinafter mentioned the Contractor undertakes to the Employer to construct, complete and remedy any defects in the Works in conformity in all respects with the provisions of the Contract:

The Employer hereby undertakes to pay to the Contractor in consideration of the construction, completion and defects correction of the Works the Contract Price at the times and in the manner prescribed by the Contract.

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General Tender Information

TENDER ADVERTISED	:	02 DECEMBER 2016
ESTIMATED CIDB CONTRACTOR GRADING DESIGNATION	:	9ME or higher
SITE VISIT/CLARIFICATION MEETING	:	12h00 on 14 DECEMBER 2016 (Compulsory)
VENUE FOR SITE VISIT/CLARIFICATION MEETING	:	Entrance gate at the Zandvliet Wastewater Treatment Works
CLOSING DATE	:	27 FEBRUARY 2017
CLOSING TIME	:	10h00
CLOSING VENUE	:	**Tender Box 169** at the **Tender Submission Office**, 2nd Floor (Concourse Level), Civic Centre, 12 Hertzog Boulevard, Cape Town.
TENDER BOX	:	The Tender Document (which includes the Form of Offer and Acceptance) completed in all respects, plus any additional supporting documentation required, must be submitted in a sealed envelope with the name and address of the tenderer, the tender No. and title, the tender box No. and the closing date indicated on the envelope. The sealed envelope must be inserted into the appropriate official tender box before closing time. If the tender offer is too large to fit into the abovementioned box or the box is full, please enquire at the public counter (Tender Distribution Office) for alternative instructions. The onus remains with the tenderer to ensure that the tender is placed in either the original box or as alternatively instructed.
BRIEF DESCRIPTION OF TENDER (cont'd overleaf):		• Mechanical and electrical equipment related to fine screening stations upstream of membrane bioreactors (MBRs); • Mechanical and electrical equipment related to the bioreactor and ultra-filtration membrane bioreactors including mixers, pumps, fine bubble diffused aeration equipment, membrane air scour equipment, and chemical dosing equipment; • Mechanical and electrical equipment related to secondary settling tanks, including full bridges, • Provision for of new channel and wall mounted sluice gates, pumps/valves; • Mechanical and electrical equipment related to pumping RAS/WAS, pipework, valves, pipe supports, lifting equipment and stairs/handrailing; • Provision for new compressed air plant;

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BRIEF DESCRIPTION OF TENDER :

- Upgrading and refurbishment of existing plant equipment such as aerators, mixers, pumps, FBDA equipment and ultra-filtration membranes etc.;
- Standby power diesel generators and fuel tanks;
- Miniature substations and MV cabling;
- LV motor control stations, LV cabling and cable support systems;
- Programmable controllers, fibre optic and control cabling;
- upgrading of existing control system, including plant-wide integration with the newly upgraded plant's control system; and
- Electronic, Controls and instrumentation.

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C1.2	Contract Data	Cream
C1.3	Form of Performance Guarantee	White
C1.4	Form of Advance Payment Guarantee	White
C1.5	Occupational Health and Safety Agreement	White
C1.6	Protection of the Environment Declaration	White
C1.7	Insurance Broker's Warranty	White
Part C2: Pricing data		
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C2.2	Schedules of Quantities	Cream
C2.3	Schedule of Rates for Electrical Variations	Cream
Part C3: Scope of Work		
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C3.2	Engineering	Blue
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T1.1 Tender Notice and Invitation to Tender

The **CITY OF CAPE TOWN**, Water and Sanitation, invites tenders for Tender No. **178Q/2016/17: Design – Build of Mechanical and Electrical Works for the Construction of an MBR Plant and Bottleneck Alleviation at Zandvliet Wastewater Treatment Works.**

Tenderers must be registered on the City of Cape Town's Vendor Database.

Tenderers who are not registered on the City of Cape Town's Vendor Database are not precluded from submitting tenders, but must however be registered prior to the evaluation of tenders in order for their tenders to be responsive.

It is estimated that tenderers should have a CIDB contractor grading designation of 9ME or higher.

Preferences are offered to tenderers who tender in accordance with the Preferential Procurement Regulations, 2011.

The physical address for collection of tender documents is:

Tender Distribution Office, 2nd Floor (Concourse Level), Civic Centre, 12 Hertzog Boulevard, Cape Town.

Documents may be collected during working hours between 08:30 – 15:00 from **02 December 2016**.

A non-refundable tender fee of R500.00 payable by crossed cheque made out in favour of the City of Cape Town, is required on collection of the tender documents.

Queries relating to any issues in these documents may be addressed to
Tel No. e-mail

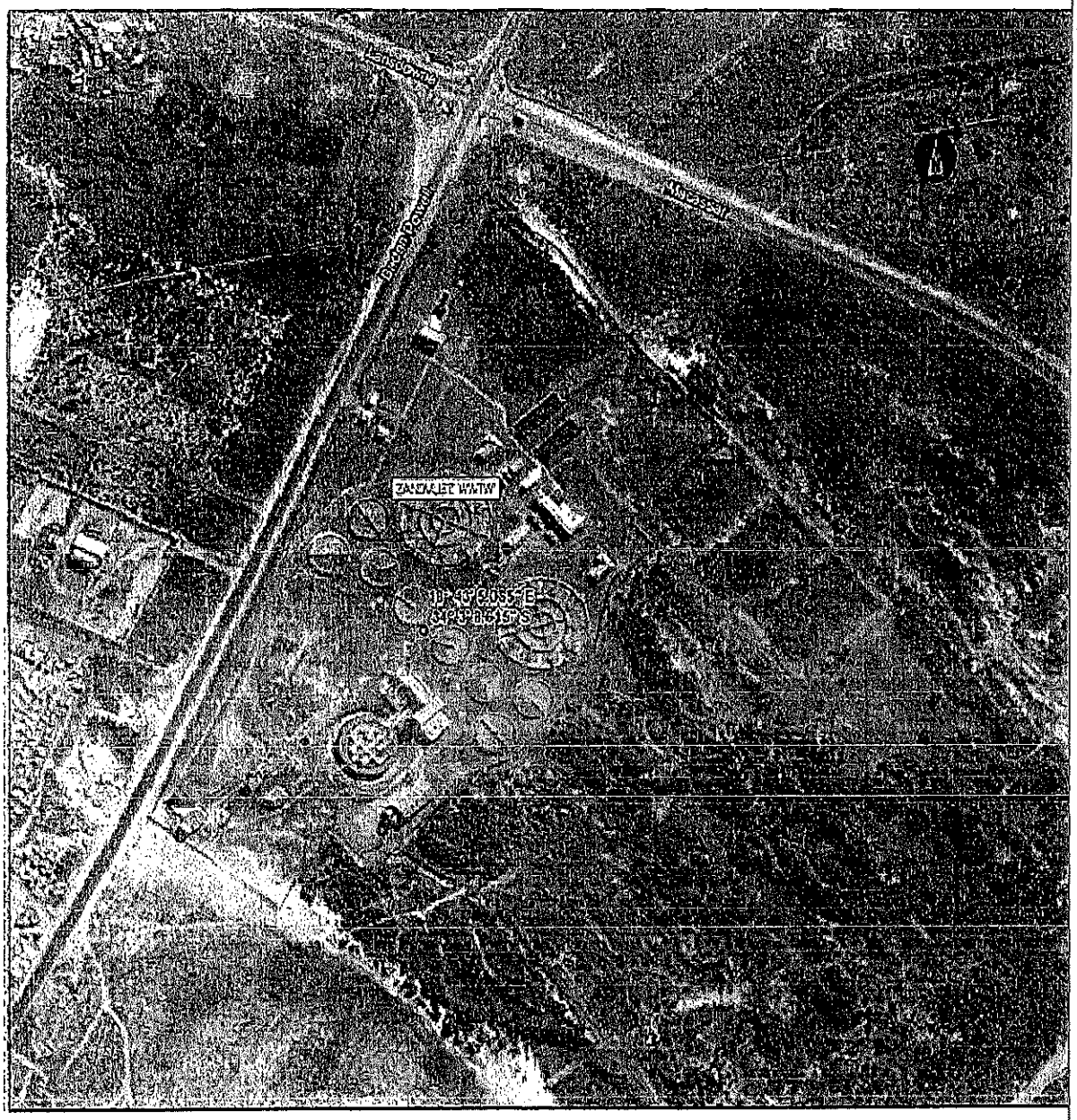
A compulsory site visit/clarification meeting with representatives of the Employer will take place at the entrance gate to the Zandvliet Wastewater Treatment Works on **14 December 2017** starting at 12:00.

The closing time for receipt of tenders is **10:00** on **27 February 2017**.

Telegraphic, telephonic, telex, facsimile, e-mail and late tenders will not be accepted.

Tenders may only be submitted on the tender documentation that has been issued. Printed Schedules of Quantities, in the same format (that is, layout, scheduled items and quantities) as those issued electronically by the Employer upon request, may be submitted as stated in the Tender Data.

Requirements for sealing, addressing, delivery, opening and assessment of tenders are stated in the Tender Data.



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LOCALITY PLAN – SITE VISIT/CLARIFICATION MEETING VENUE

T1.2 Tender Data

The conditions of tender are the Standard Conditions of Tender as contained in Annex F of Board Notice 86 of 2010 in Government Gazette No. 33239 of 28 May 2010, Construction Industry Development Board (CIDB) Standard for Uniformity in Construction Procurement (see www.cidb.org.za), which are reproduced without amendment or alteration for the convenience of tenderers as an Annex to this Tender Data.

The Standard Conditions of Tender make several references to the Tender Data for details that apply specifically to this tender. The Tender Data shall have precedence in the interpretation of any ambiguity or inconsistency between it and the Standard Conditions of Tender. Each item of data given below is cross-referenced to the clause in the Standard Conditions of Tender to which it mainly applies.

The following variations, amendments and additions to the Standard Conditions of Tender as set out in the Tender Data below shall apply to this tender:

Clause number	Tender Data

F.1 General

F.1.1 **Actions**

Add the following:

The Employer is the City of Cape Town, represented by the Director: Water and Sanitation.

F.1.2 **Tender Documents**

Add the following:

The following documents form part of this tender:

VOLUME 1: The Conditions of Contract for Plant and Design-Build for Electrical and Mechanical Works and for Building and Engineering Works Designed by the Contractor, First Edition 1999 (Yellow Book), published by the International Federation of Consulting Engineers (FIDIC).

This publication is available and tenderers must obtain copies at their own cost from the South African Institution of Civil Engineering / Consulting Engineers South Africa (C

Volume 1 may also be inspected, by appointment, at the offices of the Employer's agent during normal office hours.

The tender documents issued by the Employer comprise:

VOLUME 2: The Contract Document (this document, which may also be obtained in electronic format – or parts thereof – in terms of F.4.11), in which is bound:

The Tender
Part T1: Tendering procedures
T1.1 Tender notice and invitation to tender
T1.2 Tender data
Part T2: Returnable Documents
T2.1 List of returnable documents
T2.2 Returnable schedules

The Employer's agent is:

Name:
Address:

Tel:
Fax:
E-mail:

F.1.6.2 **Competitive negotiation procedure**
Add the following to F.1.6.2:
A competitive negotiation procedure will not be followed.

F.1.6.3 **Proposal procedure using the two-stage system**
Add the following to F.1.6.3:
A two-stage system will not be followed.

F.2 Tenderer's obligations

F.2.1 **Eligibility**
Add the following to F.2.1.1:

F.2.1.1 Only those tenderers who satisfy the following criteria are eligible to submit tenders:

F.2.1.1.1 **City of Cape Town Supplier Database Registration**
Tenderers are required to be registered on the CCT Supplier Database as a service provider. Tenderers must register as such upon being requested to do so in writing and within the period contained in such a request, failing which no orders can be raised or payments processed from the resulting contract. In the case of Joint Venture partnerships this requirement will apply individually to each party of the Joint Venture.

Tenderers who wish to register on the City of Cape Town's Vendor Database may collect registration forms from the Supplier Management Unit located within the Tender Distribution Office, 2nd Floor (Concourse Level), Civic Centre, 12 Hertzog Boulevard, Cape Town (Tel 021 400 9242/3/4/5). Registration forms and related information are also available on the City of Cape Town's website www.capetown.gov.za (follow the Supply Chain Management link to Supplier registration).

F.2.1.1.1.A **National Treasury Web Based Central Supplier Database (CSD) Registration**
Tenderers are required to be registered on the National Treasury Web Based Central Supplier Database (CSD) as a service provider. Tenderers must register as such upon being requested to do so in writing and within the period contained in such a request, failing which no orders can be raised or payments processed from the resulting contract. In the case of Joint Venture partnerships this requirement will apply individually to each party of the Joint Venture.

Tenderers who wish to register on the National Treasury Web Based Central Supplier Database (CSD) may do so via the web address **https://secure.csd.gov.za**.

It is each tenderer's responsibility to keep all the information on the National Treasury Web Based Central Supplier Database (CSD) updated.

F.2.1.1.2 **Construction Industry Development Board (CIDB) Registration**
Only those tenderers who are registered with an active status with the CIDB in a contractor grading designation equal to or higher than a contractor grading designation determined in accordance with the sum tendered, or a value determined in accordance with Regulation 25 (1B) or 25 (7A) of the Construction Industry Development Regulations, for a ME class of construction work, are eligible to have their tenders evaluated.

Joint Ventures are eligible to submit tenders provided that:
a) every member of the joint venture is registered with an active status with the CIDB;
b) the lead partner has a contractor grading designation of not lower than one level below the required grading designation in the ME class of construction work; and
c) the combined contractor grading designation calculated in accordance with the Construction Industry Development Regulations is equal to or higher than a contractor grading designation determined in accordance with the sum tendered for a ME class of construction work or a value

determined in accordance with Regulation 25 (1B) or 25 (7A) of the Construction Industry Development Regulations.

Notwithstanding the above, tenderers who are capable of being so registered with an active status with the CIDB prior to the evaluation of submissions may be evaluated at the sole discretion of the Employer (the evaluation of tenders takes place when the Employer's Bid Evaluation Committee meets to make a final recommendation to the Bid Adjudication Committee).

For alpha-numerics associated with the Contractor Grading Designations see Annex G attached.

F.2.1.1.3 **Minimum score for quality**

Tender offers will be allocated a functionality score out of 100 in terms of the Functionality Criteria described herein. The score will be determined by the Employer, based on his interpretation of the comparative quality of the various tender offers, as evidenced by the documentation provided in the tender offer. Where information in support of a score for the various categories of Functionality Criteria is not provided fully and in compliance with:

a) the requirements herein;

b) the requirements of the corresponding schedules in Part T2.2: Returnable Schedules and the format stipulated in these; and

c) with Clauses F.2.13.2 and F.2.13.3 of T1.2: Tender Data;

a score of zero will be allocated for that category.

The minimum score for Functionality Criteria that tender offers must attain in order to be deemed responsive is **69** out of **100**. Tenderers whose tender offer does not achieve this minimum qualification score will be rejected as non-responsive.

In order to be considered for allocation of a Functionality Criteria score, tenderers must submit with their tender, a Functionality Criteria file labelled in accordance with F.2.13.5 of the Tender Data. The file shall contain all information required to support the allocation of a score for the respective Functionality Criteria where this information is not already provided in T2.2 Returnable Schedules as bound into Volume 2 of the Schedule of Documents. The file shall be indexed to match the Functionality Criteria given in Table 1, and shall be provided with dividers to separate and label each Functionality Criteria and the associated sub-sections.

A summary of the principal Functionality Criteria and the maximum possible score for each is shown in Table 1. The total score allocated for Functionality Criteria will be the sum of the scores allocated for each of the categories.

Table 1: Summary of principal functionality criteria

Description of functionality criteria category	*Weighting*
Key personnel assigned to the work	25
Evidence of planning for the project	40
Tenderer's expertise and experience	35
Maximum possible score	**100**

The quality score will be the average of that determined by not less than three evaluators appointed by the Employer, based on their interpretation of the comparative quality of the various tender offers. Their evaluation will be based on the information provided in the tender, in accordance with the returnable schedules referenced in the above table.

F2.1.1.3.2 **Joint Ventures**

Where the entity tendering is a Joint Venture, or where components of the work will be undertaken by sub-contractors, the tender offer must include a statement describing exactly what aspects of the Works will be undertaken by each party to the joint venture or each sub-contractor, as per Returnable Schedule. If this requirement is not met, the functionality criteria for the associated category will not be allocated to the tenderer.

Details regarding the manner in which points will be allocated for quality criteria are given below:

i) **Key Personnel Assigned to the Work**

Tenderers will be allocated a functionality score in accordance with Table 2, to rate the key personnel assigned to the Contract. The total points allocated in terms of Table 2 will in turn be pro-rated to a total weighting of 25, to carry through to the total allowed for key personnel in Table 1. In order to receive a Functionality Criteria score for key personnel, the tender offer must provide the information required in Schedule 14.1: Key personnel assigned to the Contract, Schedule 14.2: Proposed organisation and staffing, and Schedule 14.3: Experience of key personnel, in the format specified.

Continued overleaf

Table 2: Functionality Score for Key Personnel Assigned to the Work

Key Personnel Role	Qualification[4]		Professional accreditation		Relevant experience		Maximum points available
	Type	Points	Type	Points	Years	Points	
Contractor's Representative in terms of Clause 4.3 of the General Conditions of Contract	4yr Eng + Masters[5] degree	8	ECSA Pr Eng	2	>15	12	22
					>10	8	
	4yr Eng degree	6	ECSA Pr Eng	2	>15	12	20
					>10	8	
	3yr Eng diploma or BTech	4	ECSA Pr Tech	1	>15	12	17
					>10	8	
Design Engineers responsible for Contractor's obligations in terms of Clause 5 and the associated obligations in terms of Clause 6.8 of the General Conditions of Contract[1]	4yr Eng degree	3	ECSA Pr Eng	2	>10	10	3 x 15 = 45
					>6	5	
	3yr Eng diploma or BTech	1	ECSA Pr Tech	1	>10	10	3 x 12 = 36
					>6	5	
Installation/construction Foremen responsible for the Contractor's associated obligations in terms of Clause 6.8 of the General Conditions of Contract (to be full-time on Site whilst associated work is underway)[2]	3yr Eng diploma or higher	2	NA		>10	4	2 x 6 = 12
					>6	3	
	Other tertiary	1	NA		>10	4	2 x 5 = 10
					>6	3	
Commissioning Engineers responsible for Contractor's obligations in terms of Clause 9 and the associated obligations in terms of Clause 6.8 of the General Conditions of Contract (to be full-time on Site whilst associated work is underway)[3]	4yr Eng degree	3	NA	2	>10	10	3 x 15 = 45
					>6	5	
	3yr Eng diploma or BTech	1	NA	1	>10	10	3 x 12 = 36
					>6	5	
Environmental Officer responsible for the Contractor's associated obligations in terms of Clause 6.8 of the General Conditions of Contract	3yr diploma/ degree	1	SACNASP or similar	1	>5	1	3
Health and Safety Agent/ Accident Prevention Officer responsible for Contractor's obligations in terms of Clause 6.7 of the General Conditions of Contract (to be full-time on Site whilst installation/ construction/ commissioning activities are underway)	3yr diploma/ degree	1	Member ACHASM or similar	1	>5	3	5
Total points available							132

Notes:

1: A score for up to four (4) Design Engineers will be allocated. Further instructions concerning Design Engineers and information required in support of an associated score, are contained in Schedule 14.1: Key personnel assigned to the Contract

2: A score for up to two (2) Installation Foremen will be allocated. Further instructions concerning Installation Foremen and information required in support of an associated score, are contained in Schedule 14.1: Key personnel assigned to the Contract

3: A score for up to four (4) Commissioning Engineers will be allocated. Further instructions concerning Commissioning Engineers and information required in support of an associated score, are contained in Schedule 14.1: Key personnel assigned to the Contract

4: In order to obtain a score for "Qualification", the qualification held must be relevant to the Key Personnel Role proposed (for instance an electrical engineering qualification for a Design Engineer responsible for electrical work)

5: The Masters degree may be an engineering degree, project management, business administration or similar degree

Continued overleaf

ii) Evidence of Planning for the Project

Tenderers will be allocated a functionality score in accordance with Tables 3a to 3d, to rate the evidence and quality of preliminary planning for the Contract. The total points allocated in terms of Tables 3a to 3d will in turn be pro-rated to a total weighting of 40, to carry through to the total allowed for evidence of planning in Table 1. In order to receive a Functionality Criteria score for each category, the tender offer must provide the information required in terms of the respective table and the cross-referenced Returnable Schedules.

Table 3a: Functionality score for preliminary planning – Provision of method statement in compliance with Schedule 14.4: Method statement, demonstrating thorough understanding of the Works and the key factors required for successful execution thereof

Extent to which associated preliminary planning is demonstrated		*Points available*
Nil	No associated evidence of planning.	0
Poor	The technical approach and / or methodology is poor / is unlikely to satisfy project objectives or requirements. The Tenderer has misunderstood certain aspects of the scope of work and does not deal with the critical aspects of the project. The approach is generic and not tailored to address the specific project objectives and methodology. The quality plan, manner in which risk is to be managed etc is too generic.	35
Satisfactory	The approach is specifically tailored to address the specific project objectives and methodology and is sufficiently flexible to accommodate changes that may occur during execution. The quality plan and approach to managing risk etc is specifically tailored to the critical characteristics of the project.	70
Excellent	Besides meeting the "satisfactory" rating, the important issues are approached in an innovative and efficient way, indicating that the Tenderer has outstanding knowledge of state-of-the- art approaches. The approach paper details ways to improve the project outcomes and the quality of the outputs.	100
Total points available		**100**

Table 3b: Functionality score for preliminary planning – Provision of an organogram and associated supporting information in compliance with Schedule 14.2: Proposed organisation and staffing

Extent to which associated preliminary planning is demonstrated		*Points available*
Nil	No associated evidence of planning.	0
Poor	The organization chart is sketchy; the staffing plan is weak in important areas. There is no clarity in allocation of tasks and responsibilities.	35
Satisfactory	The organizational chart is complete and detailed, the technical level and composition of the staffing arrangements are adequate.	70
Good	Besides meeting the "satisfactory" rating, staff are well balanced i.e. they show good co-ordination, complimentary skills, clear and defined duties and responsibilities. Some members of the project team have worked together before on limited occasions.	90
Excellent	Besides meeting the "good" rating, the proposed team is well integrated and several members have worked together extensively in the past.	100
Total points available		**100**

Continued overleaf

Table 3c: Functionality score for preliminary planning – Provision of a preliminary programme of the Works in compliance with Schedules 14.5 and 18: Preliminary programme		
Extent to which associated preliminary planning is demonstrated		*Points available*
Nil	No associated evidence of planning.	0
Poor	Programme is inadequate and/or considered unrealistic and does not achieve required completion date.	35
Satisfactory	Programme is considered realistic and adequately shows the main components and compliance with completion date.	70
Excellent	Programme is considered realistic and includes the main components and subcomponents and linkages and compliance with completion date.	100
Total points available		**100**

Table 3d: Functionality score for preliminary planning – Provision of a realistic estimated monthly cash flow forecast in compliance with Schedules 14.5 and 18: Preliminary programme		
Extent to which associated preliminary planning is demonstrated		*Points available*
Nil	No associated evidence of planning.	0
Poor	The cash flow forecast is inadequate and/or considered unrealistic and does not match the preliminary programme.	6
Satisfactory	The cash flow forecast is considered realistic, matches the preliminary programme, and matches terms of payment specified in the Contract.	14
Excellent	Besides meeting the "satisfactory" rating, the cash flow forecast identifies major components of work which become due for payment in a clear and understandable format.	20
Total points available		**20**

Table 3e: Functionality score for Financial Standing – Contract administration		
Extent to which associated preliminary planning is demonstrated		*Points available*
Nil	"E" Bank rating – Major Business Risk.	0
Poor	D" Bank rating - Reasonable business risk.	1
Satisfactory	"C" Bank rating - Adequate – Good for the amount, strictly in accordance with business.	3
Good	"B" Bank rating - Good – Good for the amount mentioned.	6
Excellent	"A" Bank rating - Very Good – Indisputable for enquiries.	10
Total points available		**20**

Continued overleaf

iii) Tenderer's Expertise and Experience

Tenderers will be allocated a functionality score in accordance with Table 4, to rate their expertise and experience in work of a similar nature to that required for this Contract. The total points allocated in terms of Table 4 will in turn be pro-rated to a score out of 35, to carry through to the total allowed for Tenderer's expertise and experience in Table 1. In order to receive a score for each category, the tender offer must provide the information required in terms of Schedule 8: Schedule of Work Experience, in the format specified. To allow for the time value of money, project construction values must be escalated at 6% per annum from the year of completion, compounded annually, until 2015.

Continued overleaf

Table 4: Functionality Score for Tenderer's Expertise and Experience

Item No.	Project / Component of Work Description	Description of Quality Scoring Criteria		
1.	**CONTRACTOR'S PROPOSAL**	**Points rating / allocation**		**Maximum Points per category**
1.1	Thorough completion of Returnable schedules/technical detail sheets and provision of other information required with the tender as listed in the List of Returnable Documents (refer to Schedule 18).	Excellent	100%	20
		Satisfactory	50%	
		Poor	0%	
1.2	Submission of separate file (with clear table of contents and section dividers) marked "Returnable Documents in Support of Quality Score", containing documentation (such as drawings, brochures, characteristic curves, and other relevant technical information concerning all equipment offered) required to support the allocation of quality score for the evaluation of responsive tender.	Excellent	100%	15
		Satisfactory	50%	
		Poor	0%	
1.3	Provision of equipment with established local representation agents in the Western Cape for the past 5 years related to (i) Servicing and repairs of equipment; as well as (ii) stock of spares.[1]	Excellent	100%	10
		Satisfactory	50%	
		Poor	0%	
2.	**MEMBRANE BIOREACTOR (MBR) SPECIALIST EXPERTISE AND PREVIOUS EXPERIENCE WITH WORK OF A SIMILAR NATURE – TO BE SUBSTANTIATED BY SUBMISSION OF A DETAILED LIST AND DESCRIPTION OF RELEVANT PROJECTS/WORK, WITH CLIENT AND OR ENGINEER REFERENCE LETTERS:**	**Points per project**		**Maximum Points per category**
		Year when project completed	**Points**	
2.1	Comprehensive wastewater treatment works projects (local and/or international) with an average dry weather flow capacity of 20 Mℓ/d or more where the **Membrane Supplier** has successfully implemented (supplied, installed, tested and commissioned) their membrane equipment (completed in the past 10 years) which has been commissioned, and has been operational for 36 months and longer as of 01 December 2016: Membrane Supplier.[2]	2002 to 2016	12	36
		1996 to 2016	6	
2.2	**Lead contractor** for provision of mechanical and electrical equipment for construction of the whole MBR wastewater treatment works (as opposed to individual components and unit processes) of capacity <30 ML/d (average dry weather flow, ADWF), or construction of <30 ML/d (ADWF) capacity upgrades to whole MBR wastewater treatment works (as opposed to individual components) to be confirmed by the end-user (Client) reference letter, and the Consultant/ Engineer involved with the project.[3]	2002 to 2016	7	21
		1996 to 2016	3	
2.3	[3]**Lead contractor** for provision of mechanical and electrical equipment for construction of the whole MBR wastewater treatment works (as opposed to individual components and unit processes) of capacity >30 ML/d (average dry weather flow, ADWF), or construction of >30 ML/d (ADWF) capacity upgrades to whole MBR wastewater treatment works (as opposed to individual components) to be confirmed by the end-user (Client) reference letter, and the Consultant/ Engineer involved with the project.	2002 to 2016	10	30
		1996 to 2016	5	
2.4	**Membrane Supplier's** and/ or **Lead contractor's** expertise and experience with at least 20 years design and at least 10 years active/installed operation and maintenance (local and/ or international) with the same type MBR plant.	2002 to 2016	12	36
		1996 to 2001	6	
2.4	**Membrane Supplier's** and/ or **Lead contractor's** expertise and experience with at least 5 years design and at least 3 years active/installed operation and maintenance (local and/ or international) of MBR Plant Fine Screening equipment.	2002 to 2016	10	30
		1996 to 2001	5	
2.5	Provision of SCADA and PLC automated electrical control systems with a value exceeding R 5 million excluding VAT, for MBR plant (of at least 10 Mℓ/d ADWF) wastewater treatment works or other industrial processes (local and/ or international).	2002 to 2016	8	24
		1996 to 2016	3	
3.	**MEMBRANE BIOREACTOR (MBR) LIFE CYCLE COST AND REMOTE OPERATION SUPPORT**	**Points rating / allocation**		**Maximum Points per category**
3.1	Guaranteed Life Cycle Costs (LCC) for the MBR system based on 10 years of installed experience (local and/ or international) with the same type of membranes offered.[4]	Excellent	100%	83
		Satisfactory	50%	
		Poor	0%	
3.2	Tenderer's expertise and experience of MBR system Remote Operation Support for a period of at least 10 years, based on at least 5 years installed experience (local and/ or international) with the same type of membranes offered.[5]	Excellent	100%	50
		Satisfactory	50%	
		Poor	0%	

Continued overleaf

Table 4: Functionality Score for Tenderer's Expertise and Experience

Item No.	Project / Component of Work Description	Description of Quality Scoring Criteria		
		Points per project		Maximum Points per category
		Year when project completed	Points	
4	GENERAL WATER/ WASTEWATER TREATMENT SPECIALIST EXPERTISE AND PREVIOUS EXPERIENCE WITH WORK OF A SIMILAR NATURE – TO BE SUBSTANTIATED BY SUBMISSION OF A DETAILED LIST AND DESCRIPTION OF RELEVANT PROJECTS/WORK, WITH CLIENT AND OR ENGINEER REFERENCE LETTERS:			
4.1	Lead contractor for contracts based on the Conditions of Contract for Plant and Design-Build for Electrical and Mechanical Plant, and for Building and Engineering Works, Designed by the Contractor, First Edition 1999 published by Federation Internationale des Ingenieurs-Conseils (FIDIC Yellow Book).	2002 to 2016	9	45
		1996 to 2001	5	
4.2	Reinforced concrete construction of components of water and wastewater treatment works with a value exceeding R2 million excluding VAT[6]	2002 to 2016	10	20
		1996 to 2001	4	
4.3	Provision of individual fine bubble diffused aeration (FBDA) blower of size 110 kW or greater, plus associated diffusers, diffuser chemical dosing skid, thermal air flow meters, control valves, pipework as well as dissolved oxygen (DO) and blower automation of the FBDA system.	2002 to 2016	10	40
		1996 to 2001	9	
4.4	Provision of complete Medium Voltage (MV) of at least 315 kVA and Light Voltage (LV) electrical equipment in water or wastewater treatment works or other industrial processes.	2002 to 2016	10	40
		1996 to 2001	4	
4.5	Provision of individual pump-sets of size 30 kW or greater, plus associated pump station pipework, flow meters etc. in water or wastewater treatment works or other industrial processes.	2002 to 2016	6	30
		1996 to 2001	3	
4.6	Provision of citric and sodium hypochlorite chemical dosing systems and bulk storage tanks as well as associated equipment for the MBR plant.[7]	2002 to 2016	5	15
		1996 to 2001	3	
4.7	Provision of ferric and caustic soda chemical dosing systems and pressurized bulk storage tanks as well as associated equipment in water or wastewater treatment works or other industrial processes.[7]	2002 to 2016	5	15
		1996 to 2001	3	
4.8	Provision of chlorine dosing and chlorine gas scrubbing systems and associated equipment in water or wastewater treatment works or other industrial processes.[7]	2002 to 2016	5	10
		1996 to 2001	2	
4.9	Provision of complete electric and pneumatic actuation systems for control of valves and sluices in water or wastewater treatment works or other industrial processes.[1]	2002 to 2016	10	30
		1996 to 2001	6	
Total points available				600

Notes:

1. Preference will be given to tenders offering equipment with established representation agents in the Western Cape for at least the past 5 years. Such representation shall include proven technical expertise, and reference lists (with client and consultant contact details) of where the proposed equipment has been successfully used.
2. To be substantiated by submission of a detailed list and description of relevant projects/work, with client and or engineer reference letters (refer to Schedules 8 and 14.6). In addition, preference will be given to tenderers whose design, testing and commissioning of the MBR system is guaranteed to be undertaken by a team with project experience in MBR systems with an average capacity of 20 Mℓ/d and above.
3. Preference will be given to lead contractor(s) for wastewater treatment works projects (local and/or international) where the membrane bioreactor (MBR) technology has successfully been implemented (supplied, installed, tested and commissioned in the past 5 years), and has remained fully functional and operational for 36 months and longer as of 01 December 2016.
4. Preference will be given to tenderers who guarantee the most favourable life cycle cost for the MBR system. The onus is on the tenderer to prove favourable life cycle costs (LCC = CAPEX + OPEX) to the satisfaction of the Employer. The tender submission must therefore clearly substantiate the life cycle cost calculations, showing pricing assumptions, the guaranteed life of components (such as chemical and power consumptions under specified design loads, and the guaranteed purchase price of membrane replacement and other associated equipment – refer Technical Data Sheets No. 16 an 67 included in Volume 2C). The life cycle cost for the MBR system equipment required in terms of the Quality Scoring Evaluation Criteria Table shall be based on current day cost over a 10 year period, and an electricity unit cost of ZAR1,50/kWh. There shall be liquidated Damages/Penalties for failing to meet the claimed OPEX as per membrane equipment specifications included in Volume 2A.
5. Preference will be given to tenders offering the most favourable remote support for operation of the MBR system. In addition to the requirements of the specifications, the Contractor's Proposal must clearly set out the details of the support offered.
6. Preference will be given to tenders who have grouted in their own equipment themselves (such as base plates/ holding down bolts for machines), concreting of pipes and screeding of clarifiers and primary sedimentation tanks etc. [to be accompanied by reference letters from the Engineer(s) involved on the project(s) where Functionality Score/Points are claimed].
7. Where the tenderer makes use of a subcontractor or joint venture partner for such work, points will only be allocated if the tenderer's proposed team includes the entity that executed this work, and where this is clearly demonstrated in the tender.

The term *"provision"* denotes the aggregation of the activities of supply, installation, testing, and commissioning

F.2.1.1.4 **Local Content**

a) The supplier shall study the terms and conditions as stated in the **Local Content Declaration / Annexure C** returnable schedule.

F.2.1.1.4.1 The stipulated minimum threshold percentages for local production and content for the **Electrical and Telecoms Cable sector** ("the designated sector") is **90%** and will include all sub-sectors from the applicable National Treasury Instruction Note.

F.2.1.1.4.2 Only tenders with locally produced or locally manufactured raw material or input will be considered. If the raw material or input to be used for a specific item is not available locally, bidders should obtain written authorisation from the Department of Trade and Industry (DTI) (Chief Director: Industrial Procurement, tel. 012 394 3927 and fax 012 394 4927) should there be a need to import such raw material or input.

F.2.1.1.4.3 A copy of the authorisation letter must be submitted together with the bid document at the closing date and time of the bid.

F.2.1.1.4.4 The Employer is obliged and must ensure that contracts for **the designated sector** are awarded at prices that are market related taking into account, among others, benchmark prices designated by the DTI for the sector, value for money and economies of scale. Where appropriate, prices may be negotiated with preferred bidders in accordance with provisions for Negotiation with Preferred Bidders as set out in the City of Cape Town SCM Policy.

F.2.1.1.4.5 A bid will be declared non-responsive / disqualified if the **Local Content Declaration / Annexure C** returnable schedule as well as the authorisation letter referred to above (if applicable) are not submitted as part of the bid documentation at the closing date and time of the bid.

F.2.1.1.4.6 For further information relating to the local production and content legislation, bidders may refer to website or may contact the Chief Director: Industrial Procurement at the DTI at telephone number , the Director: Fleet Procurement, at telephone number nd e-mail _____ or the

F.2.7 **Clarification meeting**

Add the following:

The arrangements for a compulsory site visit/clarification meeting are as stated in the Tender Notice and Invitation to Tender.

Tenderers should be represented at the site visit/clarification meeting by a person who is suitably qualified and experienced to comprehend the implications of the work involved.

F.2.10 **Pricing the tender offer**

Add the following to F.2.10.3:

F.2.10.3 Tenderers are referred to Sub-Clause 13.8 in the Appendix to Tender in Part C1.2 Contract Data regarding contract price adjustment.

F.2.12 **Alternative tender offers**

Add the following to F.2.12.1:

F.2.12.1 If a tenderer wishes to submit an alternative tender offer, he shall do so as a separate offer on a separate set of tender documents. The alternative tender offer shall be submitted in a separate sealed envelope on a separate Form of Offer, both clearly marked "Alternative Tender" in order to distinguish it from the main tender offer.

While it is not necessary to duplicate all parts of the main tender offer, the alternative tender offer shall be supported by the following documents as applicable:

a) the schedule that compares the alternative(s) offered with the requirements of the issued tender documents
b) preliminary designs, calculations, drawings and all other pertinent technical information and characteristics must be submitted with the alternative tender offer, in order to enable the Employer to evaluate the efficacy of the alternatives proposed
c) revised Schedules of Quantities, or parts thereof, highlighting the changes made, together with a revised Summary, the total of which has been carried to the Form of Offer
d) details of any proposed amendments to the Pricing Assumptions

Only the alternative of the highest ranked acceptable main tender offer (that is, submitted by the same tenderer) will be considered, and if appropriate, recommended for award.

Alternative tender offers of any but the highest ranked main tender offer will not be considered.

An alternative of the highest ranked acceptable main tender offer that is priced higher than the main tender offer may be recommended for award, provided that the ranking of the alternative tender offer is higher than the ranking of the next ranked acceptable main tender offer.

The Employer's costs in confirming the acceptability of the alternative offer will be, *inter alia*, taken into account in considering the alternative offer.

The Employer will not be bound to consider alternative tenders and shall have sole discretion in this regard.

In the event that the alternative is accepted, the Contractor shall accept full responsibility that the alternative offer complies in all respects with the Employer's standards and requirements.

F.2.13 **Submitting a tender offer**

Add the following to F.2.13.1:

F.2.13.1 **Deviations**

Where the tenderer cannot tender in all respects in accordance with the foregoing provisions, such deviations shall be clearly and separately listed in Schedule 13: Proposed Deviations and Qualifications by Tenderer in T2.2 Returnable Schedules, or in a tenderer's covering letter expressly referenced in Schedule 13.

The Employer will examine such deviations but shall not be bound to accept any such deviations or qualifications.

The sum tendered in the Tender Offer shall be deemed to include for all such deviations or qualifications listed or referred to in Schedule 13: Deviations and Qualifications by Tenderer.

Deviations which are contained in literature, detailed or general descriptions, drawings, equipment lists, etc. provided with the tender but which are not clearly and separately listed as described above will not be considered by the Employer and the tender shall be deemed to comply in all respects with the foregoing provisions and all costs in this regard shall be for the Contractor's account.

Joint Venture Agreement

Where the tendering entity is a joint venture it is recommended that the standard CIDB Joint Venture Agreement be used.

Add the following to F.2.13.2:

F2.13.2 Printed Schedules of Quantities, in the same format (that is, layout, scheduled items and quantities) as those issued electronically by the Employer on request, may be submitted in terms of F.4.11.c).

Note that Volume 2A, Volume 2B and Volume 3 are not returnable documents, and are issued electronically on a CD appended to Volume 2.

Add the following to F.2.13.3:

F.2.13.3 Parts of each tender offer communicated on paper shall be submitted as an original, plus 0 (nought) copies, unless otherwise stated in the Tender Document.

Add the following after the first sentence of F.2.13.4:

F.2.13.4 The tender shall be signed by a person duly authorised to do so. Tenders submitted by joint ventures of two or more firms shall be accompanied by the document of formation of the joint venture, in which is defined precisely the conditions under which the joint venture will function, its period of duration, the persons authorised to represent and obligate it, the participation of the several firms forming the joint venture, and any other information necessary to permit a full appraisal of its functioning.

Add the following to F.2.13.5:

F.2.13.5 The Employer's address for delivery of tender offers and identification details to be shown on each tender offer package are:

Location of tender box:	Tender Box 169
Physical address:	Tender Submission Office, 2nd Floor (Concourse Level), Civic Centre, 12 Hertzog Boulevard, Cape Town.
Identification details:	Tender number 178Q/2016/17 Title of tender: Design – Build of Mechanical and Electrical Works for the Construction of an MBR plant and bottleneck alleviation at Zandvliet Wastewater Treatment Works

Sealed tenders (including any alternative tenders) with the Tenderer's name and address and the endorsement **"TENDER NO. 178Q/2016/17: DESIGN – BUILD OF MECHANICAL AND ELECTRICAL WORKS FOR THE CONSTRUCTION OF AN MBR PLANT AND BOTTLENECK ALLEVIATION AT ZANDVLIET WASTEWATER TREATMENT WORKS"** on the envelope(s), must be placed in the appropriate official tender box at the abovementioned address.

Add the following to F.2.13.6:

F.2.13.6 A two-envelope procedure will **not** be followed (F.3.5).

Add the following sub-clause after F.2.13.9:

F.2.13.10 By signing the offer part of C1.1 Form of Offer and Acceptance the tenderer declares that all information provided in the tender submission is true and correct.

F.2.15 **Closing time**

Add the following to F.2.15.1:

F.2.15.1 The closing time for submission of tender offers is as stated in the Tender Notice and Invitation to Tender.

Telephonic, telegraphic, telex, facsimile or e-mailed tender offers will not be accepted.

F.2.16 **Tender offer validity**

Add the following to F.2.16.1:

F.2.16.1 The tender offer validity period is **12 weeks (84 days)**. Tenderers are also referred to F.4.12 in respect of the Section 33 process.

Replace sub-clause F.2.16.2 with the following:

F.2.16.2 Tender offers shall be deemed to remain valid until formal acceptance by the Employer of an offer at any time after the expiry date of the original tender offer validity period, unless the Employer is notified in writing of anything to the contrary, including any further conditions, by the tenderer.

Any further conditions introduced by the tenderer will be considered at the sole discretion of the Employer.

F.2.17 **Clarification of tender offer after submission**

Add the following:

A tender will be rejected as non-responsive if the tenderer fails to provide any clarification or supporting documentation requested by the Employer within the time for submission stated in the Employer's written request for such clarification or documentation. A tender will also be rejected as non-responsive if the tenderer fails, within the time stated in writing by the Employer, to comply with the requirements of F.4.3.

F.2.18 **Provide other material**

Delete the following word in F.2.18.1:

F.2.18.1 notarized

Add the following to F.2.18.1:

F.2.18.1 Provide, on written request by the Employer, where the transaction value (tendered amount) inclusive of VAT **exceeds R10 million:**

a) audited annual financial statements for the past 3 years, or for the period since establishment if established during the past 3 years, if required by law to prepare annual financial statements for auditing;
b) a certificate signed by the tenderer certifying that the tenderer has no undisputed commitments for municipal services towards a municipality or other service provider in respect of which payment is overdue for more than 30 days;
c) particulars of any contracts awarded to the tenderer by an organ of state during the past five years, including particulars of any material non-compliance or dispute concerning the execution of such contract;
d) a statement indicating whether any portion of the goods or services are expected to be sourced from outside the Republic, and, if so, what portion and whether any portion of payment from the municipality or municipal entity is expected to be transferred out of the Republic.

Each party to a Consortium/Joint Venture shall submit separate certificates/statements in the above regard.

F.2.23 **Certificates**

Add the following:

The tenderer is required to submit the following:

F.2.23.1 **Evidence of Tax Compliance**

Tenderers shall be registered with the South African Revenue Service (SARS) and their tax affairs must be in order and they must be tax compliant. In this regard, it is the responsibility of the Tenderer to submit evidence in the form of a valid Tax Clearance Certificate issued by SARS to the Employer at the Supplier Management Unit located within the Tender Distribution Office, 2nd Floor (Concourse Level), Civic Centre, 12 Hertzog Boulevard, Cape Town (Tel 021 400 9242/3/4/5), or included with this tender. The tenderer must also provide its Tax Compliance Status PIN number on the **Compulsory Enterprise Questionnaire.**

Each party to a Consortium/Joint Venture shall submit a separate Tax Clearance Certificate.

Tenderers are to note that the Employer will not award a contract to a Tenderer whose tax matters are not in order.

F.2.23.2 **Broad-Based Black Economic Empowerment Status Level Documentation**

In order to qualify for preference points, it is the responsibility of the tenderer to submit documentary proof, either as certificates or sworn affidavits, of its B-BBEE status level of contribution in accordance with the applicable Codes of good practise as issued by the Department of Trade and Industry, to the CCT at the Supplier Management Unit located within the Tender Distribution Office, 2nd Floor (Concourse Level), Civic Centre, 12 Hertzog Boulevard, Cape Town (Tel 021 400 9242/3/4/5) or included with the tender submission.

Consortiums/Joint Ventures will qualify for preference points, provided that the **entity** submits the relevant certificate/scorecard in accordance with the applicable codes of good practise. Note that, in the case of unincorporated entities, a verified consolidated B-BBEE scorecard must be submitted in the form of a certificate with the tender.

Tenderers are further referred to the content of the **Preference Schedule** for the full terms and conditions applicable to the awarding of preference points.

The applicable code for this tender is the **Amended Codes of Good Practise (Generic Scorecard)** unless in possession of a valid sector certificate.

The tenderer shall indicate in Section 4 of the **Preference Schedule** the Level of Contribution in respect of the enterprise status or structure of the tendering entity (the supplier).

F.3 The Employer's undertakings

F.3.2 **Issue Addenda**

Add the following to F.3.2:

Notwithstanding any requests for confirmation of receipt of Addenda issued, the tenderer shall be deemed to have received such addenda if the employer can show proof of transmission thereof (or a notice in respect thereof) via electronic mail, facsimile or registered post.

F.3.4 **Opening of tender submissions**

Add the following to F.3.4.1:

F.3.4.1 The time and location for opening of the tender offers is:

Time: Tenders will be opened immediately after the closing time for receipt of tenders as stated in the Tender Notice and Invitation to Tender, or as stated in any Addendum extending the closing date.

Location: Tender Submission Office, 2nd Floor (Concourse Level), Civic Centre, 12 Hertzog Boulevard , Cape Town.

F.3.8 **Test for responsiveness**

Replace sub-clause F.3.8.1 with the following:

F.3.8.1 Determine, after opening and before detailed evaluation, whether all tenders properly received:

a) complies with the requirements of the Conditions of Tender,
b) has been properly and fully completed and signed, and
c) is responsive to the other requirements of the tender documents.

F.3.8.2 *Replace the final sentence of F.3.8.2 with the following:*

Reject a non-responsive tender offer, and not allow it to be subsequently made responsive by correction or withdrawal of the material deviation.

Add the following two sub-clauses after F.3.8.2:

F.3.8.3 Tenders will be considered non-responsive if, inter alia:

a) the tender is not in compliance with the Scope of Work;
b) the tenderer is not registered on the City of Cape Town's Vendor Database prior to the evaluation of submissions as stated in F.2.1.1.1 above;
c) the tenderer does not comply with the CIDB registration (active status) and contractor grading designation specified in F.2.1.1.2 above;
d) the tenderer has failed to clarify or submit any supporting documentation within the time for submission stated in the employer's written request as stated in F.2.17;
e) the tenderer does not comply with the instructions as contained in Clause F.2.1.1.4 relating to Local Content.
f) the tenderer has failed to achieve the minimum score for quality as stated in F.2.1.1.3;
g) the tenderer has failed to complete the Technical Data Sheets (Schedule 19) contained in Volume 2C;
h) the tenderer has failed to attend the compulsory site clarification meeting;

Tenders may also be declared non-responsive if it is determined on reasonable grounds or evidence that the tenders are submitted by:

i) tenderers who, notwithstanding having submitted duly completed certificates of independent tender determination (Returnable Schedule 2), are nevertheless deemed to have knowledge of the contents of any other tenderer's offer and/or a certificate is not true and correct in every respect;
j) tenderers in a horizontal relationship which has the effect of substantially preventing or lessening competition in a market, subject to the exceptions as set out in section 4(1)(a) of the Competitions Act, 89 of 1998;
k) tenderers who are presumed to be firms engaged in a restrictive horizontal practice as contemplated in section 4(1)(b) read with section 2 of the Competitions Act, 89 of 1998;
l) tenderers in a vertical relationship which has the effect of substantially preventing or lessening competition in a market, subject to the exceptions as set out in section 5(1) of the Competitions Act, 89 of 1998.

F.3.8.4 The Employer reserves the right to accept a tender offer which does not, in the Employer's opinion, materially and/or substantially deviate from the terms, conditions, and specifications of the tender documents.

F.3.11 **Evaluation of tender offers**

F.3.11.1 **General**

Add the following:

The Employer shall adopt the following procedure when evaluating tender submissions:

Step 1 (Only applicable where a minimum score for quality has been prescribed as a eligibility criterion). Evaluate all valid tender submissions in order to determine whether or not the minimum score for quality has been achieved. A tender will only be considered further if it achieves the required minimum quality score.

Step 2 Conduct a preliminary ranking using **Method 2 Financial Offer and Preference** in accordance with F.3.11.3 a), b) and c) (excluding any tenders eliminated in Step 1)

Step 3 Test three highest preliminary ranked tender offers for responsiveness, and reject any found to be non-responsive. Test additional tenders if necessary to ensure that a detailed evaluation of at least three responsive tenders is carried out, with Pm in Formula 2 (Option 1) (refer to F.3.11.7 below) being the most favourable comparative offer of the three.

Step 4 Carry out a detailed evaluation of all of the highest preliminary ranked responsive tender offers as determined in Step 3.

Step 5 Complete final ranking of tender offers and make a recommendation for award in accordance with F.3.11.3 c), d) and e), unless an alternative tender is being considered. Note that, unless determined otherwise, all tender offers shall be deemed to be responsive and shall be included in the final ranking of tenders.

Step 6 Should it be considered that there is merit for accepting an alternative tender submitted in terms of F.2.12.1, include the alternative tender in the final ranking and re-score if necessary.

F.3.11.3 **Method 2 : Financial offer and preferences**

Add the following to F.3.11.3 d):

Such reasons (objective criteria) include whether the recommended tenderer:

i) has demonstrated that it has the necessary resources and skills required to fulfil its obligations in terms of the tender document;
ii) poses any commercial or legal risk to the City;
iii) is currently subject to action in accordance with the policy for combating abuse of the Supply Chain Management System.

F.3.11.7 **Scoring Financial Offers**

Add the following:

The financial offer will be scored using **Formula 2 (Option 1)** where the value of W_1 is **90** points.

F.3.11.8 **Scoring Preferences**

Points will be awarded to tenderers who are eligible for preferences in terms of the **Preference Schedule** (where preferences are granted in respect of B-BBEE contribution) which is included in T2.2 Returnable Schedules.

The terms and conditions of the **Preference Schedule** shall apply in all respects to the tender evaluation process and any subsequent contract.

Points for Preference

A maximum of 100 minus W_1 tender evaluation points will be awarded for preference to tenderers with responsive tenders, who are eligible for such preference, in accordance with the criteria listed below.

The Tenderer shall indicate on the **Preference Schedule** his or her company/firm/entity's B-BBEE status level of contributor.

Up to **10** tender evaluation points (N_P) will be awarded for the level of B-BBEE contribution, in accordance with the tables below:

Exempted Micro Enterprises (EMEs)

Black Ownership	Deemed B-BBEE Status Level of Contributor	Number of Points (N_p)
less than 51%	4	5
at least 51% but less than 100%	2	9
100%	1	10

Qualifying Small Enterprises (QSEs)

Black Ownership	Deemed B-BBEE Status Level of Contributor	Number of Points (N_p)
at least 51% but less than 100%	2	9
100%	1	10

B-BBEE Status Level of Contributor	Number of Points (N_p)
1	10
2	9
3	8
4	5
5	4
6	3
7	2
8	1
Non-compliant contributor[1]	0

[1] A non-compliant contributor is one who does not meet the minimum score for a level 8 contributor, or who is not verified in terms of the applicable Codes of Good Practice.

Add the following new subclause after F.3.11.9:

F.3.11.10 **Risk Analysis**

Notwithstanding compliance with regard to CIDB registration or any other requirements of the tender, the employer will perform a risk analysis in respect of the following:

a) reasonableness of the financial offer
b) reasonableness of unit rates and prices
c) the tenderer's ability to fulfill its obligations in terms of the tender document, that is, that the tenderer can demonstrate that he/she possesses the necessary professional and technical qualifications, professional and technical competence, financial resources, equipment and other physical facilities, managerial capability, reliability, capacity, experience, reputation, personnel to perform the contract, etc.; the employer reserves the right to consider a tenderer's existing contracts with the City of Cape Town in this regard.

No tenderer will be recommended for an award unless the tenderer has demonstrated to the satisfaction of the employer that he/she has the resources and skills required.

F.3.13 **Acceptance of tender offer**

Add the following to F.3.13:

F.3.13.1 Tender offers will only be accepted if:

a) the tenderer is registered and in good standing with the South African Revenue Service (SARS) and has submitted evidence in the form of an **original** valid Tax Clearance Certificate issued by SARS;
b) the tenderer or any of its directors is not listed on the Register of Tender Defaulters in terms of the Prevention and Combating of Corrupt Activities Act, 12 of 2004 as a person prohibited from doing business with the public sector;
c) the tenderer has not:
   i) abused the Employer's Supply Chain Management System; or
   ii) failed to pay municipal rates and taxes or service charges and such rates, taxes and charges are in arrears for more than three months;
d) the tenderer has completed the Compulsory Enterprise Questionnaire and there are no conflicts of interest which may impact on the tenderer's ability to perform the contract in the best interests of the employer or potentially compromise the tender process.

F.3.13.2 **Objections, complaints, queries and disputes/ Appeals in terms of Section 62 of the Systems Act/ Access to court**

F.3.13.2.1 **Disputes, objections, complaints and queries**

In terms of Regulations 49 and 50 of the Local Government: Municipal Finance Management Act, 56 of 2003 – Municipal Supply Chain Management Regulations (Board Notice 868 of 2005):

a) Persons aggrieved by decisions or actions taken by the City of Cape Town in the implementation of its supply chain management system, may lodge within 14 days of the decision or action, a written objection or complaint or query or dispute against the decision or action.

F.3.13.2.2 **Appeals**

a) In terms of Section 62 of the Local Government: Municipal Systems Act, 32 of 2000 a person whose rights are affected by a decision taken by the City , may appeal against that decision by giving written notice of the appeal and reasons to the City Manager within 21 days of the date of the notification of the decision.
b) An appeal must contain the following:
   i) Must be in writing
   ii) It must set out the reasons for the appeal
   iii) It must state in which way the Appellant's rights were affected by the decision;
   iv) It must state the remedy sought; and
   v) It must be accompanied with a copy of the notification advising the person of the decision

F.3.13.2.3 **Right to approach the courts and rights in terms of Promotion of Administrative Justice Act, 3 of 2000 and Promotion of Access to Information Act, 2 of 2000**

The sub- clauses above do not influence any affected person's rights to approach the High Court at any time or its rights in terms of the Promotion of Administrative Justice Act and Promotion of Access to Information Act.

F.3.13.2.4 All requests referring to this clause must be submitted in writing to:

The City Manager - C/o the Manager: Statutory Compliance Unit, Legal Services Department,

Corporate Services and Compliance Directorate

Via hand delivery at: 20th Floor, Tower Block, 12 Hertzog Boulevard, Cape Town 8001

Via post at: Private Bag X918, Cape Town, 8000

Via fax at:

Via email at:

F.3.16 **Notice to unsuccessful tenderers**

Replace the heading with:

Notice to successful and unsuccessful tenderers

Add the following to F.3.16.1:

F.3.16.1 Before accepting the tender of the successful tenderer the Employer shall notify the successful tenderer in writing of the decision of the Employer's Bid Adjudication Committee to award the tender to the successful tenderer. No rights shall accrue to the successful tenderer in terms of this notice, and only once the processes described in F.3.13.2 and F.3.13.3 above have been completed can the Employer sign the Acceptance part of the Form of Offer and Acceptance.

Replace F.3.16.2 with the following:

F.3.16.2 The Employer shall, at the same time as notifying the successful tenderer of the Bid Adjudication Committee's decision to award the tender to the successful tenderer, also give written notice to the other tenderers informing them that they have been unsuccessful.

F.3.17 **Provide copies of the contract**

Add the following:

The number of paper copies of the signed contract to be provided by the Employer is one.

F.4 Additional Conditions of Tender

The additional conditions of tender are:

F.4.1 **Compliance with Occupational Health and Safety Act, 85 of 1993**

Tenderers are to note the requirements of the Occupational Health and Safety Act, 85 of 1993 and the Construction Regulations, 2014 issued in terms of Section 43 of the Act. The Tenderer shall be deemed to have read and fully understood the requirements of the above Act and Regulations and to have allowed for all costs in compliance therewith.

In this regard the Tenderer shall submit with his tender, appended to Schedule 12: Health and Safety Plan in T2.2 Returnable Schedules, a Health and Safety Plan in respect of the Works in sufficient detail to demonstrate the necessary competencies and resources to perform the construction work all in accordance with the Act, Regulations, and Health and Safety Specification in Volume 2A. Such Health and Safety Plan shall cover, *inter alia*, the following details:

a) Management Structure, Site Supervision and Responsible Persons including a succession plan.
b) Contractor's induction training programme for employees, sub-contractors and visitors to the Site.
c) Health and safety method statements and procedures (inclusive of PPE requirements) to be adhered to in order to ensure compliance with the Act, Regulations and the project specific Health and Safety Specification.
d) Regular monitoring procedures to be performed.
e) Regular liaison, consultation and review meetings with all parties.
f) Site security, welfare facilities and first aid.
g) Site rules and fire and emergency procedures.

F.4.2 **Claims arising after submission of tender**

No claim for any extras arising out of any doubt or obscurity as to the true intent and meaning of anything shown on the Contract Drawings or contained in the Conditions of Contract, Scope of Work and Pricing Data, will be admitted by the Employer after the submission of any tender and the Tenderer shall be deemed to have:

a) inspected the Contract Drawings and read and fully understood the Conditions of Contract,
b) read and fully understood the whole text of the Scope of Work and Pricing Data and thoroughly acquainted himself with the nature of the works proposed and generally of all matters which may influence the Contract,
c) visited the site of the proposed works, carefully examined existing conditions, the means of access to the Site, the conditions under which the work is to be done, and acquainted himself with any limitations or restrictions that may be imposed by the Municipal or other Authorities in regard to access and transport of materials, plant and equipment to and from the site and made the necessary provisions for any additional costs involved thereby,
d) requested the Employer or his duly authorised agent to make clear the actual requirements of anything shown on the Contract Drawings or anything contained in the Scope of Work and Pricing Data, the exact meaning or interpretation of which is not clearly intelligible to the Tenderer, and
e) received any Addenda to the tender documents which have been issued in accordance with the Employer's Supply Chain Management Policy.

Before submission of any tender, the Tenderer should check the number of pages, and if any are found to be missing or duplicated, or the figures or writing indistinct, or if the Pricing Data contain any obvious errors, the Tenderer must apply to the Employer's agent at once to have the same rectified, as no liability will be admitted by the Employer in respect of errors in any tender due to the foregoing.

F.4.3 **Imbalance in tendered rates**

In the event of tendered rates or lump sums being declared by the Employer to be unacceptable to it because they are not priced, either excessively low or high, or not in proper balance with other rates or lump sums, the Tenderer may be required to produce evidence and advance arguments in support of the tendered rates or lump sums objected to. If, after submission of such evidence and any further evidence requested, the Employer is still not satisfied with the tendered rates or lump sums objected to, it may request the Tenderer to amend these rates and lump sums along the lines indicated by it.

The Tenderer will then have the option to alter and/or amend the rates and lump sums objected to and such other related amounts as are agreed on by the Employer, but this shall be done without altering the tender offer as tendered or, if applicable, the corrected total of prices in accordance with F.3.9.3.

Should the Tenderer fail to amend his tender in a manner acceptable to and within the time stated by the Employer, the Employer may reject the tender.

F.4.4 **Invalid tenders**

Tenders shall be considered invalid by the Bid Evaluation Committee if:

a) the tender offer (including the tender price/amount) is not submitted on the Form of Offer and Acceptance (form C1.1, Part C1: Agreements and Contract Data);
b) the returnable document is not completed in non-erasable handwritten, or printed, ink or toner;
c) the Form of Offer and Acceptance has not been signed with an original signature;
d) the Form of Offer and Acceptance is signed, but the name of the tenderer is not stated or is indecipherable;
e) in a two envelope system, the tenderer fails to submit a separately sealed financial offer.

F.4.5 **Negotiations with preferred tenderers**

The Employer may negotiate the final terms of a contract with tenderers identified through a competitive tendering process as preferred tenderers provided that such negotiation:

a) does not allow any preferred tenderer a second or unfair opportunity;
b) is not to the detriment of any other tenderer; and
c) does not lead to a higher price than the tender as submitted.

If negotiations fail to result in acceptable contract terms, the Employer may terminate the negotiations and invite the next ranked tenderer for negotiations. The original preferred tenderer will be informed of the reasons for termination of the negotiations. Once negotiations are commenced with the next ranked tenderer, the Employer will not re-open earlier negotiations.

Minutes of any such negotiations shall be kept for record purposes.

F.4.6 **General supply chain management conditions applicable to tenders**

In terms of its Supply Chain Management Policy, the Employer may not consider a tender unless the provider who submitted the tender:

a) has furnished the Employer with that provider's:
   i) full name;
   ii) identification number or company or other registration number; and
   iii) tax reference number and VAT registration number, if any.
b) has indicated whether:
   i) the provider is in the service of the state, or has been in the service of the state in the previous twelve months;
   ii) if the provider is not a natural person, whether any of the directors, managers, principal shareholders or stakeholders is in the service of the state, or has been in the service of the state in the previous twelve months; or
   iii) whether a spouse, child or parent of the provider or of a director, manager, shareholder or stakeholder referred to above is in the service of the state, or has been in the service of the state in the previous twelve months.
c) has attended a compulsory site inspection, where applicable.

Irrespective of the procurement process followed, the Employer is prohibited from making an award to:

d) a person who is in the service of the state;
e) a juristic entity of which any director, manager or principal shareholder or stakeholder is in the service of the state;
f) an advisor or consultant contracted with the Employer; or
g) a person, advisor or corporate entity involved with the bid specification committee, or a director of such corporate entity. "Involved with the bid specification committee" includes where a person, advisor or corporate entity (or its director) was involved in the initial stages of the project which resulted in the specification; and they are therefore prohibited from tendering for resulting contracts.

In this regard, tenderers shall complete Schedule 1, Part T2.2 Returnable Schedules: Compulsory Enterprise Questionnaire. Failure to complete this schedule may result in the tender not being considered.

F.4.7 **Combating abuse of the Supply Chain Management Policy**

In terms of its Supply Chain Management Policy, the Employer may reject the tender of any tenderer if that tenderer or any of its directors has:

a) failed to pay municipal rates and taxes or municipal service charges and such rates, taxes and charges are in arrears for more than three months;
b) failed, during the last five years, to perform satisfactorily on a previous contract with the Employer or any other organ of state after written notice was given to that tenderer that performance was unsatisfactory;
c) abused the supply chain management system of the Employer or has committed any improper conduct in relation to this system;
d) been convicted of fraud or corruption during the past five years;
e) wilfully neglected, reneged on or failed to comply with any government, municipal or other public sector contract during the past five years; or

f) been listed with the Register for Tender Defaulters in terms of section 29 of the Prevention and Combating of Corrupt Activities Act, 12 of 2004 or has been listed on National Treasury's Database of Restricted Suppliers as a person or juristic entity prohibited from doing business with the public sector.

In this regard, tenderers shall complete Schedules 2 and 4, Part T2.2 Returnable Schedules: Certificate of Independent Tender Determination and Declaration of Tenderer's past Supply Chain Management Practices, respectively. Failure to complete these schedules may result in the tender not being considered.

F.4.8 **UIF payments**
The Tenderer shall submit to the Employer a letter from the Industrial Council indicating his or her good standing with regard to UIF payments upon being requested to do so.

F.4.9 **Information to be provided with the tender**
Tenderers must provide the information listed in Schedule 18, Part T2.2 Returnable Schedules: Information to be provided with the Tender, with their tenders.

F.4.10 **Tender Programme**
The Tenderer's attention is drawn to the contract Commencement Date, Time for Completion of the Works, and Time for access to and possession of the Site, in the Appendix to Tender in Part C1.2 Contract Data.

F.4.11 **Requests for contract documents, or parts thereof, in electronic format**
The Employer shall not formally issue tender documents in electronic format as contemplated in F.2.13.2 and F.2.13.3 and shall only issue tender documents in hardcopy. An electronic version of the issued tender documents may be made available to the tenderer, upon written request in terms of this clause, subject to the following:

a) Electronic copies of the issued tender documents, or parts thereof, will only be provided to tenderers who have been issued with the tender documents as contemplated in F.1.2 in hardcopy.
b) The electronic version shall not be regarded as a substitute for the issued tender documents.
c) The Employer shall not accept tenders submitted in electronic format. Only those tenders that have been completed on the issued hard copy tender document shall be considered, provided that printed Schedules of Quantities, in the same format (that is, layout, scheduled items and quantities) as those issued electronically by the Employer, may be submitted with the tender as stated in F.2.13.2. Where Addenda have been issued which amend the Schedules of Quantities, then the printed Schedules of Quantities shall take these into account. The pages of the issued Schedules of Quantities should not be removed from the tender document
d) The Employer accepts no responsibility or liability arising from any reliance on or use of the electronic version provided in terms of this clause. The Employer further does not guarantee that the electronic version corresponds with the issued tender documents in all respects. Tenderers are alerted to the fact that electronic versions of the tender documents may not reflect any notices or addenda that amend the tender document.
e) Any non-compliance with these provisions, including effecting any unauthorised alterations to the tender documents as contemplated in F.2.11, shall render the tender non-responsive. The Employer reserves the right to take any action against such tenderer allowed in law including, in circumstances where the tender had already been awarded, the right to cancel the contract.
f) In requesting the electronic version of the tender documents or parts thereof, the tenderer is deemed to have read, understood and accepted all of the above conditions.

F.4.12 **Contracts having future budgetary implications**
As this project will exceed the current budget cycle, it is subject to Section 33 of the Municipal Finance Management Act, 56 of 2003, and consequently the Employer must follow the required processes in terms of Section 33. These will run concurrently with the procurement process for this tender/contract.

Annex F
(normative)

Standard Conditions of Tender

F.1 General

F.1.1 Actions

F.1.1.1 The employer and each tenderer submitting a tender offer shall comply with these conditions of tender. In their dealings with each other, they shall discharge their duties and obligations as set out in F.2 and F.3, timeously and with integrity, and behave equitably, honestly and transparently, comply with all legal obligations and not engage in anticompetitive practices.

F.1.1.2 The employer and the tenderer and all their agents and employees involved in the tender process shall avoid conflicts of interest and where a conflict of interest is perceived or known, declare any such conflict of interest, indicating the nature of such conflict. Tenderers shall declare any potential conflict of interest in their tender submissions. Employees, agents and advisors of the employer shall declare any conflict of interest to whoever is responsible for overseeing the procurement process at the start of any deliberations relating to the procurement process or as soon as they become aware of such conflict, and abstain from any decisions where such conflict exists or recuse themselves from the procurement process, as appropriate.

Note: 1) A conflict of interest may arise due to a conflict of roles which might provide an incentive for improper acts in some circumstances. A conflict of interest can create an appearance of impropriety that can undermine confidence in the ability of that person to act properly in his or her position even if no improper acts result.

2) Conflicts of interest in respect of those engaged in the procurement process include direct, indirect or family interests in the tender or outcome of the procurement process and any personal bias, inclination, obligation, allegiance or loyalty which would in any way affect any decisions taken.

F.1.1.3 The employer shall not seek and a tenderer shall not submit a tender without having a firm intention and the capacity to proceed with the contract.

F.1.2 Tender Documents

The documents issued by the employer for the purpose of a tender offer are listed in the tender data.

F.1.3 Interpretation

F.1.3.1 The tender data and additional requirements contained in the tender schedules that are included in the returnable documents are deemed to be part of these conditions of tender.

F.1.3.2 These conditions of tender, the tender data and tender schedules which are only required for tender evaluation purposes, shall not form part of any contract arising from the invitation to tender.

F.1.3.3 For the purposes of these conditions of tender, the following definitions apply:

a) **conflict of interest** means any situation in which:
   i) someone in a position of trust has competing professional or personal interests which make it difficult to fulfill his or her duties impartially;
   ii) an individual or organisation is in a position to exploit a professional or official capacity in some way for their personal or corporate benefit; or
   iii) incompatibility or contradictory interests exist between an employee and the organisation which employs that employee.

b) **comparative offer** means the tenderer's financial offer after all tendered parameters that will affect the value of the financial offer have been taken into consideration in order to enable comparisons to be made between offers on a comparative basis

c) **corrupt practice** means the offering, giving, receiving or soliciting of anything of value to influence the action of the employer or his staff or agents in the tender process; and

d) **fraudulent practice** means the misrepresentation of the facts in order to influence the tender process or the award of a contract arising from a tender offer to the detriment of the employer, including collusive practices intended to establish prices at artificial levels

e) **organization** means a company, firm, enterprise, association or other legal entity, whether incorporated or not, or a public body

f) **quality (functionality)** means the totality of features and characteristics of a product or service that bear on its ability to satisfy stated or implied needs.

F.1.4 Communication and employer's agent

Each communication between the employer and a tenderer shall be to or from the employer's agent only, and in a form that can be readily read, copied and recorded. Communication shall be in the English language. The employer shall not take any responsibility for non-receipt of communications from or by a tenderer. The name and contact details of the employer's agent are stated in the tender data.

F.1.5 The employer's right to accept or reject any tender offer

F.1.5.1 The employer may accept or reject any variation, deviation, tender offer, or alternative tender offer, and may cancel the tender process and reject all tender offers at any time before the formation of a contract. The employer shall not accept or incur any liability to a tenderer for such cancellation and rejection, but will give written reasons for such action upon written request to do so.

F.1.5.2 The employer may not subsequent to the cancellation or abandonment of a tender process or the rejection of all responsive tender offers re-issue a tender covering substantially the same scope of work within a period of six months unless only one tender was received and such tender was returned unopened to the tenderer.

F.1.6 Procurement procedures

F.1.6.1 General
Unless otherwise stated in the tender data, a contract will, subject to F.3.13, be concluded with the tenderer who in terms of F.3.11 is the highest ranked or the tenderer scoring the highest number of tender evaluation points, as relevant, based on the tender submissions that are received at the closing time for tenders.

F.1.6.2 Competitive negotiation procedure

F.1.6.2.1 Where the tender data require that the competitive negotiation procedure is to be followed, tenderers shall submit tender offers in response to the proposed contract in the first round of submissions. Notwithstanding the requirements of F.3.4, the employer shall announce only the names of the tenderers who make a submission. The requirements of F.3.8 relating to the material deviations or qualifications which affect the competitive position of tenderers shall not apply.

F.1.6.2.2 All responsive tenderers, or not less than three responsive tenderers that are highest ranked in terms of the evaluation method and evaluation criteria stated in the tender data, shall be invited in each round to enter into competitive negotiations, based on the principle of equal treatment and keeping confidential the proposed solutions and associated information. Notwithstanding the provisions of F.2.17, the employer may request that tenders be clarified, specified and fine-tuned in order to improve a tenderer's competitive position provided that such clarification, specification, fine-tuning or additional information does not alter any fundamental aspects of the offers or impose substantial new requirements which restrict or distort competition or have a discriminatory effect.

F.1.6.2.3 At the conclusion of each round of negotiations, tenderers shall be invited by the employer to make a fresh tender offer, based on the same evaluation criteria, with or without adjusted weightings. Tenderers shall be advised when they are to submit their best and final offer.

F.1.6.2.4 The contract shall be awarded in accordance with the provisions of F.3.11 and F.3.13 after tenderers have been requested to submit their best and final offer.

F.1.6.3 Proposal procedure using the two stage-system

F.1.6.3.1 Option 1
Tenderers shall in the first stage submit technical proposals and, if required, cost parameters around which a contract may be negotiated. The employer shall evaluate each responsive submission in terms of the method of evaluation stated in the tender data, and in the second stage negotiate a contract with the tenderer scoring the highest number of evaluation points and award the contract in terms of these conditions of tender.

F.1.6.3.2 Option 2

F.1.6.3.2.1 Tenderers shall submit in the first stage only technical proposals. The employer shall invite all responsive tenderers to submit tender offers in the second stage, following the issuing of procurement documents.

F.1.6.3.2.2 The employer shall evaluate tenders received during the second stage in terms of the method of evaluation stated in the tender data, and award the contract in terms of these conditions of tender.

F.2 Tenderer's obligations

F.2.1 Eligibility

F.2.1.1 Submit a tender offer only if the tenderer satisfies the criteria stated in the tender data and the tenderer, or any of his principals, is not under any restriction to do business with employer.

F.2.1.2 Notify the employer of any proposed material change in the capabilities or formation of the tendering entity (or both) or any other criteria which formed part of the qualifying requirements used by the employer as the basis in a prior process to invite the tenderer to submit a tender offer and obtain the employer's written approval to do so prior to the closing time for tenders.

F.2.2 Cost of tendering

Accept that, unless otherwise stated in the tender data, the employer will not compensate the tenderer for any costs incurred in the preparation and submission of a tender offer, including the costs of any testing necessary to demonstrate that aspects of the offer complies with requirements.

F.2.3 Check documents

Check the tender documents on receipt for completeness and notify the employer of any discrepancy or omission.

F.2.4 Confidentiality and copyright of documents

Treat as confidential all matters arising in connection with the tender. Use and copy the documents issued by the employer only for the purpose of preparing and submitting a tender offer in response to the invitation.

F.2.5 Reference documents

Obtain, as necessary for submitting a tender offer, copies of the latest versions of standards, specifications, conditions of contract and other publications, which are not attached but which are incorporated into the tender documents by reference.

F.2.6 Acknowledge addenda

Acknowledge receipt of addenda to the tender documents, which the employer may issue, and if necessary apply for an extension to the closing time stated in the tender data, in order to take the addenda into account.

F.2.7 Clarification meeting

Attend, where required, a clarification meeting at which tenderers may familiarize themselves with aspects of the proposed work, services or supply and raise questions. Details of the meeting(s) are stated in the tender data.

F.2.8 Seek clarification

Request clarification of the tender documents, if necessary, by notifying the employer at least five working days before the closing time stated in the tender data.

F.2.9 Insurance

Be aware that the extent of insurance to be provided by the employer (if any) might not be for the full cover required in terms of the conditions of contract identified in the contract data. The tenderer is advised to seek qualified advice regarding insurance.

F.2.10 Pricing the tender offer

F.2.10.1 Include in the rates, prices, and the tendered total of the prices (if any) all duties, taxes (except Value Added Tax (VAT), and other levies payable by the successful tenderer, such duties, taxes and levies being those applicable 14 days before the closing time stated in the tender data.

F.2.10.2 Show VAT payable by the employer separately as an addition to the tendered total of the prices.

F.2.10.3 Provide rates and prices that are fixed for the duration of the contract and not subject to adjustment except as provided for in the conditions of contract identified in the contract data.

F.2.10.4 State the rates and prices in Rand unless instructed otherwise in the tender data. The conditions of contract identified in the contract data may provide for part payment in other currencies.

F.2.11 Alterations to documents

Do not make any alterations or additions to the tender documents, except to comply with instructions issued by the employer, or necessary to correct errors made by the tenderer. All signatories to the tender offer shall initial all such alterations. Erasures and the use of masking fluid are prohibited.

F.2.12 Alternative tender offers

F.2.12.1 Unless otherwise stated in the tender data submit alternative tender offers only if a main tender offer, strictly in accordance with all the requirements of the tender documents, is also submitted. The alternative tender offer is to be submitted with the main tender offer together with a schedule that compares the requirements of the tender documents with the alternative requirements the tenderer proposes.

F.2.12.2 Accept that an alternative tender offer may be based only on the criteria stated in the tender data or criteria otherwise acceptable to the employer.

F.2.13 Submitting a tender offer

F.2.13.1 Submit one tender offer only, either as a single tendering entity or as a member in a joint venture to provide the whole of the works, services or supply identified in the contract data and described in the scope of works, unless stated otherwise in the tender data.

F.2.13.2 Return all returnable documents to the employer after completing them in their entirety, either electronically (if they were issued in electronic format) or by writing legibly in non-erasable ink.

F.2.13.3 Submit the parts of the tender offer communicated on paper as an original plus the number of copies stated in the tender data, with an English translation of any documentation in a language other than English, and the parts communicated electronically in the same format as they were issued by the employer.

F.2.13.4 Sign the original and all copies of the tender offer where required in terms of the tender data. The employer will hold all authorized signatories liable on behalf of the tenderer. Signatories for tenderers proposing to contract as joint ventures shall state which of the signatories is the lead partner whom the employer shall hold liable for the purpose of the tender offer.

F.2.13.5 Seal the original and each copy of the tender offer as separate packages marking the packages as "ORIGINAL" and "COPY". Each package shall state on the outside the employer's address and identification details stated in the tender data, as well as the tenderer's name and contact address.

F.2.13.6 Where a two-envelope system is required in terms of the tender data, place and seal the returnable documents listed in the tender data in an envelope marked "financial proposal" and place the remaining returnable documents in an envelope marked "technical proposal". Each envelope shall state on the outside the employer's address and identification details stated in the tender data, as well as the tenderer's name and contact address.

F.2.13.7 Seal the original tender offer and copy packages together in an outer package that states on the outside only the employer's address and identification details as stated in the tender data.

F.2.13.8 Accept that the employer shall not assume any responsibility for the misplacement or premature opening of the tender offer if the outer package is not sealed and marked as stated.

F.2.13.9 Accept that tender offers submitted by facsimile or e-mail will be rejected by the employer, unless stated otherwise in the tender data.

F.2.14 Information and data to be completed in all respects

Accept that tender offers, which do not provide all the data or information requested completely and in the form required, may be regarded by the employer as non-responsive.

F.2.15 Closing time

F.2.15.1 Ensure that the employer receives the tender offer at the address specified in the tender data not later than the closing time stated in the tender data. Accept that proof of posting shall not be accepted as proof of delivery.

F.2.15.2 Accept that, if the employer extends the closing time stated in the tender data for any reason, the requirements of these conditions of tender apply equally to the extended deadline.

F.2.16 Tender offer validity

F.2.16.1 Hold the tender offer(s) valid for acceptance by the employer at any time during the validity period stated in the tender data after the closing time stated in the tender data.

F.2.16.2 If requested by the employer, consider extending the validity period stated in the tender data for an agreed additional period with or without any conditions attached to such extension.

F.2.16.3 Accept that a tender submission that has been submitted to the employer may only be withdrawn or substituted by giving the employer's agent written notice before the closing time for tenders that a tender is to be withdrawn or substituted.

F.2.16.4 Where a tender submission is to be substituted, submit a substitute tender in accordance with the requirements of F.2.13 with the packages clearly marked as "SUBSTITUTE".

F.2.17 Clarification of tender offer after submission

Provide clarification of a tender offer in response to a request to do so from the employer during the evaluation of tender offers. This may include providing a breakdown of rates or prices and correction of arithmetical errors by the adjustment of certain rates or item prices (or both). No change in the competitive position of tenderers or substance of the tender offer is sought, offered, or permitted.

Note: Sub-clause F.2.17 does not preclude the negotiation of the final terms of the contract with a preferred tenderer following a competitive selection process, should the Employer elect to do so.

F.2.18 Provide other material

F.2.18.1 Provide, on request by the employer, any other material that has a bearing on the tender offer, the tenderer's commercial position (including notarized joint venture agreements), preferencing arrangements, or samples of materials, considered necessary by the employer for the purpose of a full and fair risk assessment. Should the tenderer not provide the material, or a satisfactory reason as to why it cannot be provided, by the time for submission stated in the employer's request, the employer may regard the tender offer as non-responsive.

F.2.18.2 Dispose of samples of materials provided for evaluation by the employer, where required.

F.2.19 Inspections, tests and analysis

Provide access during working hours to premises for inspections, tests and analysis as provided for in the tender data.

F.2.20 Submit securities, bonds, policies, etc.

If requested, submit for the employer's acceptance before formation of the contract, all securities, bonds, guarantees, policies and certificates of insurance required in terms of the conditions of contract identified in the contract data.

F.2.21 Check final draft

Check the final draft of the contract provided by the employer within the time available for the employer to issue the contract.

F.2.22 Return of other tender documents

If so instructed by the employer, return all retained tender documents within 28 days after the expiry of the validity period stated in the tender data.

F.2.23 Certificates

Include in the tender submission or provide the employer with any certificates as stated in the tender data.

F.3 The Employer's undertakings

F.3.1 Respond to requests from the tenderer

F.3.1.1 Unless otherwise stated in the Tender Data, respond to a request for clarification received up to five working days before the tender closing time stated in the Tender Data and notify all tenderers who drew procurement documents.

F.3.1.2 Consider any request to make a material change in the capabilities or formation of the tendering entity (or both) or any other criteria which formed part of the qualifying requirements used to prequalify a tenderer to submit a tender offer in terms of a previous procurement process and deny any such request if as a consequence:

a) an individual firm, or a joint venture as a whole, or any individual member of the joint venture fails to meet any of the collective or individual qualifying requirements;
b) the new partners to a joint venture were not prequalified in the first instance, either as individual firms or as another joint venture; or
c) in the opinion of the Employer, acceptance of the material change would compromise the outcome of the prequalification process.

F.3.2 Issue Addenda

If necessary, issue addenda that may amend or amplify the tender documents to each tenderer during the period from the date the tender documents are available until three working days before the tender closing time stated in the Tender Data. If, as a result a tenderer applies for an extension to the closing time stated in the Tender Data, the Employer may grant such extension and, shall then notify all tenderers who drew documents.

F.3.3 Return late tender offers

Return tender offers received after the closing time stated in the Tender Data, unopened, (unless it is necessary to open a tender submission to obtain a forwarding address), to the tenderer concerned.

F.3.4 Opening of tender submissions

F.3.4.1 Unless the two-envelope system is to be followed, open valid tender submissions in the presence of tenderers' agents who choose to attend at the time and place stated in the tender data. Tender submissions for which acceptable reasons for withdrawal have been submitted will not be opened.

F.3.4.2 Announce at the meeting held immediately after the opening of tender submissions, at a venue indicated in the tender data, the name of each tenderer whose tender offer is opened and, where applicable, the total of his prices, preferences claimed and time for completion for the main tender offer only.

F.3.4.3 Make available the record outlined in F.3.4.2 to all interested persons upon request.

F.3.5 Two-envelope system

F.3.5.1 Where stated in the tender data that a two-envelope system is to be followed, open only the technical proposal of valid tenders in the presence of tenderers' agents who choose to attend at the time and place stated in the tender data and announce the name of each tenderer whose technical proposal is opened.

F.3.5.2 Evaluate the quality of the technical proposals offered by tenderers, then advise tenderers who remain in contention for the award of the contract of the time and place when the financial proposals will be opened. Open only the financial proposals of tenderers, who score in the quality evaluation more than the minimum number of points for quality stated in the tender data, and announce the score obtained for the technical proposals and the total price and any preferences claimed. Return unopened financial proposals to tenderers whose technical proposals failed to achieve the minimum number of points for quality.

F.3.6 Non-disclosure

Not disclose to tenderers, or to any other person not officially concerned with such processes, information relating to the evaluation and comparison of tender offers, the final evaluation price and recommendations for the award of a contract, until after the award of the contract to the successful tenderer.

F.3.7 Grounds for rejection and disqualification

Determine whether there has been any effort by a tenderer to influence the processing of tender offers and instantly disqualify a tenderer (and his tender offer) if it is established that he engaged in corrupt or fraudulent practices.

F.3.8 Test for responsiveness

F.3.8.1 Determine, after opening and before detailed evaluation, whether each tender offer properly received:

a) Complies with the requirements of these Conditions of Tender,
b) has been properly and fully completed and signed, and
c) is responsive to the other requirements of the tender documents.

F.3.8.2 A responsive tender is one that conforms to all the terms, conditions, and specifications of the tender documents without material deviation or qualification. A material deviation or qualification is one which, in the Employer's opinion, would:

a) detrimentally affect the scope, quality, or performance of the works, services or supply identified in the Scope of Work,
b) significantly change the Employer's or the tenderer's risks and responsibilities under the contract, or
c) affect the competitive position of other tenderers presenting responsive tenders, if it were to be rectified.

Reject a non-responsive tender offer, and not allow it to be subsequently made responsive by correction or withdrawal of the non-conforming deviation or reservation.

F.3.9 Arithmetical errors, omissions and discrepancies

F.3.9.1 Check responsive tenders for discrepancies between amounts in words and amounts in figures. Where there is a discrepancy between the amounts in figures and the amount in words, the amount in words shall govern.

F.3.9.2 Check the highest ranked tender or tenderer with the highest number of tender evaluation points after the evaluation of tender offers in accordance with F.3.11 for:

a) the gross misplacement of the decimal point in any unit rate;
b) omissions made in completing the pricing schedule or bills of quantities; or
c) arithmetic errors in:
   i) line item totals resulting from the product of a unit rate and a quantity in bills of quantities or schedules of prices; or
   ii) the summation of the prices.

F.3.9.3 Notify the tenderer of all errors or omissions that are identified in the tender offer and either confirm the tender offer as tendered or accept the corrected total of prices.

F.3.9.4 Where the tenderer elects to confirm the tender offer as tendered, correct the errors as follows:

a) If bills of quantities or pricing schedules apply and there is an error in the line item total resulting from the product of the unit rate and the quantity, the line item total shall govern and the rate shall be corrected. Where there is an obviously gross misplacement of the decimal point in the unit rate, the line item total as quoted shall govern, and the unit rate shall be corrected.
b) Where there is an error in the total of the prices either as a result of other corrections required by this checking process or in the tenderer's addition of prices, the total of the prices shall govern and the tenderer will be asked to revise selected item prices (and their rates if bills of quantities apply) to achieve the tendered total of the prices.

F.3.10 Clarification of a tender offer

Obtain clarification from a tenderer on any matter that could give rise to ambiguity in a contract arising from the tender offer.

F.3.11 Evaluation of tender offers

F.3.11.1 General

Appoint an evaluation panel of not less than three persons. Reduce each responsive tender offer to a comparative offer and evaluate them using the tender evaluation methods and associated evaluation criteria and weightings that are specified in the tender data.

F.3.11.2 Method 1: Financial offer

In the case of a financial offer:

a) Rank tender offers from the most favourable to the least favourable comparative offer.
b) Recommend the highest ranked tenderer for the award of the contract, unless there are compelling and justifiable reasons not to do so.

c) Re-rank all tenderers should there be compelling and justifiable reasons not to recommend the highest ranked tenderer and recommend the highest ranked tenderer, unless there are compelling and justifiable reasons not to do so and the process set out in this subclause is repeated.

F.3.11.3 Method 2: Financial offer and preference

In the case of a financial offer and preferences:

a) Score each tender in respect of the financial offer made and preferences claimed, if any, in accordance with the provisions of F.3.11.7 and F.3.11.8.
b) Calculate the total number of tender evaluation points *(T_{EV})* in accordance with the following formula:

$T_{EV} = N_{FO} + N_P$

where: N_{FO} is the number of tender evaluation points awarded for the financial offer made in accordance with F.3.11.7;
N_P is the number of tender evaluation points awarded for preferences claimed in accordance with F.3.11.8.

c) Rank tender offers from the highest number of tender evaluation points to the lowest.
d) Recommend the tenderer with the highest number of tender evaluation points for the award of the contract, unless there are compelling and justifiable reasons not to do so.
e) Rescore and re-rank all tenderers should there be compelling and justifiable reasons not to recommend the tenderer with the highest number of tender evaluation points, and recommend the tenderer with the highest number of tender evaluation points, unless there are compelling and justifiable reasons not to do so and the process set out in this subclause is repeated.

F.3.11.4 Method 3: Financial offer and quality

In the case of a financial offer and quality:

a) Score each tender in respect of the financial offer made and the quality offered in accordance with the provisions of F.3.11.7 and F.3.11.9, rejecting all tender offers that fail to score the minimum number of points for quality stated in the tender data, if any.
b) Calculate the total number of tender evaluation points *(T_{EV})* in accordance with the following formula:

$T_{EV} = N_{FO} + N_Q$

where: N_{FO} is the number of tender evaluation points awarded for the financial offer made in accordance with F.3.11.7;
N_Q is the number of tender evaluation points awarded for quality offered in accordance with F.3.11.9.

c) Rank tender offers from the highest number of tender evaluation points to the lowest.
d) Recommend tenderer with the highest number of tender evaluation points for the award of the contract, unless there are compelling and justifiable reasons not to do so.
e) Rescore and re-rank all tenderers should there be compelling and justifiable reasons not to recommend the tenderer with the highest number of tender evaluation points and recommend the tenderer with the highest number of tender evaluation points, unless there are compelling and justifiable reasons not to do so and the process set out in this subclause is repeated.

F.3.11.5 Method 4: Financial offer, quality and preferences

In the case of a financial offer, quality and preferences:

a) Score each tender in respect of the financial offer made, preference claimed, if any, and the quality offered in accordance with the provisions of F.3.11.7 to F.3.11.9, rejecting all tender offers that fail to score the minimum number of points for quality stated in the tender data, if any.
b) Calculate the total number of tender evaluation points *(T_{EV})* in accordance with the following formula, unless otherwise stated in the Tender Data:

$T_{EV} = N_{FO} + N_P + N_Q$

where: N_{FO} is the number of tender evaluation points awarded for the financial offer made in accordance with F.3.11.7;
N_P is the number of tender evaluation points awarded for preferences claimed in accordance with F.3.11.8;
N_Q is the number of tender evaluation points awarded for quality offered in accordance with F.3.11.9.

c) Rank tender offers from the highest number of tender evaluation points to the lowest.

d) Recommend the tenderer with the highest number of tender evaluation points for the award of the contract, unless there are compelling and justifiable reasons not to do so.

e) Rescore and re-rank all tenderers should there be compelling and justifiable reasons not to recommend the tenderer with the highest number of tender evaluation points and recommend the tenderer with the highest number of tender evaluation points, unless there are compelling and justifiable reasons not to do so and the process set out in this subclause is repeated.

F.3.11.6 Decimal places

Score financial offers, preferences and quality, as relevant, to two decimal places.

F.3.11.7 Scoring Financial Offers

Score the financial offers of remaining responsive tender offers using the following formula:

$$N_{FO} = W_1 \times A$$

where: N_{FO} is the number of tender evaluation points awarded for the financial offer.
W_1 is the maximum possible number of tender evaluation points awarded for the financial offer as stated in the Tender Data.
A is a number calculated using the formula and option described in Table F.I as stated in the Tender Data.

Table F.1: Formulae for calculating the value of *A*

Formula	Comparison aimed at achieving	Option 1[a]	Option 2[a]
1	Highest price or discount	$A = (1 + \frac{(P - Pm)}{Pm})$	$A = P/Pm$
2	Lowest price or percentage commission/ fee	$A = (1 - \frac{(P - Pm)}{Pm})$	$A = Pm/P$
[a] Pm is the comparative offer of the most favourable comparative offer. P is the comparative offer of the tender offer under consideration.			

F.3.11.8 Scoring preferences

Confirm that tenderers are eligible for the preferences claimed in accordance with the provisions of the tender data and reject all claims for preferences where tenderers are not eligible for such preferences.

Calculate the total number of tender evaluation points for preferences claimed in accordance with the provisions of the tender data.

F.3.11.9 Scoring quality

Score each of the criteria and subcriteria for quality in accordance with the provisions of the Tender Data.

Calculate the total number of tender evaluation points for quality using the following formula:

$$N_Q = W_2 \times S_O / M_S$$

where: S_O is the score for quality allocated to the submission under consideration;
M_S is the maximum possible score for quality in respect of a submission; and
W_2 is the maximum possible number of tender evaluation points awarded for the quality as stated in the tender data.

F.3.12 Insurance provided by the employer

If requested by the proposed successful tenderer, submit for the tenderer's information the policies and/or certificates of insurance which the conditions of contract identified in the contract data, require the employer to provide.

F.3.13 Acceptance of tender offer

Accept the tender offer, if in the opinion of the employer, it does not present any unacceptable commercial risk and only if the tenderer:

a) is not under restrictions, or has principals who are under restrictions, preventing participating in the employer's procurement,
b) can, as necessary and in relation to the proposed contract, demonstrate that he or she possesses the professional and technical qualifications, professional and technical competence, financial resources, equipment and other physical facilities, managerial capability, reliability, experience and reputation, expertise and the personnel, to perform the contract,
c) has the legal capacity to enter into the contract,
d) is not insolvent, in receivership, bankrupt or being wound up, has his affairs administered by a court or a judicial officer, has suspended his business activities, or is subject to legal proceedings in respect of any of the foregoing,
e) complies with the legal requirements, if any, stated in the tender data, and
f) is able, in the opinion of the employer, to perform the contract free of conflicts of interest.

F.3.14 Prepare contract documents

F.3.14.1 If necessary, revise documents that shall form part of the contract and that were issued by the employer as part of the tender documents to take account of:

a) addenda issued during the tender period,
b) inclusion of some of the returnable documents, and
c) other revisions agreed between the employer and the successful tenderer.

F.3.14.2 Complete the schedule of deviations attached to the form of offer and acceptance, if any.

F.3.15 Complete adjudicator's contract

Unless alternative arrangements have been agreed or otherwise provided for in the contract, arrange for both parties to complete formalities for appointing the selected adjudicator at the same time as the main contract is signed.

F.3.16 Notice to unsuccessful tenderers

F.3.16.1 Notify the successful tenderer of the employer's acceptance of his tender offer by completing and returning one copy of the form of offer and acceptance before the expiry of the validity period stated in the tender data, or agreed additional period.

F.3.16.2 After the successful tenderer has been notified of the employer's acceptance of the tender, notify other tenderers that their tender offers have not been accepted.

F.3.17 Provide copies of the contracts

Provide to the successful tenderer the number of copies stated in the Tender Data of the signed copy of the contract as soon as possible after completion and signing of the form of offer and acceptance.

F.3.18 Provide written reasons for actions taken

Provide upon request written reasons to tenderers for any action that is taken in applying these conditions of tender, but withhold information which is not in the public interest to be divulged, which is considered to prejudice the legitimate commercial interests of tenderers or might prejudice fair competition between tenderers.

Annex G
(normative)

Alpha-numeric associated with the Contractor Grading Designations

Table G1: Contractor grading designations and associated parameters

Contractor Grading Designation	Tender Value Range designation	Maximum value of contract that a contractor is considered capable of performing (R)
1 (class of construction works)	1	200 000
2 (class of construction works)	2	650 000
3 (class of construction works)	3	2 000 000
4 (class of construction works)	4	4 000 000
5 (class of construction works)	5	6 500 000
6 (class of construction works)	6	13 000 000
7 (class of construction works)	7	40 000 000
8 (class of construction works)	8	130 000 000
9 (class of construction works)	9	No Limit

Table G2: Classes of construction work (see next page)

Table G2: Classes of construction work

Description	Designation	Definition	Work types	Examples
Civil engineering works	CE	Construction works that are primarily concerned with materials such as steel, concrete, earth and rock and their application in the development, extension, installation, maintenance, removal, renovation, alteration, or dismantling of building and engineering infrastructure	Water, sewerage, roads, railways, harbours and transport, urban development and municipal services	Structures such as a cooling tower, bridge, culvert, dam, grand stand, road, railway, reservoir, runway, swimming pool, silo or tunnel. The results of operations such as dredging, earthworks and geotechnical processes. Township services, water treatment and supply, sewerage works, sanitation, soil conservation works, irrigation works, storm-water and drainage works, coastal works, ports, harbours, airports and pipelines.
Electrical engineering works (Infrastructure)	EP	Construction works that are primarily concerned with development, extension, installation, removal, renovation, alteration or dismantling of engineering infrastructure: a) relating to the generation, transmission and distribution of electricity; or b). which cannot be classified as EB.	Electrical power generation, transmission, control and distribution equipment and systems.	Power generation Street and area lighting Substations and protection systems Township reticulations Transmission Lines Supervisory control and data acquisition systems
Electrical engineering works (buildings)	EB	Construction works that are primarily concerned with the installation, extension, modification or repair of electrical installations in or on any premises used for the transmission of electricity from a point of control to a point of consumption, including any article forming part of such an installation	All electrical equipment forming an integral and permanent part of buildings and/or structures, including any wiring, cable jointing and laying and electrical overhead line construction	Electrical installations in buildings Electrical reticulations within a plot of land (erf) or building site Standby plant and uninterrupted power supply Verification and certification of electrical installations on premises

Description	Designation	Definition	Work types	Examples
General building works	GB	Construction works that: a) are primarily concerned with the development, extension, installation, renewal, renovation, alteration, or dismantling of a permanent shelter for its occupants or contents; or b) cannot be categorised in terms of the definitions provided for civil engineering works, electrical engineering works, mechanical engineering works, or specialist works.	Buildings and ancillary works other than those categorised as being: a) civil engineering works; b) electrical engineering works; c) mechanical engineering works; or d) specialist works.	Buildings for domestic, industrial, institutional or commercial occupancies Car ports Stores Walls
Mechanical engineering works	ME	Construction works that are primarily concerned with the development, extension, installation, removal, alteration, renewal of engineering infrastructure for gas transmission and distribution, solid waste disposal, heating, ventilation and cooling, chemical works, metallurgical works, manufacturing, food processing and, materials handling	Machine systems including those relating to the environment of building interiors: a) gas transmission and distribution systems b) pipelines c) solid waste disposal d) materials handling, lifting machinery, heating, ventilation and cooling, pumps, e) continuous process systems f) chemical works, metallurgical works, manufacturing, food processing such as that in concentrator machinery and apparatus, oil and gas wells, smelters, cyanide plants, acid plants, metallurgical machinery, equipment and apparatus, and works necessary for the beneficiation of metals, minerals, rocks, petroleum and organic substances or other chemical processes.	Air-conditioning and mechanical ventilation Boiler installations and steam distribution Central heating Centralised hot water generation Cranes and hoists Dust and sawdust extraction Compressed air, gas and vacuum installations Conveyor and materials handling installations Continuous process systems involving chemical works, metallurgical works, oil and gas wells, acid plants, metallurgical machinery, equipment and apparatus, and works necessary for the beneficiation of metals, minerals, rocks, petroleum and organic substances and other chemical processes Kitchen equipment Laundry equipment Lift installations and escalators Refrigeration and cold rooms Waste handling systems (including compactors)

Description	Designation	Definition	Work types	Examples
Specialist works	SB	A subset of construction works identified and defined by the Board that involves specialist capabilities for its execution	The extension, installation, repair, maintenance or renewal, or removal, of asphalt	
	SC		The development, extension, installation, removal, and dismantling, as relevant, associated with building excavations, shaft sinking and lateral earth support	
	SD		The development, extension, installation, repair, renewal, removal, or alteration of corrosion protection systems (cathodic, anodic and electrolytic)	
	SE		Demolition of buildings and engineering infrastructure and blasting	
	SF		The development, extension, installation, renewal, removal, renovation, alteration or dismantling of fire prevention and protection infrastructure (drencher and sprinkler systems and fire installation)	
	SG		The development, extension, installation, renewal, removal, renovation, alteration or dismantling of glazing, curtain walls and shop fronts	
	SH		The development, extension, installation, maintenance, renewal, removal, alteration or dismantling, as relevant, of landscaping, irrigation and horticultural works	
	SI		The development, extension, installation, repair, maintenance, renewal, removal, renovation, alteration or, dismantling of lifts, escalators, travellators and hoisting machinery	
	SJ		The development, installation, removal, or dismantling, as relevant, of piles and other specialized foundations for buildings and structures	
	SK		The installation, renewal, removal, alteration or dismantling, as relevant, road markings and signage	
	SL		The development, extension, installation, renewal, removal, renovation, alteration or dismantling of structural steelwork and scaffolding	
	SM		Timber buildings and structures	
	SN		The extension, installation, repair, maintenance, renewal, removal, renovation or alteration, as relevant, of the waterproofing of basements, roofs and walls using specialist systems.	
	SO		The development, extension, installation, renewal, removal, alteration or dismantling or demolition of water installations and soil and waste water drainage associated with buildings (wet services, plumbing)	
	SQ		The development, extension, installation, repairs, dismantling of precast walls, installation of wire perimeter fencing, diamond perimeter fencing, palisade steel fencing with posts and stay at intervals	

CITY OF CAPE TOWN

WATER AND SANITATION

CONTRACT NO. 178Q/2016/17

DESIGN – BUILD OF MECHANICAL AND ELECTRICAL WORKS FOR THE CONSTRUCTION OF AN MBR PLANT AND BOTTLENECK ALLEVIATION AT ZANDVLIET WASTEWATER TREATMENT WORKS

Part T2: Returnable Documents

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T2.2 Returnable Schedules

CITY OF CAPE TOWN

WATER AND SANITATION

CONTRACT NO. 178Q/2016/17

DESIGN – BUILD OF MECHANICAL AND ELECTRICAL WORKS FOR THE CONSTRUCTION OF AN MBR PLANT AND BOTTLENECK ALLEVIATION AT ZANDVLIET WASTEWATER TREATMENT WORKS

T2.1 List of Returnable Documents

The tenderer must complete the following Returnable Documents in non-erasable **black ink**, as they constitute the tender. Whilst many of the returnable documents are required for the purpose of evaluating the tenders, some will form part of the subsequent contract, as they form the basis of the tender offer. For this reason, the tenderers shall provide all information requested.

Note: "For Contractor's Proposal" means the respective document, where ticked, forms part of the Contractor's Proposal in terms of the Conditions of Contract, and will be incorporated into the Contract		Check List	For Contractor's Proposal	Page No.
Schedule 1	Compulsory Enterprise Questionnaire	Tick if completed and submitted ✓	✓	44
Schedule 2	Certificate of Independent Tender Determination	Tick if completed and submitted ✓		46-47
Schedule 3	Certificate of Authority for Joint Ventures	Tick if completed and submitted ✓	Forms part of Contractor's Proposal	48
Schedule 4	Declaration of Tenderer's Past Supply Chain Management Practices	Tick if completed and submitted ✓		49
Schedule 5	Certificate for Municipal Services and Payments to Service Provider	Tick if completed and submitted ✓	✓	50
Schedule 6	Bargaining Council Certificate and Declaration in Respect of Minimum Wage	Not Used		51
Schedule 7	Confirmation of City of Cape Town Vendor Database Registration	Tick if completed and submitted ✓		52
Schedule 8	Schedule of Work Experience	Tick if completed and submitted ✓	✓	53-54
Schedule 9	Details of Contractor's Representative's Experience	Tick if completed and submitted ✓	Forms part of Contractor's Proposal	55
Schedule 10	Details of Tenderer's Workshop Facilities	Tick if completed and submitted ✓	Forms part of Contractor's Proposal	56
Schedule 11	Schedule of Sub-Contractors	Tick if completed and submitted ✓	Forms part of Contractor's Proposal	57
Schedule 12	Health and Safety Plan	Tick if completed and submitted ✓	Forms part of Contractor's Proposal	58
Schedule 13	Proposed Deviations and Qualifications by Tenderer	Tick if completed and submitted ✓		59
Schedule 14	Quality Criteria:			
Schedule 14.1	Key Personnel Assigned to the Contract	Tick if completed and submitted ✓	Forms part of Contractor's Proposal	61
Schedule 14.2	Proposed Organization and Staffing	Tick if completed and submitted ✓	Forms part of Contractor's Proposal	62
Schedule 14.3	Experience of Key Personnel	Tick if completed and submitted ✓	Forms part of Contractor's Proposal	63-64
Schedule 14.4	Method Statement	Tick if completed and submitted ✓	Forms part of Contractor's Proposal	65
Schedule 14.5	Preliminary Programme and Cash flow Forecast	Tick if completed and submitted ✓	Forms part of Contractor's Proposal	66
Schedule 14.6	Membrane equipment supplier reference project list	Tick if completed and submitted ✓	Forms part of Contractor's Proposal	67-68
Schedule 14A	Declaration Certificate for Local Production and Content for Designated Sectors	Tick if completed and submitted ✓		69-90
Schedule 15	Authorisation for the Deduction of Outstanding Amounts Owed to the City of Cape Town	Tick if completed and submitted ✓	✓	91
Schedule 16	Record of Addenda to Tender Documents	Tick if completed and submitted ✓	Forms part of Contractor's Proposal	92

Note: "For Contractor's Proposal" means the respective document, where ticked, forms part of the Contractor's Proposal in terms of the Conditions of Contract, and will be incorporated into the Contract		Check List	For Contractor's Proposal	Page No.
Schedule 17	Preferencing Schedule (where preferences are granted in respect of B-BBEE contribution)	Tick if completed and submitted ✓	Forms part of Contractor's Proposal	93-96
Schedule 18	Information to be Provided with the Tender	Tick if completed and submitted ✓	Forms part of Contractor's Proposal	97
Schedule 19	Technical Data Sheets (see Volume 2C)	Tick if completed and submitted ✓	Forms part of Contractor's Proposal	98
Schedule 20	Certificate of Tenderer's Attendance at The Site/Clarification Meeting	Tick if completed and submitted ✓	✓	99
Schedule 21	Price Basis for Imported Plant and Materials	Tick if completed and submitted ✓	Forms part of Contractor's Proposal	155-159
T2.2	**OTHER DOCUMENTS REQUIRED FOR TENDER EVALUATION PURPOSES**			
T2.2a	Joint Venture Agreement (if applicable) - **append to Schedule 3.**	Tick if completed and submitted ✓	Forms part of Contractor's Proposal	
T2.2b	Certificate of Compliance issued by the relevant Bargaining Council (if applicable) - **append to Schedule 6.**	Tick if completed and submitted	N/A	
	Tax Clearance Certificate Requirements	Tick if completed and submitted ✓	✓	
	Vat Registration Certificate	Tick if completed and submitted ✓	✓	
	Tenderer's Financial Standing	Tick if completed and submitted ✓	✓	
	Pro forma OHS Notification	Tick if completed and submitted ✓		
	CIDB Registration Certificates	Tick if completed and submitted ✓	✓	
	Letter of Intent to Provide Professional Indemnity Insurance Cover	Tick if completed and submitted ✓	Forms part of Contractor's Proposal	
C1	**CONTRACT PART C1, AGREEMENT AND CONTRACT DATA**			
C1.1	The offer portion of the C1.1 Form of Offer and Acceptance	Tick if completed and submitted ✓	Tick if completed and submitted	101-105
C1.2	Contract Data (Appendix to Tender, Part 2)	Tick if completed and submitted ✓	Tick if completed and submitted	106-137
C2	**CONTRACT PART C2, PRICING DATA**			
C2.2	Schedules of Quantities	Tick if completed and submitted ✓	Tick if completed and submitted	160-371
C2.3	Schedule of Rates for Electrical Variations	Tick if completed and submitted N/A	Tick if completed and submitted	372

* *Tenderer to confirm the inclusion of an item by ticking the checkbox.*

** *Tenderer to confirm that these have been completed by ticking the checkbox.*

---oOo---

CITY OF CAPE TOWN

WATER AND SANITATION

CONTRACT NO. 178Q/2016/17

DESIGN – BUILD OF MECHANICAL AND ELECTRICAL WORKS FOR THE CONSTRUCTION OF AN MBR PLANT AND BOTTLENECK ALLEVIATION AT ZANDVLIET WASTEWATER TREATMENT WORKS

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: .....

Address of enterprise: .....

.....

.....

Section 2: VAT registration number, if any: .....

Section 2a: National Treasury Central Supplier Database registration number : .....

Section 2b: SARS Tax Compliance Status PIN : .....

Section 3: CIDB registration number, if any: .....

Section 4: Particulars of sole proprietors and partners in partnerships

Name*	Identity number*	Personal income tax number*
	N/A	

* 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 ..... N/A .....

Close corporation number .....

Tax reference number .....

Section 6: Record of service of the state

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

- ☐ a member of any municipal council
- ☐ a member of any provincial legislature
- ☐ a member of the National Assembly or the National Council of Provinces
- ☐ a member of the board of directors of any municipal entity
- ☐ an official of any municipality or municipal entity
- ☐ an employee of any provincial department, national or provincial public entity or constitutional institution within the meaning of the Public Finance Management Act, 1999 (Act 1 of 1999)
- ☐ a member of an accounting authority of any national or provincial public entity
- ☐ an employee of Parliament or a provincial legislature

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DESIGN – BUILD OF MECHANICAL AND ELECTRICAL WORKS FOR THE CONSTRUCTION OF AN MBR PLANT AND BOTTLENECK ALLEVIATION AT ZANDVLIET WASTEWATER TREATMENT WORKS

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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: . .....

Address of enterprise: . .....

.. ..

.. ..

Section 2: VAT registration number, if any: .....

Section 2a: National Treasury Central Supplier Database registration number : . .....

Section 2b: SARS Tax Compliance Status PIN : . .....

Section 3: CIDB registration number, if any: .....

Section 4: Particulars of sole proprietors and partners in partnerships

Name*	Identity number*	Personal income tax number*
	N/A	

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

Section 5: Particulars of companies and close corporations

Company registration number . . . . .

Close corporation number .....

Tax reference number . .....

Section 6: Record of service of the state

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

- ☐ a member of any municipal council
- ☐ a member of any provincial legislature
- ☐ a member of the National Assembly or the National Council of Provinces
- ☐ a member of the board of directors of any municipal entity
- ☐ an official of any municipality or municipal entity
- ☐ an employee of any provincial department, national or provincial public entity or constitutional institution within the meaning of the Public Finance Management Act, 1999 (Act 1 of 1999)
- ☐ a member of an accounting authority of any national or provincial public entity
- ☐ an employee of Parliament or a provincial legislature

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

Name of sole proprietor, partner, director, manager, principal shareholder or stakeholder	Identity Number	Name of institution, public office, board or organ of state and position held	Status of service (tick appropriate column)	
			current	Within last 12 months
	N/A			

*insert separate page if necessary

Section 7: Record of spouses, children and parents in the service of the state

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

- ☐ a member of any municipal council
- ☐ a member of any provincial legislature
- ☐ a member of the National Assembly or the National Council of Province
- ☐ a member of the board of directors of any municipal entity
- ☐ an official of any municipality or municipal entity
- ☐ an employee of any provincial department, national or provincial public entity or constitutional institution within the meaning of the Public Finance Management Act, 1999 (Act 1 of 1999)
- ☐ a member of an accounting authority of any national or provincial public entity
- ☐ an employee of Parliament or a provincial legislature

Name of spouse, child or parent	Identity Number	Name of institution, public office, board or organ of state and position held	Status of service (tick appropriate column)	
			current	Within last 12 months
	N/A			

*insert separate page if necessary

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;

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;

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

SIGNED ON BEHALF OF TENDERER: . . . .

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

Name of sole proprietor, partner, director, manager, principal shareholder or stakeholder	Identity Number	Name of institution, public office, board or organ of state and position held	Status of service (tick appropriate column)	
			current	Within last 12 months
	N/A			

*insert separate page if necessary

Section 7: Record of spouses, children and parents in the service of the state

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

- ☐ a member of any municipal council
- ☐ a member of any provincial legislature
- ☐ a member of the National Assembly or the National Council of Province
- ☐ a member of the board of directors of any municipal entity
- ☐ an official of any municipality or municipal entity
- ☐ an employee of any provincial department, national or provincial public entity or constitutional institution within the meaning of the Public Finance Management Act, 1999 (Act 1 of 1999)
- ☐ a member of an accounting authority of any national or provincial public entity
- ☐ an employee of Parliament or a provincial legislature

Name of spouse, child or parent	Identity Number	Name of institution, public office, board or organ of state and position held	Status of service (tick appropriate column)	
			current	Within last 12 months
	N/A			

*insert separate page if necessary

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;

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;

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

SIGNED ON BEHALF OF TENDERER: ....

CITY OF CAPE TOWN

WATER AND SANITATION

CONTRACT NO. 178Q/2016/17

DESIGN – BUILD OF MECHANICAL AND ELECTRICAL WORKS FOR THE CONSTRUCTION OF AN MBR PLANT AND BOTTLENECK ALLEVIATION AT ZANDVLIET WASTEWATER TREATMENT WORKS

SCHEDULE 2 : CERTIFICATE OF INDEPENDENT TENDER DETERMINATION

I, the undersigned, in submitting this tender for Contract No. **178Q/2016/17 DESIGN – BUILD OF MECHANICAL AND ELECTRICAL WORKS FOR THE CONSTRUCTION OF AN MBR PLANT AND BOTTLENECK ALLEVIATION AT ZANDVLIET WASTEWATER TREATMENT WORKS**

in response to the invitation for the tender made by the City of Cape Town, do hereby make the following statements that I certify to be true and complete in every respect:

I certify, on behalf of: _____ that:

(Name of Tenderer)

1. I have read and I understand the contents of this Certificate;
2. I understand that this tender will be disqualified if this Certificate is found not to be true and complete in every respect;
3. I am authorized by the tenderer to sign this Certificate, and to submit this tender on behalf of the tenderer;
4. Each person whose signature appears on this tender has been authorized by the tenderer to determine the terms of, and to sign, the tender, on behalf of the tenderer;
5. For the purposes of this Certificate and this tender, I understand that the word "competitor" shall include any individual or organization, other than the tenderer whether or not affiliated with the tenderer, who:
   (a) has been requested to submit a tender in response to this invitation to tender;
   (b) could potentially submit a tender in response to this invitation to tender, based on their qualifications, abilities or experience; and
   (c) provides the same goods and services as the tenderer and/or is in the same line of business as the tenderer;
6. The tenderer has arrived at this tender independently from, and without consultation, communication, agreement or arrangement with any competitor. However, communication between partners in a joint venture or consortium[1] will not be construed as collusive tendering;
4. In particular, without limiting the generality of paragraph 6 above, there has been no consultation, communication, agreement or arrangement with any competitor regarding:
   (a) prices;
   (b) geographical area where product or service will be rendered (market allocation);
   (c) methods, factors or formulas used to calculate prices;
   (d) the intention or decision to submit or not to submit a tender;
   (e) the submission of a tender which does not meet the specifications and conditions of the tender; or
   (f) tendering with the intention not to win the tender;

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

8. In addition, there have been no consultations, communications, agreements or arrangements with any competitor regarding the quality, quantity, specifications and conditions or delivery particulars of the products or services to which this invitation to tender relates;
9. The terms of this tender have not been, and will not be, disclosed by the tenderer, directly or indirectly, to any competitor, prior to the date and time of the official tender opening or of the awarding of the contract;
10. I am aware that, in addition and without prejudice to any other remedy provided to combat any restrictive practices related to tenders and contracts, tenders that are suspicious will be reported to the Competition Commission for investigation and possible imposition of administrative penalties in terms of section 59 of the Competition Act No. 89 of 1998 and or may be reported to the National Prosecuting Authority (NPA) for criminal investigation and or may be restricted from conducting business with the public sector for a period not exceeding ten (10) years in terms of the Prevention and Combating of Corrupt Activities Act No. 12 of 2004 or any other applicable legislation.

.... 13/02/2017

Signature Date

....

Name Position

CITY OF CAPE TOWN

WATER AND SANITATION

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DESIGN – BUILD OF MECHANICAL AND ELECTRICAL WORKS FOR THE CONSTRUCTION OF AN MBR PLANT AND BOTTLENECK ALLEVIATION AT ZANDVLIET WASTEWATER TREATMENT WORKS

SCHEDULE 3 : CERTIFICATE OF AUTHORITY FOR JOINT VENTURES

This returnable schedule is to be completed by joint ventures.

We, the undersigned, are authorised to sign this tender offer in joint venture and hereby authorize

Mr/Ms..... .... uthorised signatory of the company,

close corporation or partnership .. .., acting in the capacity of lead partner, to sign all documents in connection with the tender offer and any contract resulting from it on our behalf.

NAME OF FIRM	ADDRESS	DULY AUTORISED SIGNATORY
Lead partner		Signature..... .... Name Designatior ..
		Signature. ..... Name.. Designation.
		Signature..... Name..... Designation.....
		Signature..... Name..... Designation.....

Note:

A copy of the Joint Venture Agreement, showing clearly the **percentage contribution of each partner** to the joint venture, shall be appended to this schedule.

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SCHEDULE 4 : DECLARATION OF TENDERER'S PAST SUPPLY CHAIN MANAGEMENT PRACTICES

Item	Question	Yes	No
1.1	Is the Tenderer or any of its directors listed on the National Treasury's Database of Restricted Suppliers as a company or person prohibited from doing business with the public sector? (Companies or persons who are listed on this Database were informed in writing of this restriction by the Accounting Officer/Authority of the institution that imposed the restriction after the *audi alteram partem* rule was applied). **The Database of Restricted Suppliers now resides on the National Treasury's website www.treasury.gov.za and can be accessed by clicking on its link at the bottom of the home page.**	Yes ☐	No ☑
1.1.1	If so, furnish particulars:		
1.2	Is the Tenderer or any of its directors listed on the Register for Tender Defaulters in terms of section 29 of the Prevention and Combating of Corrupt Activities Act, 12 of 2004? **The Register for Tender Defaulters can be accessed on the National Treasury's website (www.treasury.gov.za) by clicking on its link at the bottom of the home page.**	Yes ☐	No ☑
1.2.1	If so, furnish particulars:		
1.3	Was the Tenderer or any of its directors convicted by a court of law (including a court of law outside the Republic of South Africa) for fraud or corruption during the past five years?	Yes ☐	No ☑
1.3.1	If so, furnish particulars:		
1.4	Does the Tenderer or any of its directors owe any municipal rates and taxes or municipal charges to the municipality / municipal entity, or to any other municipality / municipal entity, that is in arrears for more than three months?	Yes ☐	No ☑
1.4.1	If so, furnish particulars:		
1.5	Was any contract between the Tenderer and the municipality / municipal entity or any other organ of state terminated during the past five years on account of failure to perform on or comply with the contract?	Yes ☐	No ☑
1.5.1	If so, furnish particulars:		

I, _____ _____ _____, the undersigned,
(full name in block letters)

certify that the information furnished on this declaration form is true and correct, and accept that, in addition to cancellation of a contract, action may be taken against me should this declaration prove to be false.

....
Signature

13/02/2017
Date

.....
Position

.....
Name of Tenderer/Contractor

Where the entity tendering is a joint venture, each party to the joint venture must sign a declaration in terms of the Municipal Finance Management Act, 56 of 2003, and attach it to this schedule.

CITY OF CAPE TOWN

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DESIGN – BUILD OF MECHANICAL AND ELECTRICAL WORKS FOR THE CONSTRUCTION OF AN MBR PLANT AND BOTTLENECK ALLEVIATION AT ZANDVLIET WASTEWATER TREATMENT WORKS

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Item	Question	Yes	No
1.1	Is the Tenderer or any of its directors listed on the National Treasury's Database of Restricted Suppliers as a company or person prohibited from doing business with the public sector? (Companies or persons who are listed on this Database were informed in writing of this restriction by the Accounting Officer/Authority of the institution that imposed the restriction after the *audi alteram partem* rule was applied). **The Database of Restricted Suppliers now resides on the National Treasury's website www.treasury.gov.za and can be accessed by clicking on its link at the bottom of the home page.**	Yes ☐	No ☒
1.1.1	If so, furnish particulars: N/A		
1.2	Is the Tenderer or any of its directors listed on the Register for Tender Defaulters in terms of section 29 of the Prevention and Combating of Corrupt Activities Act, 12 of 2004? **The Register for Tender Defaulters can be accessed on the National Treasury's website (www.treasury.gov.za) by clicking on its link at the bottom of the home page.**	Yes ☐	No ☒
1.2.1	If so, furnish particulars: N/A		
1.3	Was the Tenderer or any of its directors convicted by a court of law (including a court of law outside the Republic of South Africa) for fraud or corruption during the past five years?	Yes ☐	No ☒
1.3.1	If so, furnish particulars: N/A		
1.4	Does the Tenderer or any of its directors owe any municipal rates and taxes or municipal charges to the municipality / municipal entity, or to any other municipality / municipal entity, that is in arrears for more than three months?	Yes ☐	No ☒
1.4.1	If so, furnish particulars: N/A		
1.5	Was any contract between the Tenderer and the municipality / municipal entity or any other organ of state terminated during the past five years on account of failure to perform on or comply with the contract?	Yes ☐	No ☒
1.5.1	If so, furnish particulars: N/A		

I, _____ (full name in block letters), the undersigned,

certify that the information furnished on this declaration form is true and correct, and accept that, in addition to cancellation of a contract, action may be taken against me should this declaration prove to be false.

....
Signature

2017-02-14
Date

... .
Position

...
Name of Tenderer/Contractor

Where the entity tendering is a joint venture, each party to the joint venture must sign a declaration in terms of the Municipal Finance Management Act, 56 of 2003, and attach it to this schedule.

CITY OF CAPE TOWN

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DESIGN – BUILD OF MECHANICAL AND ELECTRICAL WORKS FOR THE CONSTRUCTION OF AN MBR PLANT AND BOTTLENECK ALLEVIATION AT ZANDVLIET WASTEWATER TREATMENT WORKS

SCHEDULE 5 : CERTIFICATE FOR MUNICIPAL SERVICES AND PAYMENTS TO SERVICE PROVIDER

To: THE CITY MANAGER, CITY OF CAPE TOWN

CERTIFICATE FOR MUNICIPAL SERVICES AND PAYMENTS TO SERVICE PROVIDER

TENDER NO: 178Q/2016/17: DESIGN – BUILD OF MECHANICAL AND ELECTRICAL WORKS FOR THE CONSTRUCTION OF PRIMARY TREATMENT AND SLUDGE HANDLING FACILITIES AT ZANDVLIET WASTEWATER TREATMENT WORKS

NAME OF THE TENDERER: ....

FURTHER DETAILS OF THE TENDERER/S; Proprietor / Director/s / Partners, etc:

Physical **Business** address of the Tenderer	Municipal Account number(s)

If there is not enough space for all the names, please attach the additional details to the Contract Document

Name of Director / Member / Partner	Identity Number	Physical **residential** address of Director / Member / Partner	Municipal Account number(s)

I, _____ (full name in block letters), the undersigned,

certify that the information furnished on this declaration form is correct and that I/we have no undisputed commitments for municipal services towards a municipality or other service provider in respect of which payment is overdue for more than 30 days or 3 (three) months.

_____ Signature

THUS DONE AND SIGNED for and on behalf of the Tenderer/Contractor

at ..... (PLACE) ..... on the ... (DATE) day of ..... (MONTH) ..... (YEAR)

Even if the requested information is not applicable to the Tenderer, the table above should be endorsed Not Applicable and THIS DECLARATION MUST STILL BE SIGNED

CITY OF CAPE TOWN

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DESIGN – BUILD OF MECHANICAL AND ELECTRICAL WORKS FOR THE CONSTRUCTION OF AN MBR PLANT AND BOTTLENECK ALLEVIATION AT ZANDVLIET WASTEWATER TREATMENT WORKS

SCHEDULE 5 : CERTIFICATE FOR MUNICIPAL SERVICES AND PAYMENTS TO SERVICE PROVIDER

To: THE CITY MANAGER, CITY OF CAPE TOWN

CERTIFICATE FOR MUNICIPAL SERVICES AND PAYMENTS TO SERVICE PROVIDER

TENDER NO: 178Q/2016/17: DESIGN – BUILD OF MECHANICAL AND ELECTRICAL WORKS FOR THE CONSTRUCTION OF PRIMARY TREATMENT AND SLUDGE HANDLING FACILITIES AT ZANDVLIET WASTEWATER TREATMENT WORKS

NAME OF THE TENDERER: ....

FURTHER DETAILS OF THE TENDERER/S; Proprietor / Director/s / Partners, etc:

Physical Business address of the Tenderer	Municipal Account number(s)

If there is not enough space for all the names, please attach the additional details to the Contract Document

Name of Director / Member / Partner	Identity Number	Physical residential address of Director / Member / Partner	Municipal Account number(s)

I, _____ (full name in block letters) _____, the undersigned, certify that the information furnished on this declaration form is correct and that I/we have no undisputed commitments for municipal services towards a municipality or other service provider in respect of which payment is overdue for more than 30 days or 3 (three) months.

_____
Signature

THUS DONE AND SIGNED for and on behalf of the Tenderer/Contractor

at ..... (PLACE) ..... on the ..... (DATE), day of ... (MONTH) ..... (YEAR)

Even if the requested information is not applicable to the Tenderer, the table above should be endorsed Not Applicable and THIS DECLARATION MUST STILL BE SIGNED

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SCHEDULE 6:

Not used

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SCHEDULE 7: CONFIRMATION OF CoCT VENDOR DATABASE REGISTRATION

CoCT VENDOR DATABASE REGISTRATION		
COMPANY NAME	REGISTERED YES/NO	REGISTRATION NUMBER IF APPLICABLE
	Yes	
	Yes	

Tenderers who are not registered on the City of Cape Town's Vendor Database are not precluded from submitting tenders, but must however be registered prior to the evaluation of tenders in order for their tenders to be responsive (the evaluation of tenders takes place when the Employer's Bid Evaluation Committee meets to make a final recommendation to the Bid Adjudication Committee).

In this regard it is the sole responsibility of tenderers to ensure that this requirement is complied with. In the case of Joint Venture Partnerships this requirement will apply to each party to the Joint Venture.

SIGNED ON BEHALF OF TENDERER: ..... DATE: ...

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SCHEDULE 8 : SCHEDULE OF WORK EXPERIENCE

The tender offer shall provide comprehensive details in a tabular format (shown overleaf), of the Tenderer's expertise and experience over the last 15 years in work of a similar nature and magnitude to that entailed in this Contract. Where the Tenderer is a joint venture, or where sub-contractors are to be employed, the information shall be provided for the joint venture partners, or the sub-contractors as applicable.

Details to be provided in the table of expertise and experience shall as a minimum include:

- Project name
- Project location
- Employing authority/client with contact details
- Supervising Engineer, with contact details
- Period of construction (commencement and completion)
- Description and value of principle work content, in particular highlighting disciplines as listed in Table 4 of Clause F.2.1.1.3 of T1.2: Tender Data
- Value of contract
- Tenderer's role and percentage participation in terms of value of the work

Furthermore, the Tenderer should provide a written reference letter from the employing authority/client for whom the work was undertaken, commenting on the scope, quality, and timeous completion of the tenderer's work.

The table of expertise and experience and any supporting information shall be included in the Functionality Criteria file, to be submitted in accordance Clause F.2.1.1.3 of T1.2: Tender Data.

The tenderer shall insert in the spaces provided below a list of similar completed contracts awarded to him and those currently being undertaken.

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

SIGNED ON BEHALF OF TENDERER: .... DATE: ..13/02/2017.....

Please Refer To Returnable Documents in Support of Quality Score File

EMPLOYER (NAME, TEL No. AND FAX No.)	CONSULTING ENGINEER (NAME, TEL No. AND FAX No.)	PROJECT NAME	DESCRIPTION OF PRINCIPLE WORK CONTENT, INCLUDING PLANT CAPACITY (AVERAGE DRY WEATHER FLOW AND PEAK WET WEATHER FLOW)	VALUE OF WORK EXCLUDING VAT (ZAR MILLIONS)	COMMENCEMENT DATE	TENDERER'S ROLE & % PARTICIPATION IN TERMS OF VALUE OF CONTRACT	COMPLETION DATE
COMPLETED CONTRACTS							
Please Refer To Returnable Documents in Support of Capacity Score Fine Section 3.							
CURRENT CONTRACTS							

CITY OF CAPE TOWN

WATER AND SANITATION

CONTRACT NO. 178Q/2016/17

DESIGN – BUILD OF MECHANICAL AND ELECTRICAL WORKS FOR THE CONSTRUCTION OF AN MBR PLANT AND BOTTLENECK ALLEVIATION AT ZANDVLIET WASTEWATER TREATMENT WORKS

SCHEDULE 9 : DETAILS OF CONTRACTOR'S REPRESENTATIVE'S EXPERIENCE

The Conditions of Contract require the Contractor to appoint a Contractor's Representative (Sub-Clause 4.3). Tenderers shall complete Part 2 of the Appendix to Tender in this regard.

Tenderers shall set out in the Schedule hereunder details of their Contractor's Representative's experience in work of a similar nature to that for which their Tender is submitted.

CONTRACTOR'S REPRESENTATIVE	NAME: ..... NQF LEVEL: Pr Cnst			
CONTRACT & CLIENT	NATURE OF WORK	POSITION HELD	VALUE OF WORK	YEAR COMPLETED
			R6,694,343.12	2010
			R21,324,884.35	2013
			R27,573,352.43	CURRENT
			R146,205,961.96	CURRENT
			R 3,960,654.85	2012
			R56,233,388.96	CURRENT

REFER TO SECTION 1 OF RETURNABLE DOCUMENTS IN SUPPORT OF QUALITY SCORE FILE FOR FURTHER INFORMATION

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

SIGNED ON BEHALF OF TENDERER: .... DATE: 13/02/2017

CITY OF CAPE TOWN

WATER AND SANITATION

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DESIGN – BUILD OF MECHANICAL AND ELECTRICAL WORKS FOR THE CONSTRUCTION OF AN MBR PLANT AND BOTTLENECK ALLEVIATION AT ZANDVLIET WASTEWATER TREATMENT WORKS

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Tenderers shall set out in the Schedule hereunder details of their Contractor's Representative's experience in work of a similar nature to that for which their Tender is submitted.

CONTRACTOR'S REPRESENTATIVE	NAME: ..... NQF LEVEL Pr. Tech. Eng			
CONTRACT & CLIENT	NATURE OF WORK	POSITION HELD	VALUE OF WORK	YEAR COMPLETED
			R6,452,079.92	2016 MAINTENANCE PERIOD
			R16,000,000.00	MAINTENANCE PERIOD 2015
			R5,952,020.00	2013
			R29,019,140.00	2011
			R26,000,000.00	2013
PLEASE REFER TO RETURNABLE DOCUMENTS IN SUPPORT OF QUALITY SCORE FILE FOR MORE INFORMATION SECTION 1				

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

SIGNED ON BEHALF OF TENDERER: ..... DATE: 13/02/2017

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Tenderers shall set out in the Schedule hereunder details of their Contractor's Representative's experience in work of a similar nature to that for which their Tender is submitted.

CONTRACTOR'S REPRESENTATIVE	NAME: ..... NQF LEVEL Pr Eng			
CONTRACT & CLIENT	NATURE OF WORK	POSITION HELD	VALUE OF WORK	YEAR COMPLETED
			R15, 851, 965.00	2011
			R 7, 601, 898.00	2011
			R27, 393, 424.00	2011
			R80, 420, 610.00	2013
PLEASE REFER TO SECTION 1 OF RETURNABLE DOCUMENTS IN SUPPORT OF QUALITY SCORE FILE FOR FURTHER INFORMATION				

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

SIGNED ON BEHALF OF TENDERER: ..... DATE: 13/02/2017

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SCHEDULE 10 : DETAILS OF TENDERER'S WORKSHOP FACILITIES

The tenderer shall state below what workshop facilities will be available for this Contract.

WATER HAVE AVAILABLE A FULLY EQUIPPED, 1000 SQUARE METERS, UNDER ROOF WORKSHOP.
AS WELL AS A 2000 SQUARE METERS UNDER ROOF STORAGE FACILITY
BOTH BUILDINGS ARE EQUIPPED WITH OVERHEAD CRANES; AND
THE 1000 SQUARE METERS YARD SPACE ARE ALSO UNUSED
FOR ADDITIONAL STORAGE

Address of Workshop .....

.....

.....

.....

Number of Artisans Normally Employed by Firm 6

.....

Number of Technically Qualified Persons Employed 6

SIGNED ON BEHALF OF TENDERER: ..... DATE: 13/02/2017

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SCHEDULE 11 : SCHEDULE OF SUB-CONTRACTORS

We notify you that it is our intention to employ the following sub-contractors for work (excluding work covered by provisional sums and contingencies) in this contract.

Acceptance of this tender shall not be construed as approval of all or any of the listed sub-contractors. Should any of the sub-contractors not be approved subsequent to acceptance of the tender, this shall in no way invalidate the contract, and the tendered unit rates for the various items making up the work activities shall remain final and binding.

SUB-CONTRACTORS		
Sub-contractor's name	Work activities to be undertaken by the Sub-contractor	Estimated value of work (Rand)
	ALL ELECTRICAL AND ELECTRONIC WORKS	± R50 mil

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

SIGNED ON BEHALF OF TENDERER: .... DATE: 13/02/2017

CITY OF CAPE TOWN

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SCHEDULE 12 : HEALTH AND SAFETY PLAN

Tenderers are referred to the requirements of Clause F.4.1 in Part T1.2 Tender Data and shall append the required Health and Safety Plan to this Schedule.

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

Please Refer to Section 8 of Our Covering Letter Submission

SIGNED ON BEHALF OF TENDERER: .... DATE: 13/02/2017

CITY OF CAPE TOWN

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SCHEDULE 13 : PROPOSED DEVIATIONS AND QUALIFICATIONS BY TENDERER

The Tenderer should record any **proposed** deviations or qualifications he may wish to make to the tender documents in this Returnable Schedule. Alternatively, a tenderer may state such proposed deviations and qualifications in a covering letter attached to his tender and reference such letter in this schedule. Any proposed deviations or qualifications contained in a covering letter which is not referenced in this schedule will not be considered.

The Tenderer's attention is drawn to clause F.3.8 of the Standard Conditions of Tender referenced in the Tender Data regarding the Employer's handling of material deviations and qualifications, and to clause F.2.13.1 Deviations in the Tender Data.

If no deviations or qualifications are proposed, the schedule hereunder is to be marked NIL and signed by the Tenderer.

PAGE	CLAUSE OR ITEM	PROPOSED DEVIATION OR QUALIFICATION
		N/A

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

SIGNED ON BEHALF OF TENDERER: .... DATE: 13/02/2017

CITY OF CAPE TOWN

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CONTRACT NO. 178Q/2016/17

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WORKS

SCHEDULE 14 : SCHEDULE OF QUALITY CRITERIA

Tender offers will be allocated a functionality score out of 100 in terms of the Functionality Criteria described clause F.2.1.1.3 in the Tender Data. The score will be determined by the Employer, based on his interpretation of the comparative quality of the various tender offers, as evidenced by the documentation provided in the tender offer.

The minimum score for Functionality Criteria that tender offers must attain in order to be deemed responsive is **69** out of 100. Tenderers whose tender offer does not achieve this minimum qualification score will be rejected as non-responsive.

The Tenderer shall provide information for the quality criteria listed in this Returnable Schedule, specifically Schedules 14.1 to 14.6. All the information submitted in this schedule shall form part of the Contractor's Proposal.

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

SIGNED ON BEHALF OF TENDERER: ....

REFER TO QUALITY SCORE FILES 1-3

Continued overleaf

CITY OF CAPE TOWN

WATER AND SANITATION

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DESIGN – BUILD OF MECHANICAL AND ELECTRICAL WORKS FOR THE CONSTRUCTION OF AN MBR PLANT AND BOTTLENECK ALLEVIATION AT ZANDVLIET WASTEWATER TREATMENT WORKS WORKS

SCHEDULE 14.1 : SCHEDULE OF KEY PERSONNEL ASSIGNED TO THE CONTRACT

Tenderers shall insert in the table below, the names, proposed function, qualifications, professional accreditation and experience of the key personnel that the Tenderer proposes to assign to the Contract. This information must correspond with the details submitted in accordance with Schedule 14.2: Proposed Organization and Staffing, and Schedule 14.3: Experience of Key Personnel.

Tenderers must note that the key personnel as proposed herein form part of the Contractor's Proposal in terms of the Conditions of Contract and hence (if the Tenderer's Offer is accepted by the Employer) shall not be changed without written permission of the Engineer, and such permission will not be granted unless the alternate scores the same or higher than the original key person in terms of the applicable Functionality Criteria prescribed in Clause F.2.1.1.3 of T1.2: Tender Data.

KEY PERSONNEL SCHEDULE

Position	Name	Qualifications	Professional accreditation	Relevant experience (years)
Contractor's Representative [1]				
Design Engineer No. 1 [2] (Mechanical Works for water and wastewater treatment equipment)	REFER TO TABLE IN		RETURNABLE	
Design Engineer No. 2 [2,5] (MBR Plant Supplier)	DOCUMENTS IN	SUPPORT	OF QUALITY	SCORE
Design Engineer No. 3 [2] (Electrical Works for water and wastewater treatment equipment)	FILE	SECTION	AND	TABLE
Design Engineer No. 4 [2] (Systems Integration – PLC/SCADA programming)	OPPOSITE			
Installation / construction foreman No. 1 [3] (for mechanical equipment)				
Installation / construction foreman No. 2 [3] (for electrical equipment)				
Commissioning Engineer No. 1 [4] (for mechanical equipment)				
Commissioning Engineer No. 2 [4] (for MBR Plant, to be undertaken by MBR Plant Supplier)				
Commissioning Engineer No. 3 [4] (for electrical equipment)				
Commissioning Engineer No. 4 [4] (for systems integration – PLC/SCADA)				
Environmental Officer [6]				
Health and Safety Agent/ Accident Prevention Officer [7]				

Notes:

1: In terms of Clause 4.3 of the General Conditions of Contract

2: Responsible for Contractor's obligations in terms of Clause 5 and the associated obligations in terms of Clause 6.8 of the General Conditions of Contract; pertaining to the component of the Works shown above

3: Responsible for the Contractor's associated obligations in terms of Clause 6.8 of the General Conditions of Contract (to be full-time on Site whilst associated work is underway). The specific assignment of the component of the Works to the various foremen is at the Tenderer's discretion, must be clearly shown on the organogram (in accordance with Schedule 14.2: Proposed organisation and staffing) and cross-referenced to CVs (in accordance with Schedule 14.1: Experience of Key Personnel), and must generally cover the spectrum of the Works (such as pumping systems, water and wastewater treatment equipment, actuation equipment, disinfection systems, sludge dewatering, low voltage installations, medium voltage installations, and PLC/SCADA systems)

4: Responsible for Contractor's obligations in terms of Clause 9 and the associated obligations in terms of Clause 6.8 of the General Conditions of Contract (to be full-time on Site whilst associated work is underway); pertaining to the component of the Works shown above

5: An Engineer with at least 10 years' experience in the design and commissioning of membrane equipment, including MBR system integration(s).

6: Responsible for the Contractor's associated obligations in terms of Clause 6.8 of the General Conditions of Contract

7: Responsible for Contractor's obligations in terms of Clause 6.7 of the General Conditions of Contract (to be full-time on Site whilst installation/construction/testing/commissioning activities are underway

DATE: 13/02/2017

SIGNATURE: .....

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

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WORKS

SCHEDULE 14.2 : SCHEDULE OF PROPOSED ORGANIZATION AND STAFFING

The tender offer shall include an organogram showing the team of key personnel that the Tenderer proposes to assign to the Contract, and how responsibilities for the various disciplines or work and components of the Works will be assigned. The name, roles and responsibilities of each person shall be clearly set out, and corresponding job descriptions shall be provided as an addendum to the organogram. In the case of a Joint Venture or where sub-contractors are made use of, the organogram must show how respective responsibilities are to be allocated. As a minimum, the organogram shall include for the personnel detailed in Schedule 14.1: Key personnel assigned to the contract. Further, the organogram must correspond to the details submitted in accordance with Schedule 14.3: Experience of Key Personnel.

The Tenderer shall include the requisite organogram and supporting information in the Functionality Criteria file, to be submitted in accordance with Clause F.2.1.1.3 of T1.2: Tender Data.

Tenderers must note that the Scope of Work requires that key personnel as proposed herein shall not be changed without written permission of the Engineer, and such permission will not be granted unless the alternate scores the same or higher than the original key person in terms of the applicable Functionality Criteria prescribed in Clause F.2.1.1.3 of T1.2: Tender Data.

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

SIGNED ON BEHALF OF TENDERER: .... DATE: 13/02/2017

PLEASE REFER TO SECTION I IN THE RETURNABLE DOCUMENTS IN SUPPORT OF QUALITY SCORE

CITY OF CAPE TOWN

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SCHEDULE 14.3 : SCHEDULE OF EXPERIENCE OF KEY PERSONNEL

Curriculum Vitae (CV), up to a maximum of three (3) pages must be submitted, for each of the key personnel proposed in Schedule 14.1: Key Personnel Assigned to the Contract, and Schedule 14.2: Proposed Organisation and Staffing. The CV's must specifically include the qualifications, professional accreditation and experience in construction projects of a similar nature. Contact details of at least three (3) contactable referees must also be provided. A template for CV's is provided overleaf.

Each CV shall be clearly cross-referenced to and labelled to correspond with the organogram submitted in terms of Schedule 14.2: Proposed Organisation and Staffing, so as to indicate which role the person in question is proposed to fulfil in the Contract.

The Tenderer shall include the requisite CVs in the Functionality Criteria file, to be submitted in accordance with Clause F.2.1.1.3 of T1.2: Tender Data.

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

SIGNED ON BEHALF OF TENDERER: ..... DATE: 13/02/2017

PLEASE REFER TO RETURNABLE DOCUMENTS IN SUPPORT OF QUALITY SCORE FILE SECTION 1

Continued overleaf

SCHEDULE 14.3 : SCHEDULE OF EXPERIENCE OF KEY PERSONNEL (Continued)

INSERT KEY PERSONNEL CVs HERE ACCORDING TO THE TEMPLATE BELOW.

Name:
Profession:
Date of Birth:
Parent Firm:
Position in Firm: *Indicate if Director, Senior Contract or Contract Manager, Site Agent, Engineer etc*
Years with Firm:
Nationality:

Tertiary Education (and year obtained):

Professional Accreditation (and year obtained):

Years of Relevant Experience: *Relevant experience shall relate to large diameter continuously welded steel pipelines.*

Languages: *Indicate first language. If the first language is not English, please indicate proficiency in English. In other languages, including South African indigenous languages, please show speaking, reading and writing ability.*

	Speaking	Reading	Writing
English			

Countries of Work Experience: .....

Proposed Position on Team: .....

Key Qualifications
Under this heading, give outline of staff member's experience and training most pertinent to the assigned work on the team.

Relevant Experience
Describe degree of responsibility held by staff member on relevant previous assignments, and give dates, project values and locations. For experience in last ten years, also give types of activities performed and client references where appropriate.

Summary of Other Experience
Under this heading, list all positions held by staff member since graduation, giving dates, names of employing organization, title of position held and location, type and value of construction projects.

References

Declaration:
I confirm that the above information contained in the CV is an accurate description of my experience and qualifications and that, at the time of signature, I am available and will to serve in the position indicated for me in the proposal for **CONTRACT NO. 178Q/2016/17: DESIGN – BUILD OF MECHANICAL AND ELECTRICAL WORKS FOR THE CONSTRUCTION OF AN MBR PLANT AND BOTTLENECK ALLEVIATION AT ZANDVLIET WASTEWATER TREATMENT WORKS
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Signature of Staff Member **Date**

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SCHEDULE 14.4 : SCHEDULE OF METHOD STATEMENT

The Tenderer shall submit a method statement (of between 2 500 and 4 000 words) responding to the Scope of Work and outlining and explaining the proposed approach / methodology to be employed for the construction of the Works and its various components. The method statement should articulate what value the Tenderer will add in achieving the stated objectives for the project.

The method statement must highlight the issues of importance, the critical factors for success or failure of achieving the Employer's objectives, and explain the technical approach the Tenderer will adopt to address them. The method statement must include a quality plan which outlines processes, procedures and associated resources, applied by whom and when, to meet the requirements and indicate how risks will be managed and what contribution can be made regarding value management. Particular attention in this quality plan must address the following:

a) The preparation and internal approval process for the Contractor's Documents in terms of Clause 5 of the General Conditions of Contract
b) The proposed internal quality management procedures pertaining to the Works and including aspects such as:
   i. Design
   ii. Drawing
   iii. Control and tracking of the Contractor's Documents
   iv. Pipework fabrication
   v. General metalwork fabrication
   vi. Corrosion protection and coatings
   vii. Installation
   viii. Concrete construction
   ix. Testing and commissioning
   x. Training of the Employer's operation staff
   xi. Trial operation

PLEASE REFER TO SECTION 2 OF RETURNABLE DOCUMENTS IN SUPPORT OF QUALITY SCORE

In addition, the method statement must include a technical description of systems and equipment offered, highlighting the main features, benefits and innovations thereof, and showing how these can meet the Employer's objectives and the specified service requirements. This must be supplemented by technical literature such as brochures, drawings, charts, characteristic curves, for the various items of plant and equipment offered.

The method statement must address the Tenderer's plans for completing the Works within the specified Time for Completion, paying particular attention to:

a) interfacing between the MBR pumpstation (by others), fine screening, existing MBR plant and proposed MBR plant, alleviation of bottlenecks to the existing treatment works, to the requirement for achieving Time for Completion for these parts of the Works by the corresponding Due Completion Date, and to interfacing with and accommodating the Civil Contractor on site.
b) interfacing with (i) the Tenderer's own sub-contractors or joint venture partners and (ii) the Civil Contractor; and
c) the Sequencing of the Works in terms of the requirements of C3.5 Scope of Work

The Tenderer shall include his / her method statement in the Functionality Criteria file to be submitted in accordance with Clause F.2.1.1.3 of T1.2: Tender Data. The method statement must not be longer than 8 pages.

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

SIGNED ON BEHALF OF TENDERER: .... **DATE:** 13/02/2017

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SCHEDULE 14.5 : PRELIMINARY PROGRAMME AND CASH FLOW FORECAST

The Tenderer shall provide a preliminary programme in Gantt Chart format, outlining the key activities, milestones and critical path for the Works and the sequencing thereof, with due consideration given to the requirements of the Contract Data and Scope of Works. The programme should show allowance for and interfacing with the Civil Contractor. In addition, a preliminary cash flow forecast, matching the progress of the programme must be submitted.

The programme must be based on the Time for Practical Completion as specified in the Contract Data.

The preliminary programme and cash flow forecast shall be included in the Functionality Criteria file, to be submitted in accordance with Clause F.2.1.1.3 of T1.2: Tender Data.

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

SIGNED ON BEHALF OF TENDERER: ..... DATE: 13/02/2017

PLEASE REFER TO RETURNABLE DOCUMENTS IN SUPPORT OF QUALITY SCORE FILE SECTION 2

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SCHEDULE 14.6 : MEMBRANE EQUIPMENT SUPPLIER REFERENCE PROJECT LIST

The Tenderer shall provide a project reference list of membrane bioreactors with an average dry weather flow (ADWF) capacity of at least 20 Mℓ/d where the proposed membrane bioreactor equipment has been successfully used in the last 15 years. This information is to be provided with Client and Engineer reference letters.

The membrane equipment supplier reference project list shall be included in the Functionality Criteria file (refer to the table shown overleaf), to be submitted in accordance with Clause F.2.1.1.3 of T1.2: Tender Data.

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

SIGNED ON BEHALF OF TENDERER: ..... DATE: 13/02/2017

PLEASE REFER TO RETURNABLE DOCUMENTS IN SUPPORT OF QUALITY SCORE FILE SECTION 3

SCHEDULE 14.6 : MEMBRANE EQUIPMENT SUPPLIER REFERENCE PROJECT LIST

EMPLOYER (NAME, TEL No. AND E-MAIL)	CONSULTING ENGINEER (NAME, TEL No. AND E-MAIL)	PROJECT NAME	DESCRIPTION OF PRINCIPLE WORK CONTENT, INCLUDING PLANT CAPACITY (AVERAGE DRY WEATHER FLOW AND PEAK WET WEATHER FLOW)		VALUE OF WORK, EXCLUDING VAT (ZAR MILLIONS)	COMMENCEMENT DATE	COMPLETION DATE
COMPLETED CONTRACTS / PROJECTS							
	PLEASE REFER TO RETURNABLE DOCUMENTS IN SUPPORT OF QUALITY SCRE-						
	SECTION 3						
CURRENT CONTRACTS / PROJECTS							

DATE: 13/02/2017

SIGNED ON BEHALF OF TENDERER: .....

CITY OF CAPE TOWN

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SCHEDULE 14A : 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, 2011 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, 2011 (Regulation 9) makes provision for the promotion of local production and content.

1.2 Regulation 9(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 sector (i) **Electrical and Telecom Cables** and (ii) **Valves Products and Actuators** 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 ABSA 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
Electrical and Telecom Cable sector	**90%**
Valves Products and Actuators	**70%**

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 Absa 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	R13.24
Pound Sterling	R16.32
Euro	R14.11
Yen	
Other	

NB: Suppliers must submit proof of the ABSA 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

WATER AND SANITATION

CONTRACT NO. 178Q/2016/17

DESIGN – BUILD OF MECHANICAL AND ELECTRICAL WORKS FOR THE CONSTRUCTION OF AN MBR PLANT AND BOTTLENECK ALLEVIATION AT ZANDVLIET WASTEWATER TREATMENT WORKS

SCHEDULE 14A : 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. ....178Q/2016/17.....

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, ... (full names),
do hereby declare, in my capacity as .. ..
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)	R21,750,965,57
Imported content (x), as calculated in terms of SATS 1286:2011	R 4,461,836.22
Stipulated minimum threshold for local content (paragraph 3 above)	70%
Local content %, as calculated in terms of SATS 1286:2011	75%

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 13 of the Preferential Procurement Regulations, 2011 promulgated under the Preferential Procurement Framework Act (PPPFA), 2000 (Act No. 5 of 2000).

SIGNATURE: DATE: 13/02/2017

WITNESS No. 1 DATE: 13/02/2017

WITNESS No. 2 DATE: 13/02/2017

		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)
M2 - 3	MBR – Inlet of each fine screen							6			
M2 - 5	MBR – Flow split to MBR A and MBR B downstream of fine screens.							3			
M2 - 7	MBR B – Inlet to anaerobic zone							3			
M2 - 9	MBR B – Outlet of aerobic zone to Membrane Tank Feed Pumps							3			
M2 - 11	MBR B – Downward opening sluice gate upstream of Membrane tank feed pumps to WAS sump							1			
M2 - 13	MBR B – Downward opening sluice gate at inlet of membrane filtration train							9			
M2 - 15	MBR B – mixed liquor return to aerobic zone							3			
M2 - 17	MBR B – aerobic zone outlet to scum collection chamber (downward opening)							3			
M2 - 19	MBR B – Downstream of Mixed Liquor Swing Recycle Pumps Isolation							1			
M2 - 21	MBR B – membrane train outlet to WAS sump							1			
M2 - 23	MBR B – between WAS sump and membrane inspection sump							1			
M2 - 24	MBR B - Scum Skimmer Outlet							1			
M2 - 25	MBR A – Transfers Pump to MLSS Recycle Channel							3			
M2 - 27	MBR A - Downward opening sluice gate at inlet of membrane filtration train							6			

		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)
M2 - 29	MBR A – Recycle Channel to Anoxic Zone							5			
M2 - 31	MBR A – Recycle Channel to Aerobic Zone							4			
M2 - 33	CAS A – Outlet of reactor to SST							6			
M2 - 34	CAS B – Outlet of Reactor to SST							6			
M2 - 35	Final Effluent Collection Chamber – Outlet to CCT distribution chamber							2			
M2 - 36	Chlorine Contact Tank – Inlet to CCT distribution chamber							2			
M2 - 37	Chlorine Contact Tank – Inlet and outlet of each CCT							1			
M2 - 38	Chlorine Contact Tank – Inlet and outlet of each CCT							2			
	Tilting Weir Summary										
M2 - 39	CAS A – Reactor Aerobic Zone Outlet							2			
M2 - 40	CAS B – Reactor Aerobic Zone Outlet							2			
	Weir Plate Summary										
M2 - 41	MBR B – Inlet to Anaerobic Zone							3			
M2 - 42	MBR B – Anaerobic Zone 1 to Anaerobic Zone 2							3			
M2 - 43	MBR B – Anaerobic Zone 2 to Anoxic Zone 1							3			
M2 - 44	MBR B – Anoxic Zone 2 to Anoxic Zone 1							3			
M2 - 45	MBR B – Anoxic Zone 2 to Aerobic Zone							3			

		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)
M2 - 46	MBR B – Membrane tank Feed Pumps to MBR TANKS Distribution Channel							6			
M2 - 47	MBR B – Filtration Train Inlet							9			
M2 - 48	MBR B – Filtration Train Outlet							9			
M2 - 49	MBR B – Ax-An Recycle Pump Outlet							9			
M2 - 50	MBR B – Ae-Ax Recycle Pump Outlet							9			
M2 - 51	MBR B – Membrane to Aerobic Zone Inlet							3			
M2 - 52	MBR B – Swing Recycle Pump Outlet							4			
M2 - 53	MBR A – Transfers Pump to Membrane Distribution Channel							3			
M2 - 54	MBR A – Filtration Train Inlet							6			
M2 - 55	MBR A – Filtration Train Outlet							6			
M2 - 56	CAS A – Reactor Aerobic Zone Outlet to SST							6			
M2 - 57	CAS B – Reactor Aerobic Zone Outlet to SST							6			
M2 - 58	CAS A – Emergency overflow to SST							6			
M2 - 59	CAS B – Emergency overflow to SST							6			
M2 - 60	Service Water Supply Chamber							1			
	Stop Log Summary										
M2 - 61	CAS A – Aerobic zone to central WAS sump							1			
M2 - 62	CAS B – Aerobic zone to central							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)
	WAS sump										
M2 - 63	CAS A – Emergency overflow to SST							6			
M2 - 64	CAS B – Emergency overflow to SST							6			
	Valves for Section A of the Works										
	MBR Fine Screening Station										
M2 - 65	MBR Fine Screening Station common wash water valves (isolation, pressure reducing and other)							Sum			
	FBDA System										
M2 - 67	FBDA V-Port knife gate valves (VAG or equal) for aeration control							9			
M2 - 69	FBDA Condensate drain valves							Sum			
M2 - 70	FBDA Formic Acid valves							Sum			
M2 - 71	FBDA Blower - all valves for one blower (non-return valve, isolation valves etc.)							5			
M2 - 73	Scum Spray Valves							Sum			
	MBR Equipment										
M2 - 75	Membrane Casette Air Scour Isolation Valve							108			
M2 - 76	Membrane Filtration Train Sequential Aeration Valves per Train							9			
M2 - 77	Actuators for item above							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)
M2 - 78	Membrane Filtration Train Sequential Aeration Isolation Valves							9			
M2 - 79	Membrane Casette Permeate Isolation Valve							54			
M2 - 80	Membrane Filtration Train Permeate Isolation Valves							9			
M2 - 81	Chemical dosing diaphragm valves, Non return Valve and isolation valve							18			
M2 - 82	Actuators for item above							18			
M2 - 83	Membrene Filtration Train Drain Isolation Valve							9			
M2 - 84	Membrene Filtration Train Drain Isolation Valve (Actuated)							9			
M2 - 85	Actuators for item above							9			
M2 - 86	Membrane plant ventilation/ air ejection system Valves							Sum			
M2 - 87	Actuators for item above							Sum			
M2 - 88	Permeate Pump Safety Relief Valve							18			
M2 - 89	Permeate Pump Isolation Valve							9			
M2 - 90	Permeate Pump Isolation Valve (Actuated)							9			
M2 - 91	Actuators for item above							9			
M2 - 92	Service Water Tank Make-up Valves							Sum			
M2 - 93	Actuators for item above							Sum			
M2 - 94	Membrane Filtration Train Drain Pump Isolation Valve							6			

		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)
M2 - 95	Membrane Filtration Train Drain Pump Non Return Valve Valve							3			
M2 - 96	WAS Pump Isolation Valve							4			
M2 - 97	WAS Pump Non Return Valve Valve							2			
M2 - 98	WAS Pump Diverting (To WAS sump and to Mixed Liquor Recycle Channel)							2			
M2 - 99	Actuators for item above							2			
M2 - 100	WAS/Scum Sump Scum Spray Valves							Sum			
M2 - 101	Actuators for item above							Sum			
M2 - 102	Air Scour - all valves for one blower (non return valve, isolation valves etc.)							6			
M2 - 103	Actuators for item above							6			
M2 - 104	Air Scour Common Manifold Isolation valves							2			
M2 - 105	All Sodium Hypochlorite Valves							Sum			
M2 - 107	All Citric Acid Valves							Sum			
M2 - 109	All Instrument Air Valves							Sum			
M2 - 111	All Service Water Valves							Sum			
	Valves for Section B of the Works										
M2 - 113	Scum box isolation valves							8			
M2 - 115	Telescopic Valves							12			
M2 - 116	WAS Pump Isolation Valve							8			

		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)
M2 - 117	WAS Pump Non Return Valve Valve							4			
M2 - 118	Scum Pump Isolation Valve							12			
M2 - 119	Scum Pump Non Return Valve Valve							6			
M2 - 120	All Chlorine Tank Isolation Valves							8			
M2 - 121	Actuators for item above							8			
M2 - 123	All Chlorine Dosing System Valves							Sum			
M2 - 125	All Instrument Air Valves including actuators							Sum			
	Valves for Section C of the Works										
	FBDA System										
M2 - 127	FBDA V-Port knife gate valves (VAG or equal) for aeration control							4			
M2 - 128	FBDA Distribution Isolation Valves							2			
M2 - 129	FBDA Condensate drain valves							Sum			
M2 - 130	FBDA Formic Acid valves							Sum			
M2 - 132	FBDA Blower - all valves for one blower (non-return valve, isolation valves etc.)							3			
M2 - 134	Scum Spray Actuated Valves							Sum			
	MBR Equipment										
M2 - 135	Membrane Cassette Air Scour Isolation Valve							72			

		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)
M2 - 136	Membrane Filtration Train Sequential Aeration Valves per Train							6			
M2 - 137	Actuators for item above							6			
M2 - 138	Membrane Filtration Train Sequential Aeration Isolation Valves							6			
M2 - 139	Membrane Cassette Permeate Isolation Valve							36			
M2 - 140	Membrane Filtration Train Permeate Isolation Valves							6			
M2 - 141	Chemical dosing diaphragm valves, Non return Valve and isolation valve							12			
M2 - 142	Actuators for item above							12			
M2 - 143	Membrane Filtration Train Drain Isolation Valve							6			
M2 - 144	Membrane Filtration Train Drain (Actuated)							6			
M2 - 145	Actuators for item above							6			
M2 - 146	Membrane plant ventilation/ air ejection system Valves							Sum			
M2 - 147	Actuators for item above							Sum			
M2 - 148	Permeate Pump Safety Relief Valve							12			
M2 - 149	Permeate Pump Isolation Valve							6			
M2 - 150	Permeate Pump Isolation Valve (Actuated)							6			
M2 - 151	Actuators for item above							6			
M2 - 152	Service Water Tank Make-up							Sum			

		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)
	Valves										
M2 - 153	Membrane Filtration Train Drain Pump Isolation Valve							4			
M2 - 154	Membrane Filtration Train Drain Pump Non Return Valve							2			
M2 - 155	Membrane Inspection Sump to Membrane Filtration Drain Pump Set							2			
M2 - 156	Actuators for item above							2			
M2 - 157	WAS Pump Isolation Valve							4			
M2 - 158	WAS Pump Non Return Valve							2			
M2 - 159	WAS/Scum Sump Scum Spray Valves							Sum			
M2 - 160	Actuators for item above							Sum			
M2 - 161	Air Scour - all valves for one blower (non-return valve, isolation valves (VAG or equal) etc.)							3			
M2 - 162	Actuators for item above							3			
M2 - 163	Air Scour Common Manifold Isolation valves							2			
M2 - 165	All Sodium Hypochlorite Valves							Sum			
M2 - 167	All Citric Acid Valves							Sum			
M2 - 169	All Instrument Air Valves							Sum			
M2 - 171	All Service Water Valves							Sum			
M2 - 172	Scum Pump isolation							4			

		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)
M2 - 173	Scum Pump non return							4			
M2 - 174	Scum Telescopic Valve							5			
M2 - 175	Scum Telescopic Valve Isolation Valve							5			
	Valves for Equipment Common to Sections of the Works										
M2 - 177	All Ferric Chloride Valves							Sum			
M2 - 179	All Sodium Hydroxide Valves							Sum			
	SPARES										
	MBR Fine Screening Station										
M2 - 180	Two each type and size used							Sum			
	Fine Bubble Diffused Aeration										
	MBR B										
M2 - 182	V-Port knife gate valves (Aeration zone 1)							2			
M2 - 184	V-Port knife gate valves (Aeration zone 2)							2			
M2 - 186	V-Port knife gate valves (Aeration zone 3)							2			
	MBR A										
M2 - 188	V-Port knife gate valve for dropleg 1							1			
M2 - 190	V-Port knife gate valve for dropleg 2							1			
M2 - 192	V-Port knife gate valve for dropleg 3							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)
M2 - 194	V-Port knife gate valve for dropleg 4							1			
	Blowers										
	MBR B										
M2 - 196	FBDA Blower Isolation Valves							2			
M2 - 197	FBDA Blower Non return Valves							2			
M2 - 199	Air Scour Blower Isolation Valves							2			
M2 - 200	Air Scour Blower Non Return Valves							2			
	MBR A										
M2 - 202	FBDA Blower Isolation Valves							2			
M2 - 203	FBDA Blower Non return Valves							2			
M2 - 205	Air Scour Blower Isolation Valves							2			
M2 - 206	Air Scour Blower Non Return Valves							2			
	MBR Equipment										
	MBR B										
M2 - 207	Permeate pump suction valve							2			
M2 - 208	Permeate pump discharge valve							2			
M2 - 209	Actuators for item above							2			
M2 - 210	Membrane cassette permeate isolation valve							6			
M2 - 211	Membrane cassette air scour isolation valve							12			

		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)
M2 - 212	Chemical dosing diaphragm valves complete							18			
M2 - 213	Actuators for item above							18			
M2 - 214	Sequential aeration Valves Complete (Equal to twice the number installed)							Sum			
M2 - 215	Actuators for item above							Sum			
	MBR A										
M2 - 216	Permeate pump suction valve							2			
M2 - 217	Permeate pump discharge valve							2			
M2 - 218	Actuators for item above							2			
M2 - 219	Membrane cassette permeate isolation valve							6			
M2 - 220	Membrane cassette air scour isolation valve							12			
M2 - 221	Chemical dosing diaphragm valves							12			
M2 - 222	Actuators for item above							12			
M2 - 223	Sequential aeration Valves (Equal to twice the number installed)							Sum			
M2 - 224	Actuators for item above							Sum			
	Filtration Train Drain Pumps and Wasting Pumps (MBR B)										
M2 - 225	Membrane Tank Drain Isolation valve							2			
M2 - 226	Actuators for item above							2			
M2 - 227	Membrane Tank Drain Isolation							2			

		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)
	valve										
M2 - 228	Membrane tank drain pump suction valve							1			
M2 - 229	Membrane tank drain pump discharge valve							1			
M2 - 230	Scum/WAS pump suction valve							1			
M2 - 231	Scum/WAS pump discharge valve							1			
M2 - 232	Scum/WAS pump non return valve							1			
M2 - 233	Scum/WAS pump diverter valve (to WAS holding tank or mixed liquor recycle channel)							1			
M2 - 234	Actuators for item above							1			
	Filtration Train Drain Pumps and Wasting Pumps (MBR A)										
M2 - 235	Membrane Tank Drain Isolation valve							2			
M2 - 236	Actuators for item above							2			
M2 - 237	Membrane Tank Drain Isolation valve							2			
M2 - 238	Membrane tank drain pump suction valve							1			
M2 - 239	Membrane tank drain pump discharge valve							1			
M2 - 240	Scum/WAS pump suction valve							1			
M2 - 241	Scum/WAS pump discharge valve							1			
M2 - 242	Scum/WAS pump non return valve							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)
	Instrument Air										
	Valves (MBR B)										
M2 - 243	One of each Valve type and size used							Sum			
M2 - 245	One of each Actuated valve type and size used (actuated)							Sum			
M2 - 246	Blow-off (purge) valves							2			
	Valves (MBR A)										
M2 - 247	One of each Valve type and size used							Sum			
M2 - 249	One of each Actuated valve type and size used (actuated)							Sum			
M2 - 250	Blow-off (purge) valves							2			
	Service Water Pump Station										
	MBR B										
M2 - 252	One of each Valve type and size used							Sum			
	MBR A										
M2 - 254	One of each Valve type and size used							Sum			
	UV Disinfection System (MBR B)										
M2 - 255	Set of OEM recommended spares per unit							Sum			
M2 - 256	10% of Bulbs supplied							Sum			
	Chemical Dosing Systems MBR A and MBR B and CAS										
M2 - 258	Four each type and size							Sum			

		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)
	used										
	Existing Plant WAS Pumps (CAS)										
M2 - 259	Suction valve							1			
M2 - 260	Discharge valve							1			
M2 - 261	Non return valve							1			
	Existing Plant Scum Pumps (CAS)										
M2 - 262	Suction valve							1			
M2 - 263	Discharge valve							1			
M2 - 264	Non return valve							1			

Continued overleaf

		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)
	New Chlorination Equipment (CAS)										
M2 - 265	One of each valve type and size used							Sum			
M2 - 266	One of each actuated valve type and size used including actuator							Sum			
M2 - 267	Blow-off (purge) valves							2			

(C20) Total tender value	R 21,750,965.57
(C21) Total Exempt imported content	R 1,057,143.53
(C22) Total Tender value net of exempt imported content	R 20 693 822.05
(C23) Total Imported content	R 4,461,836.22
(C24) Total local content	R 16,231,985.83
(C25) Average local content % of tender	75 %

Signature of tenderer from Annex B

Date: 13/02/2017

Annex C

Local Content Declaration - Summary Schedule

(C1)	Tender No.	178Q/2016/17
(C2)	Tender description:	ZANDVLIET WWTW
(C3)	Designated product(s)	ELECTRICAL CABLES
(C4)	Tender Authority:	
(C5)	Tendering Entity name:	
(C6)	Tender Exchange Rate:	Pula
(C7)	Specified local content %	90

Note: VAT to be excluded from all calculations

PLEASE REFER TO FILE 3 OF 3 - RETURNABLE DOCUMENTS IN SUPPORT OF QUALITY SCORE DIVIDER.

EU GBP

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 (#)	Total tender value	Total exempted imported content	Total Imported content
(C8)	(C9)	(C10)	(C11)	(C12)	(C13)	(C14)	(C15)	(C16)	(C17)	(C18)	(C19)
Schedule E4	Complete Schedule										

		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 (#)	Total tender value	Total exempted imported content	Total Imported content
(C8)	(C9)	(C10)	(C11)	(C12)	(C13)	(C14)	(C15)	(C16)	(C17)	(C18)	(C19)

(C20) Total tender value	R 4,274,322.00
(C21) Total Exempt imported content	R 0
(C22) Total Tender value net of exempt imported content	R 4,274,322.00
(C23) Total Imported content	R 0
(C24) Total local content	R 4,274,322.00
(C25) Average local content % of tender	100

Signature of tenderer from Annex B

Date: 13/02/2017

CITY OF CAPE TOWN

WATER AND SANITATION

CONTRACT NO. 178Q/2016/17

DESIGN – BUILD OF MECHANICAL AND ELECTRICAL WORKS FOR THE CONSTRUCTION OF AN MBR PLANT AND BOTTLENECK ALLEVIATION AT ZANDVLIET WASTEWATER TREATMENT WORKS

SCHEDULE 15 : AUTHORISATION FOR THE DEDUCTION OF OUTSTANDING AMOUNTS OWED TO THE CITY OF CAPE TOWN

To: THE CITY MANAGER, CITY OF CAPE TOWN

From: _____ _____
(Name of Tenderer)

1.1 AUTHORISATION FOR THE DEDUCTION OF OUTSTANDING AMOUNTS OWED TO THE CITY OF CAPE TOWN

The Tenderer:

a) hereby acknowledges that according to SCM Regulation 38(1)(d)(i) the City Manager may reject the tender of the Tenderer if any municipal rates and taxes or municipal service charges owed by the Tenderer or any of its directors/members/partners to the City of Cape Town, or to any other municipality or municipal entity, are in arrears for more than 3 (three) months; and

b) therefore hereby agrees and authorises the City of Cape Town to deduct the full amount outstanding by the Tenderer or any of its directors/members/partners from any payment due to the Tenderer.

I, _____ _____, **the undersigned,**
(full name in block letters)
hereby authorise the City of Cape Town to deduct the full amount outstanding by the Tenderer/Contractor or any of its directors/members/partners from any payment due to the Tenderer/Contractor.

_____ _____
Signature

THUS DONE AND SIGNED for and on behalf of the Tenderer/Contractor

at ..... Howard Dew ..... on the ..13.... day of ..... February ..... 20..17...
(PLACE) (DATE) (MONTH) (YEAR)

CITY OF CAPE TOWN

WATER AND SANITATION

CONTRACT NO. 178Q/2016/17

DESIGN – BUILD OF MECHANICAL AND ELECTRICAL WORKS FOR THE CONSTRUCTION OF AN MBR PLANT AND BOTTLENECK ALLEVIATION AT ZANDVLIET WASTEWATER TRE/ 'MENT WORKS

SCHEDULE 16 : RECORD OF ADDENDA TO TENDER DOCUMENTS

We confirm that the following communications received from the Employer before the submission of this tender offer, amending the tender documents, have been taken into account in this tender offer:

	Date	Title or Details
1.	31/01/2017	ADDENDUM TO TENDER DOCUMENTS NO 1
2.	31/01/2017	ADDENDUM TO TENDER DOCUMENTS NO 2
3.	22/02/2017	ADDENDUM TO TENDER DOCUMENTS NO 3
4.		
5.		
6.		
7.		
8.		
9.		
10		
11		
12		
13		

Attach additional pages if more space is required.

SIGNED ON BEHALF OF TENDERER: .... DATE: 13/02/2017

SCHEDULE 17 : PREFERENCING SCHEDULE

Preferencing Schedule where preferences are granted in respect of B-BBEE contribution

1 Definitions

The following definitions shall apply to this schedule:

All applicable taxes: Includes value-added tax, pay as you earn, income tax, unemployment insurance fund contributions and skills development levies.

Applicable Code: Shall be either the Amended Codes of Good Practise (published on 11 October 2013) or Sector Specific Codes as indicated in the tender conditions

B-BBEE: Broad-based black economic empowerment as defined in section 1 of the Broad-Based Black Economic Empowerment Act.

B-BBEE status level of contributor: The B-BBEE status received by a measured entity based on its overall performance using the relevant scorecard contained in the Codes of Good Practice on Black Economic Empowerment, issued in terms of section 9(1) of the Broad-Based Black Economic Empowerment Act.

Bid (Tender): A written offer in a prescribed or stipulated form in response to an invitation by an organ of state for the provision of services, works or goods, through price quotations, advertised competitive bidding processes or proposals.

Broad-Based Black Economic Empowerment Act: The Broad-Based Black Economic Empowerment Act, Act 53 of 2003.

Comparative Price: The price after the factors of a non-firm price and all unconditional discounts that can be utilized have been taken into consideration.

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

Contract The agreement that results from the acceptance of a bid by an organ of state.

Exempted Micro Enterprise (EME): Any enterprise with an annual total revenue of R10 million or less.

Firm Price: The price that is only subject to adjustments in accordance with the actual increase or decrease resulting from the change, imposition, or abolition of customs or excise duty and any other duty, levy, or tax, which, in terms of the law or regulation, is binding on the contractor and demonstrably has an influence on the price of any supplies, or the rendering costs of any service, for the execution of the contract.

Functionality: The measurement according to predetermined norms, as set out in the bid documents, of a service or commodity that is designed to be practical and useful, working or operating, taking into account, among other factors, the quality, reliability, viability and durability of a service and the technical capacity and ability of a bidder.

Non-firm prices: All prices other than "firm" prices.

Person: Includes a juristic person.

Qualifying Small Enterprise (QSE): Any enterprise with an annual total revenue of greater than R10 million but less than R50 million or less.

Rand Value: means the total estimated value of a contract in South African currency, calculated at the time of bid invitations, and includes all applicable taxes and excise duties.

Sub-contract: 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.

Total Revenue: Bears the same meaning assigned to this expression in the Codes of Good Practice on Black Economic Empowerment, issued in terms of section 9(1) of the Broad-Based Black Economic Empowerment Act and promulgated in the *Government Gazette* on 9 February 2007.

Trust: The arrangement through which the property of one person is made over or bequeathed to a trustee to administer such property for the benefit of another person.

Trustee: Any person, including the founder of a trust, to whom property is bequeathed in order for such property to be administered for the benefit of another person.

Continued Overleaf

2 Conditions associated with the granting of preferences

A supplier that is granted a preference undertakes to:

1) accept that the number of preference points allocated will be based on the B-BBEE status level of contributor of the supplier as at the closing date for submission of quotation offers;
2) not sub-contract more than 25% of the value of the contract to sub-contractors that do not have an equal or higher B-BBEE status level of contributor than the supplier, unless the intended sub-contractors are exempted micro enterprises that have the capability and ability to execute the sub-contract works or unless otherwise declared in terms of Section 5 below;
3) accept the sanctions set out in Section 3 below should Condition 2(2) be breached, or should the B-BBEE status level of contribution be found to have been claimed or obtained on a fraudulent basis;
4) accept that, in order to qualify for preference points, it is the responsibility of the supplier to submit documentary proof of its BBBEE level of contribution in accordance with the Codes of Good Practise, 2013, to the CCT at the Supplier Management Unit located within the Tender Distribution Office, 2nd Floor (Concourse Level), Civic Centre, 12 Hertzog Boulevard, Cape Town (Tel 021 400 9242/3/4/5);
5) accept that, further to 4) above, Consortiums/Joint Ventures will qualify for preference points, provided that the entity submits the relevant certificate/scorecard in terms of the Preferential Procurement Regulations, 2011. Note that, in the case of unincorporated entities, a verified scorecard in the name of the consortium/Joint Venture must be submitted with the quotation (attached to this schedule);
6) accept that if it is found that, in the performance of the contract, the participation of the various partners in a Consortium/ Joint Venture differs substantially from that upon which the consolidated scorecard submitted in terms of 5) above was based, and the impact of which is that the Joint Venture would not have been awarded the contract in terms of the actual B-BBEE level of contribution achieved by the Joint Venture, then a financial penalty shall be applied (in addition to any other remedies that the CCT may have) in accordance with Section 3 below;
7) accept that suppliers are required to be registered on the City of Cape Town's Supplier Database prior to the acceptance of tenders in order to qualify for preference points. The CCT will verify the B-BBEE level of contributor of the supplier as at the closing date for submission of tender offers, to determine the number of preference points to be awarded to the supplier. In the case of Consortiums/Joint Ventures which tender as unincorporated entities, a verified scorecard submitted with the tender and valid as at the closing date will be used to determine the number of preference points to be awarded to the supplier;
8) accept that, notwithstanding 7) above, a supplier will **not** be awarded points for B-BBEE status level of contributor if he indicates in his tender that he intends sub-contracting more than 25% of the value of the contract to sub-contractors that do not qualify for at least the points that the supplier qualifies for unless the intended sub-contractors are exempted micro enterprises that have the capability and ability to execute the sub-contract works; and
9) immediately inform the City of Cape Town of any change that may affect the tenderer's B-BBEE level of contribution upon which preference points will be or have been allocated.

3 Sanctions relating to breaches of preference conditions

The sanctions for breaching the conditions associated with the granting of preferences are:

1) disqualify the supplier from the quotation process;
2) recover costs, losses or damages the CCT has incurred or suffered as a result of the supplier's or contractor's conduct;
3) cancel the contract and claim any damages which the CCT has suffered as a result of having to make less favourable arrangements due to such cancellation;
4) restrict the supplier, its shareholders and directors, or only the shareholders and directors who acted on a fraudulent basis, from obtaining business from the CCT for a period not exceeding 10 years, after the *audi alteram partem* (hear the other side) rule has been applied;
5) forward the matter for criminal prosecution; and/or
6) a financial penalty payable to the CCT, as set out below.

Continued Overleaf

Financial penalty for breach of Condition 2 in Section 2 above:

The penalty to be applied for sub-contracting more than 25% of the value of the contract to sub-contractors that do not qualify for at least the preference points that the supplier qualified for (unless so declared or proven to be beyond the control of the supplier, or the sub-contractors are EMEs that have the capability and ability to execute the sub-contract works) shall be as provided for in the following formula:

Penalty = 0.5 x E(%) x P*

where:

E = The value of work (excluding VAT) executed by sub-contractors that do not qualify for at least the preference points that the supplier qualified for, expressed as a percentage of P*, less 25%

P* = Value of the contract

Financial penalty for breach in terms of condition 6 in Section 2 above:

The penalty to be applied where, in the performance of the contract, the participation of the various partners in a Consortium/ Joint Venture differs substantially from that upon which the consolidated scorecard submitted in terms of 5) in Section 2 above was based, and the impact of which is that the Joint Venture would not have been awarded that contract in terms of the actual B-BBEE level of contribution achieved by the Joint Venture, shall be as provided for in the following formula:

Penalty = 5/100 x ($B\text{-}BBEE^a - B\text{-}BBEE^t$) x P*

where:

$B\text{-}BBEE^a$ = The B-BBEE level of contribution that is achieved, determined in accordance with the actual participation of the Joint Venture partners in the performance of the contract

$B\text{-}BBEE^t$ = The B-BBEE level of contribution that was used to determine the number of preference points granted to the Joint Venture at the time of quotation evaluation

P* = Value of the contract

4 Level of Contribution in respect of enterprise status or structure of the tendering entity (the supplier)

In the interest of transparency, suppliers are required to complete Table 1: Level of Contribution below.

Table 1: Tender preference claim

Type of B-BBEE Contributor	Status (tick box(es) below as applicable)
Exempted Micro Enterprise (EME), 100% black-owned	
Exempted Micro Enterprise (EME), at least 51% but less than 100% black-owned	
Exempted Micro Enterprise (EME), less than 51% black-owned	
Qualifying Small Enterprise (QSE), 100% black-owned	
Qualifying Small Enterprise (QSE), at least 51% but less than 100% black-owned	
Qualifying Small Enterprise (QSE), less than 51% black-owned	
Verified B-BBEE contributor B-BBEE Status Level of Contributor[1] 4	✓
Non-compliant contributor	

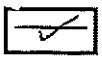
[1] If it is indicated that the company/firm/entity is a verified B-BBEE contributor, then the verified status level of contributor must be inserted in the box provided (insert a number from 1 to 8 as applicable)

Continued Overleaf

5 Declarations

1) With reference to Condition 8 in Section 2 above, the supplier declares that:

I/we hereby forfeit my preference points because I /we DO intend sub-contracting more than 25% of the value of the contract to sub-contractors that do not qualify for at least the points that I/we as supplier qualify for or are not exempted micro enterprises that have the capability and ability to execute the sub-contract works



Note:

Tenderers who do not tick this box will be allocated preference points but the sanctions relating to breaches of preference conditions in Section 3 will be applicable if the tenderer contravenes the conditions in Section 2.

2) The undersigned, who warrants that he/she is duly authorised to do so on behalf of the supplier, hereby certifies that the preference claimed based on the B-BBEE status level of contribution indicated in Table 1, qualifies the supplier, subject to condition 7 in Section 2 above, for such preference claimed, and acknowledges that:

(i) the information furnished is true and correct;

(ii) the preference claimed is in accordance with the conditions of this schedule;

(iii) the supplier may be required to furnish documentary proof to the satisfaction of the CCT that the BBBEE level of contributor as at the closing date is correct; and

iv) he/she understands the conditions under which preferences are granted, and confirms that the supplier will satisfy the conditions pertaining to the granting of preferences.

Note:
Failure by the tenderer to tick either of the boxes in this declaration will result in no preference points being awarded.

SIGNED ON BEHALF OF TENDERER: .....

For official use.
INITIALS OF CITY OFFICIALS AT TENDER OPENING
1.

CITY OF CAPE TOWN

WATER AND SANITATION

CONTRACT NO. 178Q/2016/17

DESIGN – BUILD OF MECHANICAL AND ELECTRICAL WORKS FOR THE CONSTRUCTION OF AN MBR PLANT AND BOTTLENECK ALLEVIATION AT ZANDVLIET WASTEWATER TREATMENT WORKS

SCHEDULE 18 : INFORMATION TO BE PROVIDED WITH THE TENDER

The following information shall be provided with the Tender (i.e. Contractor's Proposal):

a) Technical description of offer, including confirmation that the tenderer's design will be adequately accommodated in the structures and buildings proposed on the Employer's drawings.

b) Technical literature for all items of plant and equipment; including fine screens, sluice gates, ultra-filtration membranes equipment, diffusers, blowers, pumps, ventilation equipment, lifting equipment, VFCs, valves, electric and pneumatic actuators, instrumentation and control system.

c) Power margins provided by pump motors proposed and confirmation of the suitability of the pump motors for operation on the specified VFCs.

d) Power rating of generator set's alternator and diesel engine.

e) The name of the "internationally accepted technical design standard" which will be used for the design of the lifting equipment.

f) Name of the proposed electrical panel manufacturer.

g) Typical control system mimics proposed for this Contract, and projects where these have been used successfully.

h) Proposed corrosion protection systems, including data sheets for coatings proposed.

i) The various technical details and data required by the Technical Data Sheets (see Volume 2C) and information required in the Returnable Schedules.

j) A Health and Safety Plan in terms of F.4.1 in T1.2 Tender Data.

The above information is to be included in a Functionality Criteria file labelled in accordance with F.2.13.5 of the Tender Data. The file shall contain all information required to support the allocation of a score for the respective Functionality Criteria where this information is not already provided in T2.2 Returnable Schedules as bound into Volume 2 of the Schedule of Documents. The file shall be indexed to match the Functionality Criteria given in Table 1, and shall be provided with dividers to separate and label each Functionality Criteria and the associated sub-sections.

SIGNED ON BEHALF OF TENDERER: ..... DATE: 13/02/2017

CITY OF CAPE TOWN

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SCHEDULE 19 : TECHNICAL DATA SHEETS

The Technical Data Sheets that must be completed by the Tenderer are included in a separate volume, Volume 2C

In addition to the hardcopy document, Technical Data Sheets will be issued electronically as well as on the CD, which will accompany the tender documents. The Technical Data Sheets may be completed electronically, but the completed schedules MUST STILL BE PRINTED, SIGNED AND BOUND by the Tenderers and submitted with their Offer. A completed, signed, hard copy of all the technical data sheets MUST be submitted with the tender documents.

Please Refer To Data Sheets File

CITY OF CAPE TOWN

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SCHEDULE 20 : CERTIFICATE OF TENDERER'S ATTENDANCE AT THE SITE/CLARIFICATION MEETING

This is to certify that I, ...,

representative of *[Tenderer]* .....

.....

of *[address]* .....

.....

.....

Telephone number .....

Fax number .....

visited and examined the Site on *[date]* .....

in the company of *[Engineer/Engineer's Representative]* .....

TENDERER'S REPRESENTATIVE: .....

ENGINEER'S REPRESENTATIVE: .....

CITY OF CAPE TOWN

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SCHEDULE 20 : CERTIFICATE OF TENDERER'S ATTENDANCE AT THE SITE/CLARIFICATION MEETING

This is to certify that I, ...,

representative of *[Tenderer]* .....

.....

of *[address]* .....

.....

.....

Telephone number .....

Fax number .....

visited and examined the Site on *[date]* .....

in the company of *[Engineer/Engineer's Representative]* .....

TENDERER'S REPRESENTATIVE: .....

ENGINEER'S REPRESENTATIVE: .....

CITY OF CAPE TOWN

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Part C1: Agreements and Contract Data

Pages

C1.1 Form of Offer and Acceptance (Agreement) ..... 101 – 105

C1.2 Contract Data ..... 106 – 137

C1.3 Form of Performance Guarantee ..... 138 – 141

C1.4 Form of Advance Payment Guarantee ..... 142 – 145

C1.5 Occupational Health and Safety Agreement ..... 146 – 147

C1.6 Protection of the Environment Declaration 148

C1.7 Insurance Broker's Warranty 149

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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. 178Q/2016/17 : DESIGN – BUILD OF MECHANICAL AND ELECTRICAL WORKS FOR THE CONSTRUCTION OF AN MBR PLANT AND BOTTLENECK ALLEVIATION AT ZANDVLIET WASTEWATER TREATMENT WORKS

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 *. FIVE HUNDRED AND FORTY ONE MILLION ~~THOUS~~, TWO HUNDRED AND FORTY THOUSAND, SIX HUNDRED AND TWO RAND AND FORTY SEVEN CENTS. (in words);

R 541,240,602.47 (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)* .....

Name(s) .....

Capacity .....

for the tenderer

(Name of organization/tenderer) * .....

(Address of organization/tenderer) .....

.....

Name and signature of witness .....

Date 22/02/2017

For official use.	
INITIALS OF CITY OFFICIALS AT TENDER OPENING	
1.	3.

* Refer to Clause F.4.4 Invalid tenders in Part T1.2 Tender Data

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 as set out in the General and Special 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
The Contractor's Proposal

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 documentation to be provided in terms of the conditions of contract identified in the contract data. Failure to fulfill any of these obligations in accordance with those terms shall constitute a repudiation of this agreement.

Notwithstanding anything contained herein, this agreement comes into effect on the date when the tenderer receives one fully completed original copy of this document, including the schedule of deviations (if any). Unless the tenderer (now contractor) within five working days of the date of such receipt notifies the employer in writing of any reason why he cannot accept the contents of this agreement, this agreement shall constitute a binding contract between the parties.

Signature(s) .....

Name(s) .....

Capacity .....

for the Employer CITY OF CAPE TOWN
Tower Block, Civic Centre,
12 Hertzog Boulevard
Cape Town

Name and signature of witness ...

Date 11/06/2019

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 CPA: CONTRACT PRICE ADJUSTMENT

Details IN TERMS OF CLAUSE 13.8.2.2 OF THE CONTRACT DOCUMENT, THE CONTRACTOR SUBMITTED A FORMULA AS REQUIRED FOR ADJUSTMENT ON IMPORTED MATERIALS. THIS FORMULA IS ACCEPTED AS PER TENDER SUBMISSION

2 Subject THE CLARIFICATIONS IN THE TENDERERS CLARIFICATION

Details SUBMISSION OF 20 JUNE 2017 IN RESPONSE TO THE ENGINEERS LETTER OF 9 JUNE 2017, SHALL APPLY.

3 Subject

Details

4 Subject

Details

ONLY TO BE USED AT ACCEPTANCE STAGE

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.

For the Tenderer:

Signature(s) .....

Name(s) .....

Capacity .....

(Name of organization/tenderer) .....

(Address of organization/tenderer) .....

.....

Name and signature of witness .....

Date 11/06/2019

ONLY TO BE COMPLETED AT ACCEPTANCE STAGE

For the Employer:

Signature(s) .....

Name(s) .....

Capacity .....

(Name and address of organization) CITY OF CAPE TOWN
Tower Block, Civic Centre,
12 Hertzog Boulevard
Cape Town

Name and signature of witness .....

Date 11/6/2019

Confirmation of Receipt

The tenderer, (now contractor), identified in the offer part of this agreement hereby confirms receipt from the employer, identified in the acceptance part of this agreement, of one fully completed original copy of this agreement, including the schedule of deviations (if any) today:

the 11TH (day)

of JUNE (month)

20 19 (year)

at CENTURY CITY (place)

ONLY TO BE COMPLETED AT ACCEPTANCE STAGE

For the Contractor:

Signature(s) .....

Name(s) .....

Capacity .....

Signature and name of witness:

Signature .....

Name .....

C1.2 Contract Data

GENERAL CONDITIONS OF CONTRACT

The following standardised General Conditions of Contract:

General Conditions which form part of the **Conditions of Contract for Plant and Design-Build for Electrical and Mechanical Plant, and for Building and Engineering Works, Designed by the Contractor, First Edition 1999 (Yellow Book)** published by the International Federation of Consulting Engineers (FIDIC).

Copies of these Conditions of Contract (Yellow Book) may be obtained from the South African Institution of Civil Engineering (SAICE) (tel 011 805 5947) or Consulting Engineers South Africa (CESA) (tel 011 463 2022).

Copies of the Conditions of Contract (Yellow Book) are also available for inspection and scrutiny at the offices of the Employer.

The Annexes and Forms bound in the Conditions of Contract (Yellow Book) shall not apply to this Contract and shall be replaced with the documentation bound into this Contract Document.

The General Conditions make reference to the Appendix to Tender and Particular Conditions (contained in the Contract 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 shall be read in conjunction with the variations, amendments and additions set out in the Appendix to Tender and Particular Conditions below. Each item of data given below is cross-referenced to the Clause or Sub-Clause in the General Conditions to which it mainly applies.

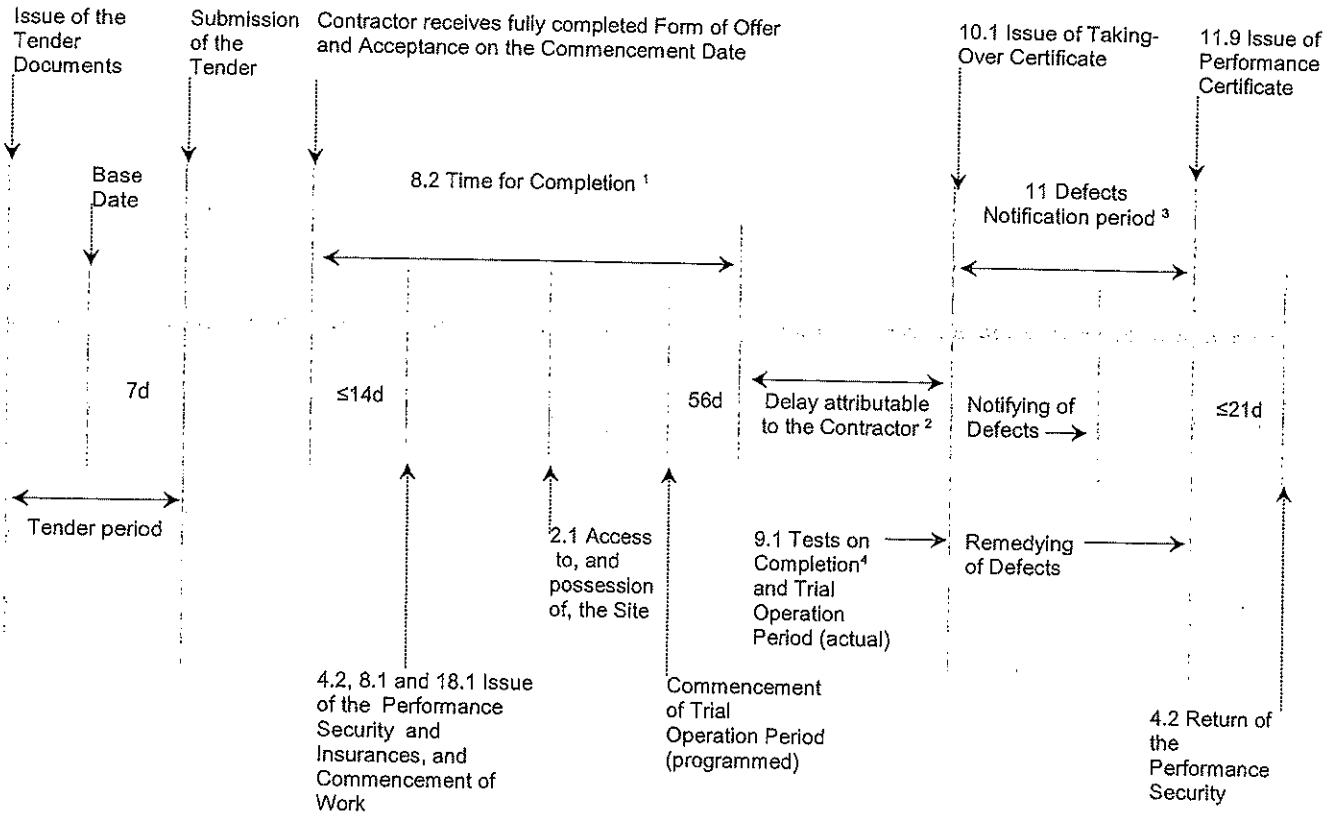
The Contract Data and General Conditions shall have precedence over the Scope of Work, Standardised Specifications and Drawings in the interpretation of any ambiguity or inconsistency between these documents.

The Foreword to the Conditions of Contract (Yellow Book) concludes with the following:

"In order to clarify the sequence of Contract activities, reference may be made to the charts on the next two pages and to the Sub-Clauses listed below (some Sub-Clause numbers are also stated in the charts). The charts are illustrative and must not be taken into consideration in the interpretation of the Conditions of Contract.

1.1.3.1	&	13.7	Base Date
1.1.3.2	&	8.1	Commencement Date
1.1.6.6	&	4.2	Performance Security
1.1.4.7	&	14.3	Interim Payment Certificate
1.1.3.3	&	8.2	Time for Completion (as extended under 8.4)
1.1.3.4	&	9.1	Tests on Completion
1.1.3.5	&	10.1	Taking-Over Certificate
1.1.3.6	&	12.1	Tests after Completion (if any)
1.1.3.7	&	11.1	Defects Notification Period (as extended under 11.3)
1.1.3.8	&	11.9	Performance Certificate
1.1.4.4	&	14.13	Final Payment Certificate"

The charts referred to above are reproduced on the following two pages, amended and amplified where necessary to conform to the Particular Conditions for this Contract. The charts are illustrative and must not be taken into consideration in the interpretation of the Conditions of Contract.



Typical sequence of Principal Events during Contracts for Plant and Design-Build

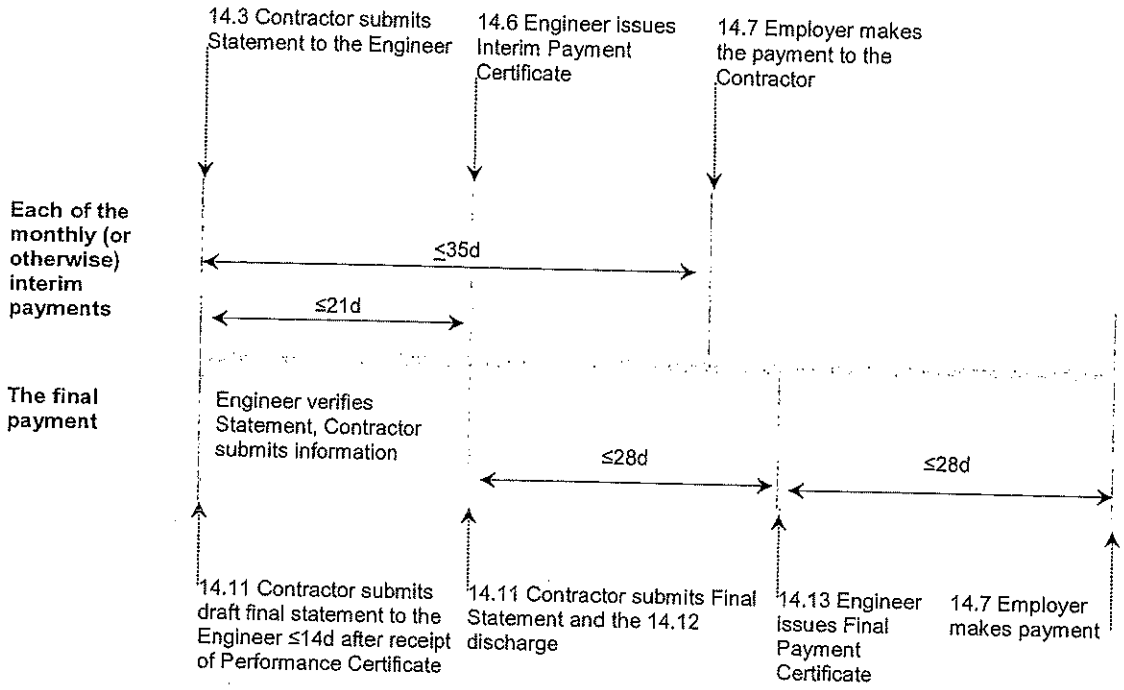
(Modified to suit this Contract)

1. The Time for Completion is stated (in the Appendix to Tender) as a number of days, to which is added any extensions of time under Sub-Clause 8.4.

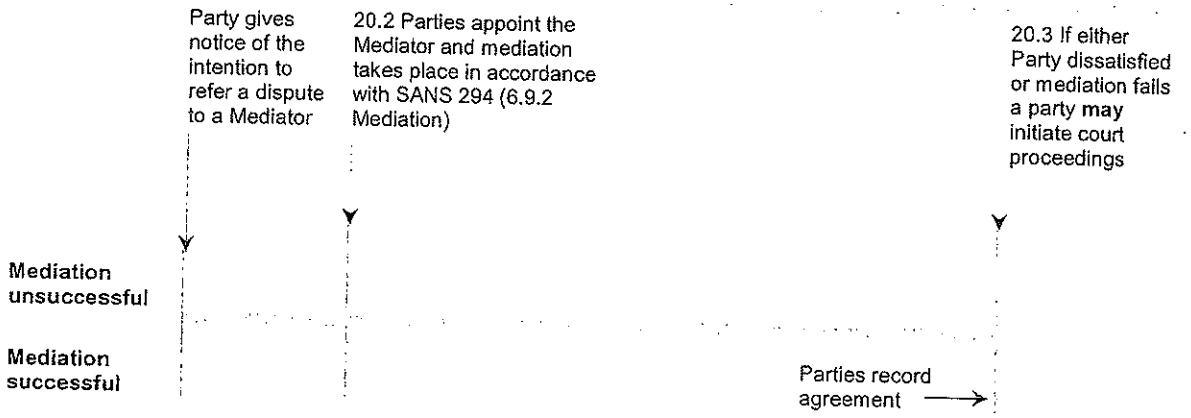
2. In order to indicate the sequence of events, the above diagram is based upon the example of the Contractor failing to comply with Sub-Clause 8.2.

3. The Defects Notification Period is stated (in the Appendix to Tender) as a number of days, to which is added any extensions under Sub-Clause 11.3.

4. Depending on the type of Works, Tests after Completion may also be required, if provided for in the Contract.



Typical Sequence of Payment Events Envisaged in Clause 14
(Modified to suit this Contract)



Typical Sequence of Dispute Events Envisaged in Clause 20
(Modified to suit this Contract)

APPENDIX TO TENDER

Part 1 : Contract Data completed by the Employer

<table>
<tr><th>Item</th><th>Sub-Clause</th><th>Entry</th></tr>
<tr><td>Employer's name and address</td><td>1.1.2.2 & 1.3(b)</td><td>CITY OF CAPE TOWN, represented by the Director: Water and Sanitation, Tower Block, Civic Centre, 12 Hertzog Boulevard, Cape Town, 8001 and/or such other person or persons duly authorised thereto by the Employer in writing; the Employer is referred to in this Contract Document by the terms "Employer", "City of Cape Town" or "Council" as the context provides.</td></tr>
<tr><td>The Engineer is:</td><td>1.1.2.4 & 1.3</td><td>represented by a or an employee duly authorised thereto in writing.</td></tr>
<tr><td>The Engineer's address for receipt of communications is:</td><td></td><td>Tel:
Fax:
e-mail:

Physical Address:

Postal Address:</td></tr>
<tr><td>Time for Completion of the Works</td><td>1.1.3.3 & 8.2</td><td><table><tr><th>Section of the Works</th><th>Time for Completion calculated from Commencement Date</th></tr><tr><td>Section A</td><td>840 days</td></tr><tr><td>Section B</td><td>994 days</td></tr><tr><td>Section C</td><td>1064 days</td></tr></table>The Time for Completion stipulated for each of the Sections in the table above, includes (i) the 14 day period referred to in Sub-Clause 8.1 and (ii) the 56 day trial operation period referred to in Sub-Clause 9.1 of the Particular Conditions.</td></tr>
<tr><td>Defects Notification Period</td><td>1.1.3.7</td><td><table><tr><th>Section of the Works</th><th>Defects Notification Period</th></tr><tr><td>Section A</td><td>365 days</td></tr><tr><td>Section B</td><td>365 days</td></tr><tr><td>Section C</td><td>365 days</td></tr></table></td></tr>
</table>

<table>
<tr><th>Item</th><th>Sub-Clause</th><th>Entry</th></tr>
<tr><td>Special non-working days</td><td>1.1.3.9</td><td>The Special non-working days are:
a) all statutory holidays as declared by National Government, and
b) the year-end builder's holidays of:
i) 15 December 2017 to 5 January 2018 inclusive for the second year of the Contract;
ii) 14 December 2018 to 4 January 2019 inclusive for the third year of the Contract;
iii) 13 December 2019 to 3 January 2020 inclusive for the third year of the Contract; and
iv) 15 December 2020 to 4 January 2021 inclusive for the third year of the Contract
iv) 15 December 2021 to 3 January 2022 inclusive for the third year of the Contract</td></tr>
<tr><td>Sections</td><td>1.1.5.6</td><td><table><tr><th>Section of the Works</th><th>Description</th></tr><tr><td>Section A</td><td rowspan="3">Refer to Clause 4 of C3.1: Description of the Works</td></tr><tr><td>Section B</td></tr><tr><td>Section C</td></tr></table></td></tr>
<tr><td>Electronic transmission systems</td><td>1.3</td><td>Formal signed correspondence may be scan copied in PDF format and issued via email messaging for information (the originals sent as per method of formal communication). All other correspondence may be affected directly by email messaging.</td></tr>
<tr><td>Governing Law</td><td>1.4</td><td>Republic of South Africa</td></tr>
<tr><td>Ruling language</td><td>1.4</td><td>English</td></tr>
<tr><td>Language for communications</td><td>1.4</td><td>English</td></tr>
<tr><td>Time for access to, and possession of, the Site</td><td>2.1*</td><td>The right and possession are not exclusive to the Contractor. The right of access to and possession of the Site (or parts thereof) shall be in terms of Clause 1.7 of C3.5: Management.</td></tr>
<tr><td>Amount of Performance Security</td><td>4.2</td><td>10 % of the Accepted Contract Amount, in South African Rands (ZAR)</td></tr>
<tr><td>Period for notifying unforeseeable errors, faults and defects in the Employer's Requirements</td><td>5.1</td><td>21 days</td></tr>
<tr><td>Time for submission of Contractor's Documents required in terms of Phase 2: Design of the Work Breakdown Schedule specified in Scope of Works, Clause 6 of Part C3.2: Engineering.</td><td>5.2</td><td><table><tr><th>Section of the Works</th><th>Time for submission of Contractor's Documents calculated from Commencement Date</th></tr><tr><td>Section A</td><td>84 days</td></tr><tr><td>Section B</td><td>140 days</td></tr><tr><td>Section C</td><td>105 days</td></tr></table></td></tr>
<tr><td>Normal working hours</td><td>6.5</td><td>07:30 to 17:30 on days other than locally recognised days of rest and special non-working days</td></tr>
<tr><td>Locally recognised days of rest</td><td>6.5</td><td>Sundays</td></tr>
</table>

<table>
<tr><th>Item</th><th>Sub-Clause</th><th>Entry</th></tr>
<tr><td>Time for submission of programme</td><td>8.3</td><td>Within 14 days from the Commencement Date</td></tr>
<tr><td>Amount of penalties for failing to provide the complete set of Contractor's Documents to acceptance by Engineer as specified in C3.2: Engineering</td><td>8.7(b) & 14.15(b)</td><td>R 10 000.00 per day (exclusive of VAT)</td></tr>
<tr><td>Amount of penalties for Sections of the Works as defined in Part C3.5 of the Scope of Work</td><td>8.7(c) & 14.15(b)</td><td><table><tr><th>Section of the Works</th><th>Amount of Penalties (Exclusive of VAT)</th></tr><tr><td>Section A</td><td>R 60 000.00 per day</td></tr><tr><td>Section B</td><td>R 30 000.00 per day</td></tr><tr><td>Section C</td><td>R 40 000.00 per day</td></tr></table></td></tr>
<tr><td>Maximum amount of Delay penalties</td><td>8.7</td><td>A maximum of 10% of the Accepted Contract Amount</td></tr>
<tr><td>Trial Operation Period</td><td>9.1</td><td><table><tr><th>Section of the Works</th><th>Trial Operation Period</th></tr><tr><td>Section A</td><td>56 days</td></tr><tr><td>Section B</td><td>56 days</td></tr><tr><td>Section C</td><td>56 days</td></tr></table></td></tr>
<tr><td>Failure to Pass Tests on Completion</td><td>9.4</td><td><table><tr><th colspan="2">Failure to Pass Tests on Completion for Chemical Consumption for MBR A and B Plants (Sections A and C of Works)</th></tr><tr><th>Percentage below guaranteed figure stated in Technical Data Sheet No. 16 & 70</th><th>Reduction in Contract Amount (Excluding VAT)</th></tr><tr><td>2.5% to 5.0%</td><td>2.5% of Accepted Amount tendered for Schedule M8 (for MBR B) and Schedule M24 (for MBR A) of Bill of Quantities</td></tr><tr><td>5.0% to 7.5%</td><td>10% of Accepted Amount tendered for Schedule M8 (for MBR B) and Schedule M24 (for MBR A) of Bill of Quantities</td></tr><tr><td>More than 7.5%</td><td>Equipment rejected</td></tr></table></td></tr>
</table>

<table>
<tr><th>Item</th><th>Sub-Clause</th><th>Entry</th></tr>
<tr><td>Failure to Pass Tests on Completion</td><td>9.4</td><td>
<table>
<tr><th colspan="2">Failure to Pass Tests on Completion for Power Consumption for MBR A and B Plants (Sections A and C of Works)</th></tr>
<tr><th>Percentage below guaranteed figure stated in Technical Data Sheet No. 16 & 70</th><th>Reduction in Contract Amount (Excluding VAT)</th></tr>
<tr><td>2.5% to 5.0%</td><td>1.5% of Accepted Amount tendered for Schedule M8 (for MBR B) and Schedule M24 (for MBR A) of Bill of Quantities</td></tr>
<tr><td>5.0% to 10.0%</td><td>2.5% of Accepted Amount tendered for Schedule M8 (for MBR B) and Schedule M24 (for MBR A) of Bill of Quantities</td></tr>
<tr><td>More than 10.0%</td><td>Equipment rejected</td></tr>
</table>
</td></tr>
<tr><td>Adjustments for Changes in Cost</td><td>13.8</td><td>The Contract Price shall be subject to Contract Price Adjustment in strict accordance with Sub-Clauses 13.8.1 and 13.8.2 in the Particular Conditions.</td></tr>
<tr><td>Advance payment</td><td>14.2</td><td>In accordance with the Advance Payment Schedule.</td></tr>
<tr><td>Percentage of retention</td><td>14.3(d)*</td><td>10% reducing to 5% upon the issue of Taking-Over Certificate</td></tr>
<tr><td>Limit of Retention Money</td><td>14.3(d)*</td><td>No limit</td></tr>
<tr><td>Minimum amount of Interim Payment Certificates</td><td>14.6</td><td>No minimum</td></tr>
<tr><td>Currency/currencies of payment</td><td>14.15</td><td>South African Rand, as named in that section of the Form of Offer and Acceptance called "Offer"</td></tr>
<tr><td>Periods for submission of insurance:

(a) evidence of insurance</td><td>18.1*</td><td>Within 14 days from the Commencement Date</td></tr>
<tr><td>(b) relevant policies</td><td>18.1</td><td>Within 14 days from the Commencement Date</td></tr>
<tr><td>Maximum amount of deductibles for insurance of the Employer's risks</td><td>18.2(d)</td><td>Not applicable</td></tr>
<tr><td>Minimum amount of third party insurance</td><td>18.3</td><td>R20 000 000,00</td></tr>
<tr><td>Disputes</td><td>20</td><td>Dispute resolution shall be by mediation failing which by court proceedings</td></tr>
<tr><td>Name of entity or official for appointment of Mediator</td><td>20.2*</td><td>President of the South African Institution of Mechanical Engineers</td></tr>
<tr><td>Time for submission of MBR Plant Life Warranty</td><td>24.1</td><td>Within 14 days from the Commencement Date</td></tr>
<tr><td colspan="3">*See Particular Conditions</td></tr>
</table>

APPENDIX TO TENDER (CONTD)

Part 2 : Contract Data completed by the Contractor

Item	Sub-Clause	Entry
Contractor's name is	1.1.2.3 & 1.3(b)	
The Contractor's address for receipt of communication is		Tel: ..... Fax: ..... e-mail:... Address: ....
Contractor's Representative's name	4.3	
Percentage profit/ mark-ups on additional work and provisional sums	13	Based on typical profit/ mark-ups for similar items in the Bill of Quantities.

The Tenderer shall complete the above Part 2 of the Appendix to Tender.

SIGNED ON BEHALF OF TENDERER.....

PARTICULAR CONDITIONS

The Particular Conditions are:

1 General Provisions

Sub-Clause 1.1 Definitions

1.1.1 The Contract

1.1.1.1 is deleted and replaced by:

"**Contract**" means the Form of Offer and Acceptance, Contract Data, these General Conditions, the Employer's Requirements, the Drawings, the Schedules, and the further documents (if any) which are listed in the Form of Offer and Acceptance, and further includes drawings and documents or parts thereof which any of the aforesaid documents incorporate by reference.

1.1.1.2 is deleted and replaced by:

"**Contract Agreement**" means the document called "Form of Offer and Acceptance".

1.1.1.3 is deleted and replaced by:

"**Letter of Acceptance**" means that section of the Form of Offer and Acceptance called "Acceptance".

1.1.1.4 is deleted and replaced by:

"**Letter of Tender**" means that section of the Form of Offer and Acceptance called "Offer".

1.1.1.5 is deleted and replaced by:

"**Employer's Requirements**" means the document called "Scope of Work", as included in the Contract, and any additions and modifications to such document in accordance with the Contract. Such document specifies the purpose, scope, and/or design and/or other technical criteria, for the Works, and includes the Specifications, which may be included in a separate volume (Volumes 2A, 2B, 2C and Volume 3).

1.1.1.6 is deleted and replaced by:

"**Schedules**" means the Returnable Schedules and Documents that are identified in T2.1 to be part of the Contractor's Proposal, and which are completed by the Contractor and submitted with the tender. Such document(s) may include data, lists and schedules of payments and/or prices.

1.1.1.7 is deleted and replaced by:

"**Contractor's Proposal**" means the Schedules, plus any other supporting documentation that the Contractor submitted with the Offer, as included in the Contract.

1.1.1.8 is deleted and replaced by:

"**Tender**" means that section of the Form of Offer and Acceptance called "Offer" and all other documents which the Contractor submitted as Returnable Documents, as included in the Contract.

1.1.1.9 is deleted and replaced by:

"**Appendix to Tender**" means the completed section entitled appendix to tender included in the Contract Data.

Add the following Sub-Clause after Sub-Clause 1.1.1.10:

1.1.1.11
"**Schedules of Quantities**" means the document entitled schedules of quantities contained in Part C2.2 in the Pricing Data.

Add the following to the end of Sub-Clause 1.1.3.9:

"Where a specific number of days is allowed in the Contract for the performance of any act or is stipulated for the extinction of any right or the duration of any event or circumstance, the special non-working days as stated in the Appendix to Tender shall be excluded from the calculation of the number of days concerned.

Add to Sub-Clause 1.1:

"1.1.7 Terms that may be used elsewhere in other portions of the Contract documents

1.1.7.1 "Certificate of Completion" is synonymous with "Taking-over Certificate".

1.1.7.2 "Defects Liability Period" is synonymous with "Defects Notification Period".

1.1.7.3 "Performance Guarantee" is synonymous with ""Performance Security".

1.1.7.4 "Final Approval Certificate" and "Final Certificate" are synonymous with "Performance Certificate".

1.1.7.5 "Contract Price Adjustment Factor" is synonymous with "table of adjustment data" as used in Sub-Clause 13.8 [Adjustments for Changes in Cost].

1.1.7.6 "Site Agent" is synonymous with "Contractor's Representative".

1.1.7.7 "Plant" is synonymous with "Contractor's Equipment" where the context so indicates.

1.1.7.8 "Agreement" is synonymous with "Contract Agreement".

1.1.2 Parties and Persons

1.1.2.3 is deleted and replaced by:

"**Contractor**" means the person(s) named as Contractor in that section of the Form of Offer called "Offer" accepted by the Employer and the legal successors in title to this person(s).

1.1.2.9 is deleted and replaced by:

"**Mediator**" means the person appointed under Sub-Clause 20.2 [*Mediation*] in the Contract Data.

1.1.3 Dates, Tests, Periods and Completion

1.1.3.1 is deleted and replaced by:

"**Base Date**" means the date 7 days prior to the closing date for the submission of the Tender.

1.1.3.2 is deleted and replaced by:

"**Commencement Date**" means the date the Contractor receives the fully completed Form of Offer and Acceptance.

1.1.3.9 is deleted and replaced by"

"**day**" means a calendar day and where a specific number of days is allowed in the Contract for the performance of any act or is stipulated for the extinction of any right or the duration of any event or circumstance, the special non-working days as stated in the Appendix to Tender shall be excluded from the calculation of the . A "week" means 7 days, and "Year" means 365 days.".

1.1.4 Money and Payments

1.1.4.1 is deleted and replaced by:

"**Accepted Contract Amount**" means the amount accepted in that section of the Form of Offer and Acceptance called "Acceptance" for the execution and completion of the Works and the remedying of any defects.

1.1.4.6 is deleted and replaced by:

"**Foreign Currency**" means a currency in which part (if any) of the Contract Price is payable, but not the Local Currency.

Add the following Sub-Clause after Sub-Clause 1.1.4.12:

1.1.4.13 **"Contract Price Adjustment"** means the adjustment to be included in the Contract Price for fluctuations in the Cost of Plant and Materials, Site Installation, General Items (comprising General Requirements and Conditions, Health and Safety, Environmental Management, Sundries, etc.), and Variations in Rates of Exchange, Customs Surcharge and Customs Duty, all as provided for in Sub-Clause 13.8 [*Adjustments for Changes in Cost*] in the Contract Data.

1.1.5 Works and Goods

1.1.5.6 is deleted and replaced by:

"Section" means a part of the Works specified in the Appendix to Tender as a Section (if any), or a part of the Works specified as a Section during the course of the Contract by the Employer (such Section may be an item of Plant).

1.1.6 Other Definitions

Add the following Sub-Clause after Sub-Clause 1.1.6.9:

1.1.6.10 **"Letter of Notification"** means the letter 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 Form of Offer and no rights shall accrue.

Sub-Clause 1.5 Priority of Documents

Deleted and replaced by:

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 Appendix to Tender within the Contract Data,
(c) the Particular Conditions within the Contract Data,
(d) these General Conditions,
(e) the Employer's Requirements,

If an ambiguity or discrepancy is found in the documents, the Engineer shall issue any necessary clarification or instruction.

Sub-Clause 1.6 Contract Agreement

Deleted and replaced by:

The Parties shall enter into a Contract Agreement after the Contractor is called upon to do so by the Employer. The Agreement shall be the fully completed Form of Offer and Acceptance contained in the Contract Document.

Sub-Clause 1.8 Care and Supply of Documents

Delete "six copies" in the second sentence of the first paragraph and replace with "three copies".

2 The Employer

Sub-Clause 2.1 Right of Access to the Site

Delete "Performance Security has been received" *and replace with* "Performance Security and all documentation required to be submitted in terms of Sub-Clause 8.1 in the Particular Conditions has been received and approved by the Engineer".

Add the following to the end of the first sentence in the first paragraph:

(where a date is stated in lieu of a number of days, such date shall be independent of the Commencement Date)

Delete sub-paragraph (b) and replace with:

(b) payment, which shall be included in the Contract Price, as follows:

An item has (or items have) been included in the Schedules of Quantities to cover Cost resulting from a delay in terms of Sub-clause 8.4(e) in the event of the Employer failing to give the Contractor access to, and possession of, the Site within the time (or times) stated in the Appendix to Tender.

The period of delay which may be allowed by the Engineer and paid for under this sub-paragraph shall be agreed margins of latitude to cover delays, normally beyond control of the Employer, for which the Contractor may be compensated by the stipulated amount. These delays shall not be regarded as an instruction to suspend the work in terms of Sub-Clause 8.8 [*Suspension of Work*].

The amount tendered shall include for all additional Cost incurred as a result of such delays, including but not limited to financing; protection, storage and securing of the Works against deterioration, loss or damage; extension of warranties; labour; handling; insurance; overheads; etc.; and profit. Should no delays be experienced in terms of this sub-paragraph, the sum included in the Schedules of Quantities therefor shall be excluded from the Contract Price.

For Contracts subject to Adjustment for Changes in Cost (Sub-Clause 13.8 in the Particular Conditions) the abovementioned amount shall be regarded as "extra over" any Contract Price Adjustment.

Add the following:

The Contractor shall be aware that the Site incorporates wastewater treatment and other infrastructure that is in permanent use by the Employer. The Contractor shall accommodate the Employer and the Employer's Personnel in this regard.

Sub-Clause 2.4 Employer's Financial Arrangements

Delete this Sub-Clause.

Sub-Clause 2.5 Employer's Claims

Insert "or by law" after "Contract" in the first sentence of the first paragraph.

Delete the second sentence of the last paragraph.

3 The Engineer

Sub-Clause 3.1 Engineer's Duties and Authority

Add the following at the end of the third paragraph:

The requirements for the Engineer to obtain the approval of the Employer before exercising a specified authority are:

(a) The issuing of instructions for dealing with fossils and the like in terms of Sub-Clause 4.24.
(b) Giving consent for work to be carried out on days of rest or outside normal working hours in terms of Sub-Clause 6.5 (b).
(c) The approval of a revised programme and supporting report in order to expedite progress in terms of Sub-Clause 8.6.
(d) Agreeing to advance payment in terms of Sub-Clause 14.2, for items not listed in the Advance Payment Schedule.

Sub-Clause 3.2 Delegation by the Engineer

In Sub-Clause 3.2, the first paragraph, after "resident engineer", *insert* "Engineer's Representative".

Sub-Clause 3.4 Replacement of the Engineer

Deleted and replaced by:

The Employer shall have the right to replace the Engineer.

4 The Contractor

Sub-Clause 4.2 Performance Security

Delete the first sentence of the second paragraph and replace with:

The Contractor shall deliver the Performance Security to the Employer within 14 days from the Commencement Date.

Add the following at the end of the second paragraph:

The form of Performance Security 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, as listed in the Annexure attached thereto.

Sub-Clause 4.3 Contractor's Representative

Add the following after "Contract," in the first line of the second paragraph: "as provided for in Part 2 of the Appendix to Tender,".

Delete "prior to the Commencement Date" in the first sentence of the second paragraph and replace with "within 14 days from the Commencement Date".

Sub-Clause 4.4 Subcontractors

Delete "28 days' notice" in sub-paragraph (c) and replace with "14 days' notice".

Sub-Clause 4.5 Nominated Subcontractors

In Sub-Clause 4.5, delete "means a Subcontractor" *and substitute* "means a subcontractor named in the Contract and/or a Subcontractor".

Sub-Clause 4.6 Co-operation

See also any requirements with regard to co-operation in the Scope of Work.

Sub-Clause 4.8 Safety Procedures

Add the following:

The Contractor's attention is also drawn to Sub-Clause 4.22(c) in the Particular Conditions, and to the Health and Safety Specification in the Employer's Requirements.

Sub-Clause 4.9 Quality Assurance

In Sub-Clause 4.9, the first paragraph, delete "The system shall be in accordance with the details stated in the Contract".

Sub-Clause 4.10 Site Data

Add the following:

The "relevant data" referred to in the first sentence of the first paragraph shall be as contained in the Employer's Requirements, if applicable

Sub-Clause 4.12 Unforeseeable Physical Conditions

In Sub-Clause 4.12, the sixth (second to last) paragraph, delete "(ii)" *and substitute* "(b)".

Sub-Clause 4.16 Transport of Goods

Delete "and" after sub-paragraph (b) and add the following to sub-paragraph(c):

In this regard the Contractor's attention is also drawn to Sub-Clause 18.2(f)(i) in the Particular Conditions; and

Add the following sub-paragraph:

(d) the Contractor shall provide all lifting facilities unless specified otherwise in the Detailed Mechanical Specification in the Employer's Requirements.

Sub-Clause 4.17 Contractor's Equipment

Add the following:

The Contractor shall provide all necessary storage facilities on Site.

Sub-Clause 4.18 Protection of the Environment

Add the following:

The Contractor's attention is also drawn to the Environmental Management Specification in the Employer's Requirements.

Sub-Clause 4.19 Electricity, Water and Gas

Delete "and prices" and "and for measuring the quantities consumed" in the second paragraph.

Delete "shall be entitled" and "are given" in the first and third lines of the second paragraph and replace with "may be entitled" and "may be given", respectively.

Delete the last paragraph.

Sub-Clause 4.21 Progress Reports

Deleted and replaced by:

Progress reports (if any) shall be prepared and submitted as specified in the Employer's Requirements.

Sub-Clause 4.22 Security of the Site

In Sub-Clause 4.22, Sub-item (a), delete "the Site" *and substitute* "those parts of the Site where the Permanent Works are being executed or which have been designated by the Engineer for the Contractor's use".

Add the following sub-paragraph:

(c) The Contractor shall in connection with the Works provide and maintain at his own cost all lights, guards, fencing, watching and other appropriate security measures when and where necessary or required by the Engineer or by any competent statutory or other authority for the protection and security of the Works and the Contractor's Equipment, or for the safety and convenience of the public and for the protection of life and property.

Sub-Clause 4.23 Contractor's Operations on Site

Add the following:

The Contractor shall protect and cover up all works as may be required and take all other precautions necessary to avoid causing damage or soiling of new and existing plant, equipment, buildings and structures. This shall inter alia apply when activities such as abrasive blasting, painting, welding, grinding, sealing, lagging and so forth, must be performed on the Site. The Contractor shall, on completion, remove all covers and shall at his cost rectify all soiling and damage to finishes to the satisfaction of the Engineer.

5 Design

Sub-Clause 5.1 General Design Obligations

Add the following at the end of the first paragraph:

In Sub-Clause 5.1, the first paragraph, delete "Unless otherwise stated in the Contract," *and substitute:* "The Contractor shall ensure that all design work to be undertaken by the Contractor or on behalf of the Contractor is undertaken by registered professionals. If required by the Engineer,".

The Contractor's design shall comply with the Employer's outline design in Volume 2A and 2B. Where the Contract is based on an alternative tender offer submitted in terms of F.2.12.1 in Part T1.2 Tender Data 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.

In the third paragraph:

Delete "Upon receiving notice under Sub-Clause 8.1" in the first sentence of the third paragraph and replace with "Subject to the provisions of Sub-Clause 8.1".

Sub-Clause 5.2 Contractor's Documents

In Sub-Clause 5.2, the sixth paragraph, delete Sub-paragraph (a)(iii).

In Sub-Clause 5.2, add the following to the end of the sub-clause: "The Contractor shall submit the Contractor's Documents required in terms of Phase 2: Design of the Work Breakdown Schedule specified in C3.5 of the Scope of Work within the time stated in the Appendix to Tender."

Sub-Clause 5.5 Training

Add the following:

Particular training requirements are specified in the Standard Specification for Mechanical Works in Volume 2A.

6 Staff and Labour

Sub-Clause 6.5 Working Hours

Add the following:

The days of rest referred to in the first line are: Saturdays, Sundays and all gazetted public holidays.

Sub-Clause 6.7 Health and Safety

Delete the second sentence in the first paragraph and delete the second paragraph.

Add the following:

The Contractor's attention is also drawn to the Health and Safety Specification in the Employer's Requirements.

The Employer and the Contractor shall enter into an agreement to complete the work required for the construction of the Works in terms of the provisions of Section 37(2) of the Occupational Health and Safety Act, 85 of 1993 and the Construction Regulations, 2014 promulgated thereunder.

An agreement is included in the Contract Document (Part C1.5 in Agreements and Contract Data) and shall be completed and submitted to the Employer together with a letter of good standing from the Compensation Commissioner (if not insured with a licenced compensation insurer) within fourteen (14) days after the Commencement Date. The Contractor shall ensure that any letter of good standing shall be timeously renewed in order that it remains in full force for the duration of the Contract.

Sub-Clause 6.9 Contractor's Personnel

In Sub-Clause 6.9, after the first sentence, insert "The Contractor shall assign suitable Personnel to each of the Key Personnel Roles identified in the respective Returnable Schedule submitted with the Tender Offer, who shall be dedicated to these roles full-time for the period stated in the schedule where applicable. The personnel proposed in the abovementioned Returnable Schedule shall not be changed without written permission of the Engineer, and such permission will not be granted unless the alternate scores the same or higher than the originally offered key person in terms of the Functionality Criteria prescribed in T1.2: Tender Data.

Sub-Clause 6.10 Records of Contractor's Personnel and Equipment

Add the following:

The Contractor shall also submit the monthly returns as described in the Scope of Work, Part C3.5 Management, Clause 12.

7 Plant, Materials and Workmanship

Sub-Clause 7.3 Inspection

Add the following after the last paragraph:

The Contractor shall ensure that Plant and equipment complies with the specified requirements before arranging for the Engineer's factory inspections. The Contractor shall then make all arrangements for the Engineer to perform the inspections specified in the Detailed Mechanical Specification and/or the Detailed Electrical Specification. The Contractor shall carry all costs related to any inspection, unless otherwise provided for in this Sub-Clause.

An item has been included in the Schedules of Quantities for the Contractor to arrange for the Engineer to perform specified inspections outside the Cape Metropolitan Area, including the Engineer's travelling and associated costs.

The purpose of these inspections is to reduce the risk of non-compliant Plant and equipment being transported to Site. The inspections do not reduce the Contractor's responsibility for complying with the Contract.

Sub-Clause 7.4 Testing

Add the following:

Notwithstanding anything to the contrary contained in this in Sub-Clause, the City of Cape Town will provide all dosing consumables, unless the Detailed Mechanical Specification states otherwise.

8 Commencement, Delays and Suspension

Sub-Clause 8.1 Commencement of Work

Delete the first paragraph.

Delete the words "the design and execution of the Works as soon as is reasonably practicable after" in the second paragraph and replace with "executing the Works within 14 days from".

Add the following:

Notwithstanding the above, the Contractor will not be permitted to commence executing the Works before the following documentation has been submitted and approved by the Engineer:

(a) Performance Security (refer to Sub-Clause 4.2 in the Particular Conditions)
(b) Occupational Health and Safety Agreement (refer to Sub-Clause 6.7 in the Particular Conditions)
(c) Letter of good standing from the Compensation Commissioner, or a licensed compensation insurer (refer to Sub-Clause 6.7 in the Particular Conditions)
(d) Evidence that insurances have been effected (refer to Sub-Clause 18.1 in the Particular Conditions)
(e) Protection of the Environment Declaration (Part C1.6 in Agreements and Contract Data)
(f) Proof of Registration / Letter of Good Standing with the Metal and Engineering Industries Bargaining Council

Furthermore, the Contractor will not be given access to, and possession of the Site, until the following documentation has been submitted and approved by the Engineer:

(g) Contractor's Documents (refer to Part C3.2 Engineering in the Scope of Work).
(h) Health and Safety Plan (refer to the Health and Safety Specification in Volume 2A).
(i) Method Statements (refer to Clause H5.1 in the Environmental Management Specification in Volume 2A).

Sub-Clause 8.2 Time for Completion

Add the following before the full stop at the end of sub-paragraph (a):

"including achieving the passing of the Tests on Completion which incorporate the Trial Operation Period referred to in Sub-Clause 9.1"

Sub-Clause 8.3 Programme

In Sub-Clause 8.3, the first paragraph, delete "within 28 days" and substitute "within the time stated in the Appendix to Tender".

Add the following after the first paragraph:

The Contractor shall incorporate any programming restrictions that may be specified in Sub-Clause 2.1 in the Particular Conditions into the programme.

In Sub-Clause 8.3, add: "The Contractor's Programme will not be accepted as the basis for claims for additional compensation without due reference to all relevant associated factors".

See also any requirements with regard to Programme in the Scope of Work.

Sub-Clause 8.4 Extension of Time for Completion

Add the following:

Regarding sub-paragraph (c), no extension of the Time for Completion 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 exceptionally adverse climatic conditions shall be deemed to exist, and an extension of the Time for Completion shall be granted in accordance with the provisions of this Sub-Clause.

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 adverse 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

Sub-Clause 8.6 Rate of Progress

In Sub-Clause 8.6, the first paragraph, add "and/or" to the end of Item (b), and add:

"(c) actual progress is too slow to complete an aspect of the required work in accordance with the Work Breakdown Schedule and/or in accordance with the Right of Access to Site as specified in C3.5 of the Scope of Work,"

Sub-Clause 8.7 Delay Damages

Delete "Damages" in the title and "damages" in the body of this Sub-Clause and replace with "Penalties" in the title and "penalties" in the body, respectively.

In Sub-Clause 8.7, the first paragraph, delete "If the Contractor fails to comply with Sub-clause 8.2 [Time for Completion]" *and substitute with:*

"If the Contractor fails to:

(a) comply with Sub-clause 8.2 [Time for Completion], and/or

(b) provide the applicable Contractor's Documents (those documents denoted as being subject to penalties) required in terms of Phase 2 of the Work Breakdown Schedule specified in C3.2: Engineering within the time stated in the Appendix to Tender, or if these documents are submitted but are not of a standard that warrants acceptance by the Engineer,".

Insert the following at the end of the second sentence in the first paragraph:

"....or, in the event of termination by the Employer under Sub-Clause 15.2 [*Termination by Employer*], the actual date of termination."

Sub-Clause 8.10 Payment for Plant and Materials in Event of Suspension

Replace sub-paragraph (b) with the following:

(b) the Contractor has provided an advance payment guarantee in accordance with Sub-Clause 14.2 in the Particular Conditions.

9 Tests on Completion

Sub-Clause 9.1 Contractor's Obligations

Add the following before the last paragraph of this Sub-Clause:

The Contractor shall provide all necessary test equipment, materials and tools and competent staff for the performance of the specified performance acceptance tests and shall submit for the approval of the Engineer certified copies of the calibration certificates for the test equipment.

In Sub-Clause 9.1, the third paragraph, Sub-paragraph (b), after "which shall include" *insert* "putting the whole of the Works into operation and".

In Sub-Clause 9.1, the third paragraph, Sub-paragraph (c), after "trial operation" *insert* "(if a trial operation is required in terms of the Appendix to the Tender or the Employer's Requirements and for the period stated therein)".

In Sub-Clause 9.1, insert the following after the fourth paragraph:

"The trial operation will be deemed to have commenced only once the Engineer certifies in writing to the Contractor and the Employer, that the Works have passed the commissioning tests in terms of Sub-item (b). Such certification will be given within 21 days of receipt by the Engineer, of the documentation specified in the Scope of Work to be submitted by the Contractor to demonstrate that the Works have passed the commissioning tests. Further requirements concerning the Contractor's obligations during the trial operation are specified in the Employer's Requirements."

When all tests have been successfully completed to the satisfaction of the Engineer, a Trial Operation Period shall start and shall consist of a continuous period of operation of 56 days free from trouble. During the Trial Operation Period the Contractor shall carry out all necessary servicing and any adjustments required. The Council's site staff will assist the Contractor in operating the Works or Section during this period and at this time the Contractor shall train the Council's operational staff in the starting, operating and stopping of the Works or Section, and the Council's maintenance staff on the maintenance requirements and procedures.

When an extended performance test period is specified, the Trial Operation Period will run concurrently with the first 56 days of the performance acceptance test period.

Before the end of the Trial Operation Period the Contractor shall arrange for an acceptance inspection to be carried out together with the Engineer for the purpose of taking over the Works or Section in terms of Clause 10 [*Employer's Taking Over*].

Sub-Clause 9.4 Failure to Pass Tests on Completion

Add the following:

If the reduction referred to in the final paragraph, based on the extent of the failure, is defined in the Employer's Requirements, minimum acceptable performance criteria shall also be specified.

10 Employer's Taking Over

Sub-Clause 10.1 Taking Over of the Works and Sections

Deleted and replaced by:

Except as stated in Sub-Clause 9.4 [*Failure to Pass Tests on Completion*], the Works or a Section shall be taken over by the Employer when (i) the Works or Section have been completed in accordance with the Contract, including the matters described in Sub-Clause 8.2 [*Time for Completion*] and except as allowed below, and (ii) a Taking-Over Certificate for the Works or Section has been issued in accordance with this Sub-Clause.

At the end of the Trial Operation Period an acceptance inspection, referred to in Sub-Clause 9.1 in the Particular Conditions, shall be done by the Contractor and the Engineer for the purpose of taking over the Works or a Section.

Upon successful (trouble free) completion of the Trial Operation Period the Engineer shall, within 28 days, issue the Taking-Over Certificate to the Contractor, stating the date on which the Works or Section were completed in accordance with the Contract (including provision of the required Installation, Operation and Maintenance Manuals and "as built" drawings in terms of Part C3.2 Engineering in the Scope of Work), except for any minor outstanding work and defects which will not substantially affect the use of the Works or Section for their intended purpose (either until or whilst this work is completed and these defects are remedied).

If the Engineer fails to issue the Taking-Over Certificate within the period of 28 days, and if the Works or Section (as the case may be) are substantially in accordance with the Contract, taking-over shall be deemed to have occurred on the day of the successful completion of the Trial Operational Period, provided that the required Installation, Operation and Maintenance Manuals and "as built" drawings have been submitted to the Engineer, and this date shall be reflected on any Taking-Over Certificate subsequently issued.

Sub-Clause 10.2 Taking Over of Parts of the Works

In Sub-Clause 10.2, the second paragraph, Sub-paragraph (a), delete "it is used" *and substitute* "the trial operation ends".

Sub-Clause 10.3 Interference with Tests on Completion

Delete paragraphs 1 and 2 and replace with:

The Contractor is entitled to an extension of time and costs if prevented from carrying out the Tests on Completion by a cause for which the Employer is responsible.

Delete sub-paragraph (b) and replace with:

(b) payment, which shall be included in the Contract Price, as follows:

An item has been included in the Schedules of Quantities to cover Cost in the event that the Contractor cannot commence testing and commissioning within the contractually agreed period, and the resultant delay in the commencement of the Defects Notification Period, from causes not attributable to the Contractor.

The period of delay which may be allowed by the Engineer and paid for under this sub-paragraph shall be agreed margins of latitude to cover delays, normally beyond control of the Employer, for which the Contractor may be compensated by the stipulated amount. These delays shall not be regarded as an instruction to suspend the work in terms of Sub-Clause 8.8 [*Suspension of Work*].

The amount tendered shall include for all additional Cost incurred by such delays, including financing, storage, labour, handling, protection, insurance, overheads, etc., and profit. Should no delays be experienced in terms of this sub-paragraph, the sum included in the Schedules of Quantities therefor shall be deducted.

For Contracts subject to Adjustment for Changes in Cost (Sub-Clause 13.8 in the Particular Conditions) the abovementioned amount shall be regarded as "extra over" any Contract Price Adjustment.

11 Defects Liability

Sub-Clause 11.1 Completion of Outstanding Work and Remedying Defects

Add the following before the first paragraph:

A Defects Notification Period shall commence on the date stated in the Taking-Over Certificate for the Works or a Section, or the date that taking-over is deemed to have occurred in accordance with Sub-Clause 10.1 in the Particular Conditions (as the case may be).

Sub Clause 11.3 Extension of Defects Notification Period

Delete the first paragraph and replace with:

The Employer shall be entitled subject to Sub-Clause 2.5 [*Employer's Claims*] to an extension of the relevant Defects Notification Period for the Works or a Section if and to the extent that the Works or Section (as the case may be, and after taking-over) cannot be used for the purposes for which they are intended by reason of a defect or damage. However, a Defects Notification Period shall not be extended by more than five years.

13 Variations and Adjustments

Sub-Clause 13.1 Right to Vary

Delete the last sentence in the first paragraph.

Sub-Clause 13.3 Variation Procedure

Delete "and the Schedule of Payments" in the last paragraph.

Sub-Clause 13.5 Provisional Sums

Add the following to the last paragraph:

The number of quotations shall be three (3). Quotations shall include full technical descriptions as well as a breakdown of prices.

Sub-Clause 13.7 Adjustments for Changes in Legislation

Add the following to the first paragraph:

Any increase or decrease in the amount of Value Added Tax inserted in the Schedules of Quantities due to a change in the percentage rates applicable shall be the subject of adjustment under this Sub-Clause.

Sub-Clause 13.8 Adjustments for Changes in Cost

Deleted and replaced by:

13.8.1 **General**

The Accepted Contract Amount shall be deemed to have included amounts to cover the contingency of all other rises and falls in costs not covered by the provisions of this or other Clauses.

If provision has been made in the Appendix to Tender for prices to be subject to adjustment, such adjustments claimed by the Contractor shall be made in accordance with the Sub-Clauses referred to therein.

The following general provisions shall apply in all cases:

(a) The Base Date shall be as defined in Sub-Clause 1.1.3.1 in the Particular Conditions.

(b) Adjustments for changes in cost shall be calculated as if the Works are executed within the time for completion and no additional costs due to any work being executed outside the time for completion shall be payable unless the Engineer allows an extension of time in accordance with Sub-Clause 8.4 [*Extension of Time for Completion*] and Sub-Clause 8.4 in the Particular Conditions.

(c) Claims for adjustments for changes in cost shall be supported by such documentary evidence that may be required by the Engineer. Failure to render this information may result in the rejection of claims for price adjustment.

(d) The value of imported Plant and Materials shall be as defined in Sub-Clause 13.8.2.2.4.

(e) No claims for adjustments for changes in cost will be accepted which are submitted later than 28 days after the date of issue of the Taking-Over Certificate.

13.8.2 **Contract Price Adjustment**

Contract Price Adjustment shall be as defined in Sub-Clause 1.1.4.13 in the Particular Conditions.

13.8.2.1 **Plant and Materials Manufactured in South Africa**

13.8.2.1.1 Permissible Adjustments

Adjustment to the Contract Price for the design, manufacture, painting, testing, supply, delivery, offloading and storage of Plant and Materials manufactured in the Republic of South Africa, shall be allowed only for variations in the cost of labour and material based on the indices published by the

Steel and Engineering Industries Federation of South Africa (SEIFSA) using the method described in Sub-Clause 13.8.2.1.2.

The following SEIFSA tables shall be regarded as relevant to Mechanical and Electrical Works in this Contract:

Table C3	Index of actual labour cost
Table G	Statistics SA - production price index, Mechanical and Electrical Engineering Materials, as applicable
Table E -	**EX** Merchant Steel Price Index, Hot Rolled Sheets
Table Q -	**(A)** Index of stainless steel flat products (excluding imports), Hot rolled steel
Table Q -	**1 (A)** Corrosion resisting steel 3CR12, Hot rolled plate
Table N	Ruling price of certain electrical cable manufacturing materials, Copper rod 7,90 mm

13.8.2.1.2 Method of Price Adjustment

Adjustment of the total values inserted in the Schedules of Quantities for the design, manufacture, painting, testing, supply, delivery, offloading and storage of Plant and Materials manufactured in the Republic of South Africa shall be based on the following:

(a) The estimated proportions (represented by the coefficients "b", "c", "d" and "e" in the formulae in sub-paragraph (b) below) of the total values shall be adjusted on the basis of the increase or decrease between the indices in the relevant tables at the Base Date and these indices at a date 42 days prior to the valuation date, for each month in which the Plant and Materials are contractually delivered to Site, by multiplying the monthly values certified by the relevant Adjustment Factor in the formulae in sub-paragraph (b) below.

(b) the applicable formulae are:

Mechanical Plant and Materials

$$A = a + b\frac{Ln}{Lo} + c\frac{Mn}{Mo} + d\frac{Sn}{So} + e\frac{SSn}{SSo} - 1$$

where

A	=	Adjustment Factor rounded off to the sixth decimal place	
a	=	0.10	Fixed coefficient (non-adjustable portion)
b	=	0.15)	
c	=	0.35)	Coefficients (sum of these coefficients shall be 0,90)
d	=	0.25)	
e	=	0.15)	
Ln	=	Current labour index in Table C3	
Lo	=	Base labour index in Table C3	
Mn	=	Current mechanical engineering materials index in Table G	
Mo	=	Base mechanical engineering materials index in Table G	
Sn	=	Current steel price index in Table E-EX	
So	=	Base steel price index in Table E-EX	
SSn	=	Current stainless steel index type 316 in Table Q-(A)	
SSo	=	Base stainless steel index type 316 in Table Q-(A)	

"Current" indices are those applicable 42 days prior to date of claim, as stated in sub-paragraph (a) above

"Base" indices are those applicable at Base Date, as stated in sub-paragraph (a) above

Electrical Plant and Materials

$$A = a + b\frac{Ln}{Lo} + c\frac{En}{Eo} + d\frac{CRn}{CRo} + e\frac{Cn}{Co} - 1$$

where
A = Adjustment Factor rounded off to the sixth decimal place
a = 0.10 Fixed coefficient (non-adjustable portion)
b = 0.10)
c = 0.30) Coefficients (sum of these coefficients shall be 0,90)
d = 0.20)
e = 0.30)
Ln = Current labour index in Table C3
Lo = Base labour index in Table C3
En = Current electrical engineering materials index in Table G
Eo = Base electrical engineering materials index in Table G
CRn = Current 3CR12 steel index in Table Q -1 (A)
CRo = Base 3CR12 steel index in Table Q -1 (A)
Cn = Current copper rod index in Table N
Co = Base copper rod index in Table N

"Current" indices are those applicable 42 days prior to date of claim, as stated in sub-paragraph (a) above

"Base" indices are those applicable at Base Date, as stated in sub-paragraph (a) above

(c) The value of any Plant and Materials imported from outside South Africa inserted in Schedule 20 and subject to Sub-Clause 13.8.2.2.2(a) shall be deducted from the total values to be adjusted by the SEIFSA Index adjustment. Any Plant and Materials not inserted in Schedule 20 shall be deemed to be manufactured in South Africa for the purposes of Contract Price Adjustment.

13.8.2.2 **Plant and Materials Imported from Outside South Africa**

13.8.2.2.1 Permissible Adjustments

Adjustment to the Contract Price for the design, manufacture, painting, testing, supply, delivery, offloading and storage of any Plant and Materials imported from outside the Republic of South Africa will be permitted **only** in respect of the following variables:

(a) Variations in Rates of Exchange as detailed in Sub-Clause 13.8.2.2.2,

(b) Variations in Customs Surcharge and Customs Duty as detailed in Sub-Clause 13.8.2.2.3, and

(c) Labour and material cost variations in the mechanical and electrical industries of the countries from which the Plant and Materials are imported as detailed in Sub-Clause 13.8.2.2.5.

13.8.2.2.2 Variations in Rates of Exchange

Adjustment for variations in rates of exchange shall be based on the following:

(a) The Tenderer shall have completed Schedule 20 for all imported Plant and Materials intended to be subject to variations in rates of exchange, subject to the following:

i. the value in foreign currency inserted in column (A) shall be subject to Sub-Clause 13.8.2.2.2(e) when recalculating the Rand value,

ii. the rate of exchange inserted in column (B) shall be the closing spot selling rate quoted by Council's main banker, ABSA, on the Base Date, rounded to the second decimal place, subject to sub-paragraph iii. below,

iii. if the rate of exchange inserted by the Tenderer differs from the ABSA rate referred to above, then the ABSA 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, and

iv. if a quotation 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 (b) below.

(b) 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 in Schedule 20.

(c) 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.

(d) Based on the evidence provided in sub-paragraph (c) above, the value in Rand inserted in column (C) of Schedule 20 shall be recalculated using the forward cover rate obtained, and any increase or decrease in the Rand value defined in Sub-Clause 13.8.2.2.4 shall be adjusted accordingly, subject to sub-paragraph (e) below.

(e) 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 Schedule 20, then the value in column (A) shall be used.

13.8.2.2.3 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 in Schedule 20 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 Engineer of any changes which occur.

13.8.2.2.4 Value of Imported Plant and Materials at Base Date

The Rand value of imported Plant and Materials inserted in Schedule 20 (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 Council's main banker, ABSA, on the Base 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)).

13.8.2.2.5 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.

13.8.2.3 **Site Installation and General Items**

For the purpose of this Sub-Clause, General Items (defined below) are included with Site Installation for the sake of convenience, and which otherwise have no relationship with each other.

General Items shall comprise General Requirements and Conditions, Health and Safety, Environmental Management, Sundries, and any other items so described or implied in the Schedules of Quantities to be adjusted under this Sub-Clause.

Adjustment of the total values inserted in the Schedules of Quantities for Site Installation and General Items, shall be based on the following:

(a) No Contract Price Adjustment shall be applied to the total values in respect of providing the Performance Security (Demand Guarantee under URDG 758) and Insurances.

(b) The estimated proportion (represented by the 0.90 coefficient in the formula in sub-paragraph (c) below) of the total values shall be adjusted on the basis of the increase or decrease between SEIFSA **Table C3(A)** Index of actual labour cost (field force) where subsistence allowance is paid, at the Base Date and this index at the valuation date, for each month in which the work is contractually executed, by multiplying the monthly values certified by the Adjustment Factor in the formula in sub-paragraph (c) below.

(c) the applicable formula is:

Site Installation and General Items

$$A = 0.10 + 0.90 \frac{Ln}{Lo} - 1$$

where
A = Adjustment Factor rounded off to the sixth decimal place
0.10 = Fixed coefficient (non-adjustable portion)
0.90 = Coefficient
Ln = Current labour index in Table C3(A)
Lo = Base labour index in Table C3(A)

"Current" index is that applicable at the valuation date, as stated in sub-paragraph (b) above

"Base" index is that applicable at Base Date, as stated in sub-paragraph (b) above

14 Contract Price and Payment

Sub-Clause 14.1 The Contract Price

Delete sub-paragraphs (c) and (d) and replace with:

(c) prices entered in the Schedules of Quantities, together with any schedule of rates for which provision is made in a Schedule, will be used for calculating the value of completed works for the purpose of interim payments or for determining the value of changes, omissions and additions for variation instructions when in the opinion of the Engineer such prices are applicable.

(d) the amounts of work and material given in the Schedules of Quantities are not to be considered as limiting or extending the amount of work to be done or material to be supplied by the Contractor.

(e) the percentage completion of the amounts of work and materials given in the Schedules of Quantities shall be determined by the Engineer for interim payment certificates when checking the Contractor's Statement referred to in Sub-Clause 14.3 [*Application for Interim Payment Certificates*] and Sub-Clause 14.6 [*Issue of Interim Payment Certificates*].

Sub-Clause 14.2 Advance Payment

Deleted and replaced by:

Subject to sub-paragraphs (a) and (e) of Sub-Clause 14.3 in the Particular Conditions, 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 Sub-Clause.

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

The Engineer shall issue an Interim Payment Certificate for, or including, advance payment after receiving a Statement under Sub-Clause 14.3 [*Application for Interim Payment Certificates*] 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 Sub-Clause and elsewhere by reference to this Sub-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.

Sub-Clause 14.3 Application for Interim Payment Certificates

Delete "in six copies" in the first line of the first paragraph.

Delete "supporting documents" in the fourth line of the first paragraph and replace with "receipts and supporting documents".

Delete sub-paragraphs (a) to (g) and replace with:

(a) the estimated contract value (including Variations, but excluding items described in sub-paragraphs (b) to (f) below) of any approved Plant and Materials which have been delivered to Site but have not yet been installed, provided the conditions for delivery and storage specified in the Employer's Requirements are followed to the complete satisfaction of the Engineer;

except for the provisions of sub-paragraph (e) below, no such payment will be made for Plant and Materials stored elsewhere, unless in the event of suspension in terms of Sub-Clause 8.10 [*Payment for Plant and Materials in Event of Suspension*] and Sub-Clause 8.10 in the Particular Conditions, in which case sub-paragraph (e) below will also apply to such Plant and Materials;

(b) the estimated contract value (including Variations, but excluding items described in sub-paragraphs (c) to (f) below) of any Site installation and General items, Health and Safety, Environmental Management and Sundry work executed, including the value of any other items so described or implied in the Schedules of Quantities to be included with this work, as determined from time to time until the commencement of the Defects Notification Period;

(c) any amounts to be added and deducted for changes in legislation and changes in Cost, in accordance with Sub-Clause 13.7 [*Adjustments for Changes in Legislation*] and Sub-Clauses 13.7 and 13.8 in the Particular Conditions;

(d) any amount to be deducted for retention, calculated by applying the percentage of retention stated in the Appendix to Tender to the total of the above amounts, until the amount so retained by the Employer reaches the limit of Retention Money (if any) stated in the Appendix to Tender;

(e) the estimated value of Plant and Materials:

(i) 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;

(ii) 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 Sub-Clause 14.2 in the Particular Conditions and in the Advance Payment Schedule at the end of this Part C1.2 Contract Data;

(f) any other additions or deductions (including fines or penalties) which have become due under the Contract or otherwise, including those under Sub-Clause 20.1 [*Contractor's Claims*] and Sub-Clauses 20.2 and 20.3 in the Particular Conditions;

(g) the deduction of amounts certified in all previous Payment Certificates; and

(h) any sales tax or value added tax which the law requires the Employer to pay to the Contractor.

Sub-Clause 14.4 Schedule of Payments

Delete this Sub-Clause.

Sub-Clause 14.5 Plant and Materials intended for the Works

Deleted and replaced by:

Interim Payment Certificates shall include, under sub-paragraphs (a) and/or (e) of Sub-Clause 14.3 in the Particular Conditions, the amount(s) for Plant and Materials to be incorporated into the Permanent Works and which have (i) been delivered to Site and/or (ii) not yet been delivered to Site and for which an advance payment guarantee has been provided in accordance with Sub-Clause 14.2 in the Particular Conditions.

Sub-Clause 14.6 Issue of Interim Payment Certificates

Delete "within 28 days" in the second sentence of the first paragraph and replace with "within 21 days".

Sub-Clause 14.7 Payment

Delete sub-paragraphs (a) to (c) and replace with:

(a) the amount certified in each Interim Payment Certificate within 35 days after the Engineer receives the Statement and supporting documents; and

(b) the amount certified in the Final Payment Certificate within 28 days after the Employer receives this Payment Certificate.

Add the following paragraph:

Notwithstanding the above, the Engineer shall be empowered to withhold the delivery of a payment certificate until the Contractor has complied with his obligations to submit the monthly returns in terms of Sub-Clause 6.10 in the Particular Conditions and as described in the Employer's Requirements.

Sub-Clause 14.9 Payment of Retention Money

Delete "the first half of the Retention Money shall be certified by the Engineer for payment to the Contractor" in the first sentence of the first paragraph and replace with "the Retention Money shall be reduced to 5% as stated in the Appendix to Tender."

Delete "the first half of" in the second sentence of the first paragraph.

Delete "certified and paid" in the second sentence of the first paragraph and replace with "reduced to 5%".

Delete "Promptly" in the first sentence of the second paragraph and replace with "Within 14 days".

Delete "percentage of the second half" in the second sentence of the second paragraph and replace with "balance".

Delete "certified and paid promptly" in the second sentence of the second paragraph and replace with "certified by the Engineer for payment to the Contractor".

Delete the last paragraph and replace with:

The relevant contract value for each Section shall be determined by the Engineer, based on the Schedules of Quantities and any variations and adjustments thereto.

Sub-Clause 14.10 Statement at Completion

Delete "Within 84 days" in the first paragraph and replace with "Within 14 days".

Delete "six copies of" in the first paragraph.

Sub-Clause 14.11 Application for Final Payment Certificate

Delete "Within 56 days" in the first paragraph and replace with "Within 14 days".

Delete "six copies of" in the first paragraph.

Sub-Clause 14.15 Currencies of Payment

Delete "damages" in sub-paragraph (b) and replace with "penalties".

Add the following new Sub-Clause:

Sub-Clause 14.16 Tax Invoices

Section 20(1) of the Value Added Tax Act, 89 of 1991 requires that a supplier (person supplying goods or services) who is registered as a VAT vendor issue to the recipient a tax invoice within 21 days of the date of a supply whether requested or not.

The Contractor shall provide a tax invoice (VAT invoice) which shall be included with each Payment Certificate and a Final Payment Certificate delivered to the Employer by the Engineer in terms of Sub-Clause 14.6 [*Issue of Interim Payment Certificates*] and Sub-Clause 14.6 in the Particular Conditions, and Sub-Clause 14.13 [*Issue of Final Payment Certificate*], respectively. Failure by the Contractor to provide a tax invoice (VAT invoice) timeously may delay payment by the Employer and no interest shall accrue.
Tax invoices shall be dated as at the date of delivery of the Contractor's Statement to the Engineer.

15 Termination by Employer

Sub-Clause 15.2 Termination by Employer

Delete "or" at the end of sub-paragraph (e), replace the full stop with a comma after "termination" at the end of sub-paragraph (f), and add the following sub-paragraphs:

(g) fails to provide the required insurances within the prescribed time,

(h) has committed a corrupt or fraudulent act during the tender process or the execution of the Contract, or

(i) has benefitted from an official or other role player committing any corrupt or fraudulent act during the tender process or in the execution of the Contract.

Delete "(e) or (f)" in the second sentence of the second paragraph and replace with "(e), (f), (h) or (i)".

16 Suspension and Termination by Contractor

Sub-Clause 16.1 Contractor's Entitlement to Suspend Work

Delete "Sub-Clause 2.4 [*Employer's Financial Arrangements*] or" in the first paragraph.

Sub-Clause 16.2 Termination by Contractor

Delete the content of sub-paragraph (a) and replace with "sub-paragraph deleted,".

17 Risk and Responsibility

Sub-Clause 14.3 Employer's Risks

Delete sub-paragraphs (a) to (h) and replace with:

(a) war, invasion, act of foreign enemies, hostilities or warlike operations (whether war be declared or not) or civil war,

(b) insurrection, rebellion or revolution,

(c) mutiny, military rising, military or usurped power, martial law or state of siege, or any other event or cause which determines the proclamation or maintenance of martial law or state of siege,

(d) any event which, at the Base Date, is defined as a risk in terms of insurance offered by the South African Special Risks Insurance Association,

(e) any occurrence for which a fund has been established in terms of the War Damage Insurance and Compensation Act, as amended,

(f) the impact of meteorites,

(g) pressure waves caused by aircraft or other aerial devices travelling at sonic or supersonic speeds,

(h) ionising radiation or contamination by radioactivity from any nuclear fuel or from any nuclear waste from the combustion of nuclear fuels,

(i) the use of or occupation by the Employer or the Employer's Personnel or the Employer's agents or other contractors (not employed by the Contractor) of any part of the Works,

(j) the design, specification or instruction of the Engineer, Employer or any of their employees or agents, or defects in the materials supplied by the Employer for incorporation in the Works,

(k) the confiscation, commandeering, nationalisation, requisition or destruction of or damage to property by an order of government, or any public or local authority, and

(l) the fact that the value of materials, as supplied by the Employer for incorporation in the Works, exceeds the value thereof as specified by or on behalf of the Employer at the time of delivery thereof by the Employer.

Sub-Clause 14.4 Consequences of Employer's Risks

Delete "(f) and (g)" in the second line of sub-paragraph (b) and replace with "(i) and (j)".

18 Insurance

Sub-Clause 18.1 General Requirements for Insurances

Add the following:

The evidence that the insurances have been effected in terms of sub-paragraph (a) above, shall be in the form of an insurance broker's warranty worded precisely as given in Part C1.7 Insurance Broker's Warranty.

The Contractor shall be liable for the payment of the deductibles in respect of each claim settlement in terms of the policies effected by the Contractor.

In respect of Subcontractors, the Contractor shall be deemed to have complied with the provisions of the requirements relating to insurance by ensuring that the Subcontractors have effected such insurance.

Save as otherwise provided in the Contract, nothing herein contained shall oblige the Contractor to effect any insurance which is not generally obtainable from a registered insurer in South Africa.

The insurances shall be effected with an insurance company registered in South Africa and the terms thereof shall be subject to approval by the Employer, which approval shall not be unreasonably withheld.

If required, the Contractor shall provide proof to the Engineer that the Contractor is in good standing with respect to duties, taxes, levies and contributions required in terms of legislation applicable to the work in this Contract.

Sub-Clause 18.2 Insurance for Works and Contractor's Equipment

Delete "Sub-Clause 14.5 [*Plant and Materials intended for the Works*]" in sub-paragraph (e) (iv) and replace with "sub-paragraphs (a) and (e) of Sub-Clause 14.3 in the Particular Conditions".

Add the following sub-paragraph:

(f) which are to be effected and maintained by the Contractor and endorsed to note the interests of the Employer are:

(i) transit insurance, including whilst in temporary storage and intended for incorporation in the Contract en route to Site,

(ii) professional indemnity insurance; the Contractor shall ensure that all design work to be undertaken by the Contractor or on behalf of the Contractor is undertaken by registered professionals who carry adequate professional indemnity insurance to cover their liability for professional negligence. Proof of such insurance shall be submitted to the Engineer on demand, and

(iii) 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, plant 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.

Sub-clause 18.3 Insurance against Injury to Persons and Damage to Property

Add the following sub-paragraph:

(e) shall include a cross-liability clause such that the insurance shall apply to the Contractor and to the Employer as separate insured parties.

Sub-Clause 18.4 Insurance of Contractor's Personnel

Add the following:

The insurance shall be in terms of the provisions of the Compensation for Occupational Injuries and Diseases Act, 130 of 1993.

Add the following new Sub-Clause:

Sub-Clause 18.5 Special Risks Insurance

The Contractor shall effect and maintain the following insurance in the joint names of the Employer and the Contractor:

A Coupon Policy for Special Risks insurance issued by the South African Special Risks Insurance Association.

Sub-Clause 19.7 Release from Performance under the Law

Add the following Sub-Clause after Sub-Clause 19.7:

19.8 Death of Sole Proprietor/Member

Further to Sub-Clause 19.7 [*Release from Performance under the Law*], 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 Sub-Clause 15.3 [*Valuation at Date of Termination*], in full and final settlement thereof.

20 Claims, Disputes and Arbitration

Delete Sub-Clauses 20.2 to 20.8 inclusive and replace with the following new Sub-Clauses:

Sub-Clause 20.2 Mediation

If the Appendix to Tender provides for dispute resolution by mediation, any dispute or difference which arises between the Contractor and the Employer out of or in connection with the Contract, including any determination or other decision of the Employer, shall be referred by either Party to a mediator for mediation in accordance with the provisions of SANS 294, *Construction Procurement Processes, Methods and Procedures* (6.9.2 Mediation, reproduced below, with "court proceedings" added in parenthesis). Where the parties fail to agree on a mediator, the mediator shall be appointed by the entity or official named in the Appendix to Tender.

"6.9.2 Mediation

6.9.2.1 The mediator shall be selected by agreement between the parties or, failing such agreement, by a mutually agreed upon person. Mediation shall be conducted without legal representation with the costs being borne equally by the parties.

6.9.2.2 The mediator shall convene a hearing of the parties and may hold separate discussions with any party. The mediator shall assist the parties in reaching a mutually acceptable settlement of their differences through means of reconciliation, interpretation, clarification, suggestion and advice. The parties shall record such agreement in writing and thereafter they shall be bound by such agreement.

6.9.2.3 The mediator shall be authorized to end the mediation process whenever, in his opinion, further efforts at mediation would not contribute to a resolution of the dispute between the parties.

6.9.2.4 If either party is dissatisfied with the opinion expressed by the mediator or should the mediation fail, then such party may require that the dispute be settled in terms of the contract (court proceedings)."

Sub-Clause 20.3 Court Proceedings

If the Appendix to Tender provides for the court proceedings to finally resolve disputes, disputes shall be determined by court proceedings in a South African court of law.

Add the following new Clauses after Clause 20:

"Clause 21 Contractor to provide everything necessary

The Contractor is to provide all labour, material, workmanship, machinery, and everything which is or may be necessary in and for the execution and entire completion of the Contract in accordance with the Conditions of Contract and Employer's Requirements.

Clause 22 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 Engineer.

Clause 23 Employer's Requirements referred to in Conditions of Contract

The matters referred to in some or all of the following Sub-Clauses in the General Conditions may be included in the Employer's Requirements and are not repeated in the Contract Data, unless otherwise indicated:

1.8	Number of copies of Contractor's Documents*
1.13	Permissions being obtained by the Employer
2.1	Phased possession of foundations, structures, plant or means of access*
4.1	Intended purposes for which the Works are required
4.6	Other contractors (and others) on the Site
4.7	Setting-out points, lines and levels of reference
4.14	Third parties
4.18	Environmental constraints*
4.19	Electricity, water, gas and other services available on the Site*
4.20	Employer's Equipment and free-issue material
5.1	Criteria for design personnel*
5.2	Contractor's Documents required, and whether for approval**
5.4	Technical standards and building regulations
5.5	Operational training for the Employer's Personnel*
5.6	As-built drawings and other records of the Works
5.7	Operation and maintenance manuals
6.6	Facilities for Personnel
4.2	Samples
4.4	Testing during manufacture and/or construction*
9.1	Tests on Completion*
9.4	Failure to pass Tests on Completion*
12.1	Tests after Completion
12.4	Failure to pass Tests after Completion
13.5	Provisional Sums*

*These Sub-Clauses are/are also referred to in the Contract Data.
**See also Part C3.2 Engineering in Scope of Work

Clause 24 Membrane Bioreactor (MBR) Plant Equipment

The Contractor shall warrant and guarantee performance of the entire offered MBR plant treatment system and associated equipment provided in accordance with Part C3: Scope of Work and MBR Plant Specifications.

Sub-Clause 24.1 MBR Plant Life Warranty

The Contractor shall provide/ deliver the MBR Plant Life Warranty (i.e. 2 years full replacement and a minimum pro-rated warranty for eight 8 years, resulting in a total of ten 10 years) to the Employer within 14 days from the Commencement Date, and shall be in the name of the Employer.

The MBR Plant Life Warranty shall warrant that the MBR plant equipment provided by the Contractor shall continue to perform as designed and produce water quality in compliance with the Specification. Failure shall be reached when the membrane(s) and associated equipment no longer produce permeate to the standards specified and/or do not pass the guaranteed design and/ or operational flux rates during the specified warranty period. If the MBR plant system does not achieve the required design flow or water quality specified, the Contractor agrees to replace or repair the membrane(s) and its associated equipment in accordance with the Specifications at no cost to the Employer.

ADVANCE PAYMENT SCHEDULE

This Advance Payment Schedule is to be read in conjunction with Sub-Clauses 14.2 and 14.3 (sub-paragraphs (a) and (e)) in the Particular Conditions. 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:**
Nil	MBR Fine Screening and associated equipment (including odour control system)
Nil	Screenings conveyor and press
Nil	Ultra-Filtration Membranes to be provided in the membrane bioreactor (MBR) process
Nil	Permeate/Backpulse pumps
Nil	Blowers
Nil	UV Equipment
Nil	Variable frequency drives (VFDs) equipment

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, and in respect of condition 5) below. 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.
5) In the event of suspension in terms of Sub-Clause 8.10 in the General and Particular Conditions, as referred to in sub-paragraph (a) in Sub-Clause 14.3 in the Particular Conditions, the Employer shall also permit advance payment for Plant and Materials which have not been delivered to Site, subject also to the terms of Sub-Clause 14.2 in the Particular Conditions.

CITY OF CAPE TOWN

WATER AND SANITATION

CONTRACT NO. 178Q/2016/17

DESIGN – BUILD OF MECHANICAL AND ELECTRICAL WORKS FOR THE CONSTRUCTION OF AN MBR PLANT AND BOTTLENECK ALLEVIATION AT ZANDVLIET WASTEWATER TREATMENT WORKS

C1.3 Form of Performance Guarantee

PERFORMANCE GUARANTEE

For use with the General Conditions of Contract for Plant and Design-Build for Electrical and Mechanical Works and for Building and Engineering Works Designed by the Contractor, First Edition, 1999 (Yellow Book) published by the International Federation of Consulting Engineers (FIDIC).

GUARANTOR DETAILS AND DEFINITIONS

"Guarantor" means: .....

"Physical address: .....

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

"Contractor" means: .....

"Engineer" means: .....

"Works" means: Contract No. 178Q/2016/17: Design – Build of Mechanical and Electrical works for the Construction of an MBR Plant and Bottleneck Alleviation at Zandvliet Wastewater Treatment Works

"Site" means: The site as defined in Sub-Clause 1.1.6.7 of the General Conditions of Contract.

"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 Engineer of the Performance Certificate.

CONTRACT DETAILS

Engineer issues: Interim Payment Certificates, Final Payment Certificate and the Performance Certificate 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 Engineer and/or the Employer shall advise the Guarantor in writing of the date on which the Performance Certificate 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 Engineer in an Interim or Final Payment Certificate has not been made in terms of the Contract and failing such payment within seven (7) calendar days, the Employer intends to call upon the Guarantor to make payment in terms of 4.2;

4.2 A first written demand issued by the Employer to the Guarantor at the Guarantor's physical address with a copy to the Contractor stating that a period of seven (7) 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 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.

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

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

9. Payment by the Guarantor in terms of 5 will only be made against the return of the original Performance Guarantee by the Employer.

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

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

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

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

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

Signed at .....

Date .....

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

Capacity .....

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

Capacity .....

Witness signatory (1) .....

Witness signatory (2) .....

CITY OF CAPE TOWN

WATER AND SANITATION

CONTRACT NO. 178Q/2016/17

DESIGN – BUILD OF MECHANICAL AND ELECTRICAL WORKS FOR THE CONSTRUCTION OF AN MBR PLANT AND BOTTLENECK ALLEVIATION AT ZANDVLIET WASTEWATER TREATMENT WORKS

ANNEXURE

LIST OF APPROVED FINANCIAL INSTITUTIONS

The following financial institutions are currently (as at 8th March 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
Deutsche Bank AG
HSBC Bank plc.
JP Morgan Chase Bank
Societe Generale
Standard Chartered Bank

Insurance companies:
ABSA Insurance
AIG South Africa
Coface s.a.
Compass Insurance Co.
Constantia Insurance Co.
Credit Guarantee Insurance Co.
Guardrisk Insurance Co.
Hollard Insurance Company Ltd.
Home Loan Guarantee Co.
Infiniti Insurance Limited
Lombard Insurance
Mutual & Federal Insurance Co.
New National Assurance Co.
Regent Insurance Co.
Renasa Insurance Company Ltd.
Santam Limited
Zurich Insurance Co.

C1.4 Form of Advance Payment Guarantee

ADVANCE PAYMENT GUARANTEE

For use with the General Conditions of Contract for Plant and Design-Build for Electrical and Mechanical Works and for Building and Engineering Works Designed by the Contractor, First Edition, 1999 (Yellow Book) published by the International Federation of Consulting Engineers (FIDIC).

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

"Contractor" means: .....

"Engineer" means: .....

"Works" means: Contract No. 178Q/2016/17: Design-Build of Mechanical and Electrical Works for the Construction of an MBR Plant and Bottleneck Alleviation at Zandvliet Wastewater Treatment Works

"Site" means: The site as defined in Sub-Clause 1.1.6.7 of the General Conditions of Contract.

"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 Engineer as having been built into the Permanent Works.

CONTRACT DETAILS

Engineer 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 Engineer in an Interim or Final Payment Certificate has not been made in terms of the Contract and failing such payment within seven (7) calendar days, the Employer intends to call upon the Guarantor to make payment in terms of 4.2;

4.2 A first written demand issued by the Employer to the Guarantor at the Guarantor's physical address with a copy to the Contractor stating that a period of seven (7) 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.

4. 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.

8. Payment by the Guarantor in terms of 5 will only be made against the return of the original Advance Payment Guarantee by the Employer.

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, whereafter 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 Advance Payment 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 Plant and Design-Build for Electrical and Mechanical Works and for Building and Engineering Works Designed by the Contractor, First Edition, 1999 (Yellow Book) published by the International Federation of Consulting Engineers (FIDIC).

Employer The City of Cape Town, Water and Sanitation

Contractor .....

Works "Works" means: Contract No. 178Q/2016/17: Design-Build of Mechanical and Electrical Works for the Construction of an MBR Plant and Bottleneck Alleviation at Zandvliet Wastewater Treatment Works

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:

Schedule 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 Engineer

CITY OF CAPE TOWN

WATER AND SANITATION

CONTRACT NO. 178Q/2016/17

DESIGN – BUILD OF MECHANICAL AND ELECTRICAL WORKS FOR THE CONSTRUCTION OF AN MBR PLANT AND BOTTLENECK ALLEVIATION AT ZANDVLIET WASTEWATER TREATMENT WORKS WORKS

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: N/A

OR Compensation Insurer:

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 appended Occupational Health and Safety Conditions and undertake to comply therewith at all times.

I hereby also undertake to comply with the Occupational Health and Safety Specification and Plan.

Signed at CENTURY CITY on the 14TH day of JUNE 2019

Witness Mandatary

Signed at CENTURY CITY on the 14 day of JUNE 2019

Witness for and on behalf of City of Cape Town

OCCUPATIONAL HEALTH AND SAFETY CONDITIONS

1. The Chief Executive Officer of the Contractor shall assume the responsibility in terms of Section 16(1) of the Occupational Health and Safety Act (as amended). Should the Contractor assign any duty in terms of Section 16(2), a copy of such assignment shall immediately be provided to the representative of the Employer as defined in the Contract.

2. All work performed on the Employer's premises shall be performed under the supervision of the construction supervisor who understand the hazards associated with any work that the Contractor performs on the site in terms of Construction Regulations, 2014.

3. The Contractor shall appoint a Competent Person who shall be trained on any occupational health and safety aspect pertaining to them or to the work that is to be performed.

4. The Contractor shall ensure that he familiarises himself with the requirements of the Occupational Health and Safety Act and that he, his employees, and any sub-contractors, comply with them.

5. Discipline in the interests of occupational health and safety shall be strictly enforced.

6. Personal protective equipment shall be issued by the Contractor as required and shall be worn at all times where necessary.

4. Written safe work procedures and appropriate precautionary measures shall be available and enforced, and all employees shall be made conversant with the contents of these practices.

8. No substandard equipment/machinery/articles or substances shall be used on the site.

9. All incidents referred to in terms of Section 24 of the Occupational Health and Safety Act shall be reported by the Contractor to the Department of Labour and the Employer.

10 The Employer hereby obtains an interest in the issue of any formal inquiry conducted in terms of Section 32 of the Occupational Health and Safety Act and into any incident involving a Contractor and/or his employees and/or his sub-contractor/s.

11. No use shall be made of any of the Employer's machinery/plant/equipment/substance/personal protective equipment or any other article without prior arrangement and written approval.

12. No alcohol or any other intoxicating substance shall be allowed on the site. Any person suspected of being under the influence of alcohol or any other intoxicating substance shall not be permitted access to, or allowed to remain on the site.

13. Prior to commencement of any work, verified copies of all documents mentioned in the agreement, must be presented to the Employer.

14. The Contractor shall prepare and maintain a Health and Safety File in respect of the project, which shall be available for inspection on Site at all times and handed over to the Employer on Final Completion of the project.

CITY OF CAPE TOWN

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DESIGN – BUILD OF MECHANICAL AND ELECTRICAL WORKS FOR THE CONSTRUCTION OF AN MBR PLANT AND BOTTLENECK ALLEVIATION AT ZANDVLIET WASTEWATER TREATMENT WORKS

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.: 178Q/2016/17

CONTRACT TITLE: **DESIGN – BUILD OF MECHANICAL AND ELECTRICAL WORKS FOR THE CONSTRUCTION OF AN MBR PLANT AND BOTTLENECK ALLEVIATION AT ZANDVLIET WASTEWATER TREATMENT WORKS**

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

Signed ... . Date 14/6/2019
CONTRAC TOR

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
8001

Dear Sir

CONTRACT NO.: 178Q/2016/17

CONTRACT TITLE: DESIGN – BUILD OF MECHANICAL AND ELECTRICAL WORKS FOR THE CONSTRUCTION OF AN MBR PLANT AND BOTTLENECK ALLEVIATION AT ZANDVLIET WASTEWATER TREATMENT WORKS

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: _____

CITY OF CAPE TOWN

WATER AND SANITATION

CONTRACT NO. 178Q/2016/17

DESIGN – BUILD OF MECHANICAL AND ELECTRICAL WORKS FOR THE CONSTRUCTION OF AN MBR PLANT AND BOTTLENECK ALLEVIATION AT ZANDVLIET WASTEWATER TREATMENT WORKS

Part C2: Pricing Data

Pages

C2.1 Pricing Assumptions ..... 151 – 153

C2.2 Schedules of Quantities ..... 154 – 371

C2.3 Schedule of Rates for Electrical Variations 372

C2.1 Pricing Assumptions

PREAMBLE

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 Schedules of Quantities contain only brief descriptions to identify the salient items required and the Tenderer is referred to the Scope of Work and drawings for the full requirements.

2. The prices and rates to be inserted in the Schedules 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.

3. A price or rate is to be entered against each item in the Schedules of Quantities, whether the quantities are stated or not. An item against which no price or a nil rate is entered will be considered to be covered by the other prices or rates in the Schedules of Quantities, i.e. an item against which no price is entered will be considered to have a price or rate of R0,00.

4. The Tenderer must price and extend each item, total each page and carry the total of each section in the Bill of Quantities to the Summary page.

5. Where an item(s) has been provided for the tenderer to price any further work considered necessary by the tenderer, the tenderer must provide full details of what has been allowed for under that item(s). Where such item(s) are not priced, it will be held that the priced items adequately cover the cost of carrying out the required work.

6. Descriptions in the Bill of Quantities are abbreviated and must be read in conjunction with the measurement and payment clauses below and the applicable Specifications.

7. Where Provisional sums are provided for items in the Bill of Quantities, the Employer reserves the right, during the execution of the Works, to adjust the stated amounts upwards or downwards according to the work actually done under the item, or the item may be omitted altogether, without affecting the validity of the Contract. The Tenderer shall not delete or amend any of the sums inserted in the "Amount" column of the Bill of Quantities and in the Summary of the Bill of Quantities unless ordered or authorized in writing by the Employer before closure of tenders.

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 Schedules of Quantities are metric units, as well as the following:

No.	=	number
Item/Sum	=	lump sum
Prov Sum	=	Provisional sum
%	=	percentage
Days	=	"Day" as defined in the Conditions of Contract

10. Items have been provided where any further items considered necessary by the Tenderer can be priced. The Tenderer must provide full details of what has been allowed for with his Tender under these items.

11. If any change in design is contemplated during the course of the Contract, the Contractor will be required to provide the Engineer with a detailed breakdown of the contract price involved with a similarly detailed

breakdown of the suggested revised price together with supporting quotations and other relevant documentation to satisfy the Engineer that the revised price is built up in a similar manner to the original contract price.

12. The Tenderer is referred to Sub-Clause 4.11, Sufficiency of the Accepted Contract Amount, of the General Conditions of Contract ("General Conditions").

13. The Tenderer is referred to Sub-Clause 14.1, The Contract Price, of the General Conditions as amended in the Particular Conditions in Part C1.2 Contract Data.

14. References to the Conditions of Contract in the Schedules of Quantities shall mean the General Conditions read in conjunction with the Appendix to Tender and Particular Conditions, all as set out in Part C1.2 Contract Data.

15. The Tenderer is referred to F2.13.1 in Part T1.2 Tender Data regarding the pricing of Deviations and/or Options.

16. Contract price adjustment to allow for variations in the rate of exchange for imported equipment shall be dealt with in terms of Sub-clause 13.8 of the General Conditions of Contract on the basis of the rates inserted by the tenderer in the **Schedule of Imported Equipment** at the beginning of Part C2.2 (i.e. Schedule 21). Note that the values of imported equipment to be inserted in this schedule will not be used for the adjudication process and will vary from the tenderer's prices inserted in the Bill of Quantities.

17. The Rand value of imported Plant and Materials listed in Returnable Schedule 21 shall be carried forward from column (F) and included in the price of each of the relevant items in the Schedules of Quantities.

18. The word "equipment" used in the Schedules of Quantities shall mean Plant as defined in the General Conditions, unless the context provides otherwise. Without limiting the definition of Materials in the General Conditions, "equipment" shall also mean components of Plant.

19. Design of the Works, Contractor's Documents (including "as built" drawings, Operation and Maintenance Manual and servicing of equipment), and design for the manufacture of materials and equipment, will be paid for as follows:

    a) An item is provided in the Schedules of Quantities (Schedule A: Preliminary and General) for Design of the Works and submission of Contractor's Documents – this item includes *inter alia* the Contractor's obligations under Clause 2 in Part C3.2 Engineering, up to Sub-Clause 2.3.

    b) Items are provided in the Schedules of Quantities (Schedule A: Preliminary and General) for Providing "as built" drawings, and draft and final copies of the Installation, Operation and Maintenance Manuals – these items cover the Contractor's obligations under Clause 2 in Part C3.2 Engineering, Sub-Clauses 2.4 and 2.5.

    c) Items are provided in the Schedules of Quantities (Schedule B, Sundries) for providing "maintenance and servicing of equipment" – these items cover the Contractor's obligations under Clause A.51 (contained in Volume 2A).

    d) Items of materials and equipment are provided in the Schedules of Quantities under headings containing the words "design, manufacture, painting, testing, supply, delivery, offloading and storage" – "design" in these items will usually only be paid upon supply of the materials and equipment, but may be paid for separately at the discretion of the Engineer.

20. Where Provisional Sums have been included in the Schedules of Quantities in terms of Sub-Clause 13.5(b) of the Conditions of Contract, the Tenderer shall insert the required (if any) percentage(s) for the "Add for overhead charges and profit" item(s) in the "Price" column and insert the resultant amount(s) in the "Amount" column, and shall include this/these amount(s) as well as the Provisional Sum amounts in the Total Amount of the relevant Schedule.

21. Also, where a quantity is measured as a "Provisional Sum", it shall be subject to re-measurement as executed and agreed to by the Engineer, and no guarantee is given that the assumption on which the quantities have been based are correct.

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

23. Where brand names or trade names are mentioned in descriptions, it shall be deemed that "equivalent and approved" be included in such descriptions.

24. Clause F.4.11 c) in Part T1.2 Tender Data shall be applicable to the submission of Schedules of Quantities which have been priced electronically, should the Tenderer wish to submit a printed version with his/her tender in place of handwritten priced Schedules 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 Schedules of Quantities, then the printed Schedules of Quantities shall take these into account.

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

25. Tenderers are referred to Clause 8 Measurement and Payment in the Environmental Management (EM) Specification in Volume 2A for the basic principles of measurement and pricing of the EM Specification.

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C2.2: SCHEDULE OF QUANTITIES, including Schedule of Imported Equipment

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SCHEDULE 21 : PRICE BASIS FOR IMPORTED PLANT AND MATERIALS

C2.2.1 SCHEDULE OF IMPORTED EQUIPMENT

VALUES OF IMPORTED PLANT AND MATERIALS TO BE ADJUSTED IN TERMS OF SUB-CLAUSE 13.8.2.2 OF THE PARTICULAR CONDITIONS					CUSTOMS SURCHARGE		CUSTOMS DUTY*		Total in Rand of (C) + (D) + (E) included in Schedule of Quantities Item
Schedule of Quantities Item No.	Description of Plant and/or Materials	Value in Foreign Currency (A)	Rate of Exchange as at tender BASE DATE (B)	Value in Rand (A) X (B) (C)	%	Rand (D)	%	Rand (E)	(F)
PLEASE REFER ATTACHED TABLE WITICH IS ALSO PROVIDED IN SECTION 4 OF OUR COVERING LETTER SUBMISSION									

* State Customs Duty Tariff Reference for each item

Note: Amounts in column (A) will be subject to Sub-Clause 13.8.2.2.2(e).
Amounts in columns (B and (C) will be subject to Sub-Clause 13.8.2.2.2(a)iii.
Amounts in column (F) will be subject to Sub-Clause 13.8.2.1.2(c). Note that any Plant and Materials not inserted in Returnable Schedule 20 shall be deemed to be manufactured in South Africa for the purposes of Contract Price Adjustment.
The BASE DATE referred to in column (B) will be subject to Sub-Clause 13.8.1(a) and as defined in Sub-Clause 1.1.3.1.

SIGNED ON BEHALF OF TENDERER: .....

DATE: 13/02/2017

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SCHEDULE 21 : PRICE BASIS FOR IMPORTED PLANT AND MATERIALS

C2.2.2 SCHEDULE OF IMPORTED EQUIPMENT

VALUES OF IMPORTED PLANT AND MATERIALS TO BE ADJUSTED IN TERMS OF SUB-CLAUSE 13.8.2.2 OF THE PARTICULAR CONDITIONS					CUSTOMS SURCHARGE		CUSTOMS DUTY*		Total in Rand of (C) + (D) + (E) included in Schedule of Quantities Item
Schedule of Quantities Item No.	Description of Plant and/or Materials	Value in Foreign Currency (A)	Rate of Exchange as at tender BASE DATE (B)	Value in Rand (A) X (B) (C)	%	Rand (D)	%	Rand (E)	(F)

* State Customs Duty Tariff Reference for each item

Note: Amounts in column (A) will be subject to Sub-Clause 13.8.2.2.2(e).
Amounts in columns (B and (C) will be subject to Sub-Clause 13.8.2.2.2(a)iii.
Amounts in column (F) will be subject to Sub-Clause 13.8.2.1.2(c). Note that any Plant and Materials not inserted in Returnable Schedule 20 shall be deemed to be manufactured in South Africa for the purposes of Contract Price Adjustment.
The BASE DATE referred to in column (B) will be subject to Sub-Clause 13.8.1(a) and as defined in Sub-Clause 1.1.3.1.

SIGNED ON BEHALF OF TENDERER:..... .....

DATE: 13/02/2017

CITY OF CAPE TOWN

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DESIGN – BUILD OF MECHANICAL AND ELECTRICAL WORKS FOR THE CONSTRUCTION OF AN MBR PLANT AND BOTTLENECK ALLEVIATION AT ZANDVLIET WASTEWATER TREATMENT WORKS

SCHEDULE 21 : PRICE BASIS FOR IMPORTED PLANT AND MATERIALS

C2.2.3 SCHEDULE OF IMPORTED EQUIPMENT

VALUES OF IMPORTED PLANT AND MATERIALS TO BE ADJUSTED IN TERMS OF SUB-CLAUSE 13.8.2.2 OF THE PARTICULAR CONDITIONS					CUSTOMS SURCHARGE		CUSTOMS DUTY*		Total in Rand of (C) + (D) + (E) included in Schedule of Quantities Item
Schedule of Quantities Item No.	Description of Plant and/or Materials	Value in Foreign Currency (A)	Rate of Exchange as at tender BASE DATE (B)	Value in Rand (A) X (B) (C)	%	Rand (D)	%	Rand (E)	(F)

* State Customs Duty Tariff Reference for each item

Note: Amounts in column (A) will be subject to Sub-Clause 13.8.2.2.2(e).
Amounts in columns (B and (C) will be subject to Sub-Clause 13.8.2.2.2(a)iii.
Amounts in column (F) will be subject to Sub-Clause 13.8.2.1.2(c). Note that any Plant and Materials not inserted in Returnable Schedule 20 shall be deemed to be manufactured in South Africa for the purposes of Contract Price Adjustment.
The BASE DATE referred to in column (B) will be subject to Sub-Clause 13.8.1(a) and as defined in Sub-Clause 1.1.3.1.

SIGNED ON BEHALF OF TENDERER: .....

DATE: 13/02/2017

CITY OF CAPE TOWN

WATER AND SANITATION

CONTRACT NO. 178Q/2016/17

DESIGN – BUILD OF MECHANICAL AND ELECTRICAL WORKS FOR THE CONSTRUCTION OF AN MBR PLANT AND BOTTLENECK ALLEVIATION AT ZANDVLIET WASTEWATER TREATMENT WORKS

SCHEDULE 21 : PRICE BASIS FOR IMPORTED PLANT AND MATERIALS

C2.2.4 SCHEDULE OF IMPORTED EQUIPMENT

VALUES OF IMPORTED PLANT AND MATERIALS TO BE ADJUSTED IN TERMS OF SUB-CLAUSE 13.8.2.2 OF THE PARTICULAR CONDITIONS					CUSTOMS SURCHARGE		CUSTOMS DUTY*		Total in Rand of (C) + (D) ÷ (E) included in Schedule of Quantities Item
Schedule of Quantities Item No.	Description of Plant and/or Materials	Value in Foreign Currency (A)	Rate of Exchange as at tender BASE DATE (B)	Value in Rand (A) X (B) (C)	%	Rand (D)	%	Rand (E)	(F)

* State Customs Duty Tariff Reference for each item

Note: Amounts in column (A) will be subject to Sub-Clause 13.8.2.2.2(e).
Amounts in columns (B and (C) will be subject to Sub-Clause 13.8.2.2.2(a)iii.
Amounts in column (F) will be subject to Sub-Clause 13.8.2.1.2(c). Note that any Plant and Materials not inserted in Returnable Schedule 20 shall be deemed to be manufactured in South Africa for the purposes of Contract Price Adjustment.
The BASE DATE referred to in column (B) will be subject to Sub-Clause 13.8.1(a) and as defined in Sub-Clause 1.1.3.1.

SIGNED ON BEHALF OF TENDERER: .....

DATE: 13/02/2017

CITY OF CAPE TOWN

WATER AND SANITATION

CONTRACT NO. 178Q/2016/17

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SCHEDULE 21 : PRICE BASIS FOR IMPORTED PLANT AND MATERIALS

C2.2.5 SCHEDULE OF IMPORTED EQUIPMENT

VALUES OF IMPORTED PLANT AND MATERIALS TO BE ADJUSTED IN TERMS OF SUB-CLAUSE 13.8.2.2 OF THE PARTICULAR CONDITIONS					CUSTOMS SURCHARGE		CUSTOMS DUTY*		Total in Rand of (C) + (D) + (E) included in Schedule of Quantities Item
Schedule of Quantities Item No.	Description of Plant and/or Materials	Value in Foreign Currency (A)	Rate of Exchange as at tender BASE DATE (B)	Value in Rand (A) X (B) (C)	%	Rand (D)	%	Rand (E)	(F)

* State Customs Duty Tariff Reference for each item

Note: Amounts in column (A) will be subject to Sub-Clause 13.8.2.2.2(e).
Amounts in columns (B and (C) will be subject to Sub-Clause 13.8.2.2.2(a)iii.
Amounts in column (F) will be subject to Sub-Clause 13.8.2.1.2(c). Note that any Plant and Materials not inserted in Returnable Schedule 20 shall be deemed to be manufactured in South Africa for the purposes of Contract Price Adjustment.
The BASE DATE referred to in column (B) will be subject to Sub-Clause 13.8.1(a) and as defined in Sub-Clause 1.1.3.1.

SIGNED ON BEHALF OF TENDERER: .....

DATE: 13/02/2017

SCHEDULE OF QUANTITIES
(forms part of the Agreement)

A CD containing electronic copies of the Tender Document in PDF format, plus C2.2: Schedule of Quantities (in MS Excel format in addition to PDF format) was made available to tenderers for the purposes of electronically entering their prices and rates in the Schedule of Quantities (as amended by Addenda to Tender Documents).

Tenderers were allowed to complete the Schedule of Quantities electronically, but the completed schedules were still to be printed, signed and bound by the Tenderers and submitted with their Offer.

The following Schedule of Quantities are the electronic copies which were completed, signed, and ıbmitted with the tender documents, and thus forms part of the Agreement.

C2.2 Schedules of Quantities

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ITEM	DESCRIPTION	UNIT	QTY	RATE R C	AMOUNT R C
	SCHEDULE A				
	PRELIMINARY AND GENERAL				
	Fixed-charge items				
	General requirements and conditions				
1	Performance Security in terms of Clause 4.2 of FIDIC (Conditions of Contract)	Sum	-		
2	Insurance	Sum	-		
3	General environmental management obligations and all costs related to compliance with the Environmental Management Specification (Specification H) in Part C3: Scope of Work	Sum	-		
4	Obligations and costs in compliance with the requirements for Site Facilities in terms of Part C3: Scope of Work	Sum	-		
5	Contractor's Superintendence and Management including compliance with Part C3: Scope of Work	Sum	-		
	Health and safety:				
6	General obligations and all costs in compliance with the Occupational Health and Safety Act, Construction Regulations, 2003, and the Health and Safety Specification (Specification G) in Part C3: Scope of Work	Sum	-		
7	Risk assessment	Sum	-		
8	Preparation of Health and Safety Plan	Sum	-		
9	Health and Safety Specialist / Accident Prevention Officer	Sum	-		
10	Medical assessment of employees	Sum	-		
11	HIV/AIDS awareness: compliance with the requirements of SANS 1921-6	Sum	-		
12	All other fixed-charge obligations	Sum	-		
Carried forward / ...					

ITEM	DESCRIPTION	UNIT	QTY	RATE R c	AMOUNT R c
Brought forward / ...					
	Design (including compliance with Clause 5 of FIDIC and Part C3: Scope of Work)				
13	Design and provision of Contractor's Documents required for Phase 2 of the Work Breakdown Structure in terms of Part C3: Scope of Work	Sum	-		
14	HAZOP study	Sum	-		
15	Training	Sum	-		
16	As-Built Documents	Sum	-		
17	Operation and Maintenance Manuals	Sum	-		
18	All other Contractor's Documents	Sum	-		
	Tests on Completion in terms of Clause 9 of FIDIC and Part C3: Scope of Work (excluding pre-commissioning)				
19	Commissioning tests including putting the whole of the Works into operation (Section A of the Works)	Sum	-		
20	Commissioning tests including putting the whole of the Works into operation (Section B of the Works)	Sum	-		
21	Commissioning tests including putting the whole of the Works into operation (Section C of the Works)	Sum	-		
	Trial operation period for first half related to the following:				
22	Section A of the Works	Sum	-		
23	Section B of the Works	Sum	-		
24	Section C of the Works	Sum	-		
	Trial operation period for second half related to the following:				
25	Section A of the Works	Sum	-		
26	Section B of the Works	Sum	-		
27	Section C of the Works	Sum	-		
Carried forward / ...					

ITEM	DESCRIPTION	UNIT	QTY	RATE R	RATE C	AMOUNT R	AMOUNT C
Brought forward / ...							
	Tests after Completion in terms of Clause 12 of FIDIC and Part C3: Scope of Work						
28	Tests after Completion for the whole of the MBR B plant (Section A of the Works)	Sum	-				
29	Tests after Completion for the whole of the MBR A plant (Section C of the Works)	Sum	-				
	Time-related items						
	General requirements and conditions						
30	Performance Security in terms of Clause 4.2 of FIDIC (Conditions of Contract)	Sum	-				
31	Insurance for Section A of the Works	Sum	-				
32	Insurance for Section B of the Works	Sum	-				
33	Insurance for Section C of the Works	Sum	-				
34	General environmental management obligations and all costs related to compliance with the Environmental Management Specification (Specification H) in Part C3: Scope of Work	Sum	-				
35	Obligations and costs in compliance with the requirements for Site Facilities for the Engineer in terms of Part C3: Scope of Work	Sum	-				
36	Contractor's Superintendence and Management including compliance with Part C3: Scope of Work	Sum	-				
	Health and Safety:		-				
37	General obligations and all costs in compliance with the Occupational Health and Safety Act, Construction Regulations, 2003, and the Health and Safety Specification (Specification G) in Part C3: Scope of Work	Sum	-				
38	Risk assessment	Sum	-				
39	Preparation of health and safety plan	Sum	-				
40	Accident prevention officer/ Health and Safety Specialist	Sum	-				
41	Medical assessment of employees	Sum	-				
Carried forward / ...							

ITEM	DESCRIPTION	UNIT	QTY	RATE R c	AMOUNT R c
Brought forward / ...					
42	HIV/AIDS awareness: compliance with the requirements of SANS 1921-6	Sum	-		
43	All other time-related obligations	Sum	-		
	Provisional Sums:				
	Others sums stated provisionally by the Engineer				
44	Alterations to existing services by authorities/others	Provisional Sum		-	R 150,000.00
45	Percentage adjustment on Item 44 for Contractor's design, sourcing quotes, superintendence, and for overheads and profit (state as percentage an extend as amount)	%	150,000		
46	Wayleave: Allow for the cost of obtaining wayleave as directed by the Engineer	Provisional Sum		-	R 30,000.00
47	Percentage adjustment on Item 46 for Contractor's design, sourcing quotes, superintendence, and for overheads and profit (state as percentage an extend as amount)	%	30,000		
48	General training costs for socio-economic requirements	Provisional Sum		-	R 50,000.00
49	Percentage adjustment on Item 48 for Contractor's design, sourcing quotes, superintendence, and for overheads and profit (state as percentage an extend as amount)	%	50,000		
50	Community Liaison Officer	Provisional Sum		-	R 80,000.00
51	Percentage adjustment on Item 50 for Contractor's design, sourcing quotes, superintendence, and for overheads and profit (state as percentage an extend as amount)	%	80,000		
52	Maintenance and workshop equipment	Provisional Sum		-	R 175,400.00
53	Percentage adjustment on Item 52 for Contractor's design, sourcing quotes, superintendence, and for overheads and profit (state as percentage an extend as amount)	%	175,400		
Carried forward / ...					

ITEM	DESCRIPTION	UNIT	QTY	RATE R c	AMOUNT R c
Brought forward / ...					
54	Relocation of existing admin and control building equipment (i.e. IT servers, electronic hardware, control system etc.) to temporary accommodation on site as directed by the Engineer	Provisional Sum		-	R 80,000.00
55	Percentage adjustment on Item 54 for Contractor's design, sourcing quotes, superintendence, and for overheads and profit (state as percentage an extend as amount)	%	80,000		
56	Other work as directed by the Engineer	Provisional Sum		-	R 150,000.00
57	Percentage adjustment on Item 56 for Contractor's design, sourcing quotes, superintendence, and for overheads and profit (state as percentage an extend as amount)	%	150,000		
	Daywork (Provisional)				
	Allow for the cost of all labour (at full cost of employment), materials and plant, including overheads and profit, superintendence and management				
	Labour:				
58	General foreman	h	150		
59	Skilled labour (Artisan/Electrician)	h	200		
60	Unskilled labour (Labourer)	h	1000		
61	Electrical foreman	h	150		
62	Cable jointer	h	50		
	Materials:				
63	Allow for net cost of goods or materials actually used	Provisional Sum			R 70,000.00
64	Percentage mark-up on Item 67 (state % and extend as an amount)	%	70,000		
	Contractor's own plant on Site:				
65	Allow for all-inclusive cost of using Contractor's own plant on Site	Provisional Sum		-	R 50,000.00
Carried forward / ...					

ITEM	DESCRIPTION	UNIT	QTY	RATE R c	AMOUNT R c
Brought forward / ...					
66	Percentage adjustment on Item 65 for Contractor's design, sourcing quotes, superintendence, and for overheads and profit (state as percentage an extend as amount)	%	50,000		
	Plant hired by Contractor:				
67	Allow for net cost of hired plant	Provisional Sum		-	R 60,000.00
68	Percentage adjustment on Item 67 for Contractor's design, sourcing quotes, superintendence, and for overheads and profit (state as percentage an extend as amount)	%	60,000		
	Factory Inspections as Specified				
	Allow for all costs related to Factory Inspections as specified (including separate return flights, car hire, accommodation and subsistence costs incurred in connection with factory inspections) outside the Cape Metropolitan Area, by the City of Cape Town Engineer and his representatives (at least three persons in total). For the following systems/equipment:				
69	MBR Fine Screening Facility	Provisional Sum		-	R 140,000.00
70	Percentage adjustment on Item 69 for Contractor's design, sourcing quotes, superintendence, and for overheads and profit (state as percentage an extend as amount)	%	140,000		
71	Fine Bubble Diffuser Aeration Equipment (Diffusers and Blowers)	Provisional Sum		-	R 140,000.00
72	Percentage adjustment on Item 71 for Contractor's design, sourcing quotes, superintendence, and for overheads and profit (state as percentage an extend as amount)	%	140,000		
73	Membrane Blowers, Instrument Air Equipment and Pumps	Provisional Sum		-	R 160,000.00
74	Percentage adjustment on Item 73 for Contractor's design, sourcing quotes, superintendence, and for overheads and profit (state as percentage an extend as amount)	%	160,000		
75	Bioreactor and Membrane Tank Feed Pumps	Provisional Sum		-	R 140,000.00
Carried forward / ...					

ITEM	DESCRIPTION	UNIT	QTY	RATE R	c	AMOUNT R	c
Brought forward / ...							
76	Percentage adjustment on Item 75 for Contractor's design, sourcing quotes, superintendence, and for overheads and profit (state as percentage an extend as amount)	%	140,000				
77	MBR A: Membrane Equipment	Provisional Sum			-	R	160,000.00
78	Percentage adjustment on Item 77 for Contractor's design, sourcing quotes, superintendence, and for overheads and profit (state as percentage an extend as amount)	%	160,000				
79	MBR B: Membrane Equipment	Provisional Sum			-	R	160,000.00
80	Percentage adjustment on Item 79 for Contractor's design, sourcing quotes, superintendence, and for overheads and profit (state as percentage an extend as amount)	%	160,000				
81	1000 kVA Mini-sub	No	2				
82	1250kVA Mini-sub	No	4				
83	1600kVA Mini-sub	No	1				Rate Only
84	1800kVA Transformer	No	1				Rate Only
85	LV SWITCHGEAR AND CONTROLGEAR ASSEMBLIES	Provisional Sum			-	R	75,000.00
86	Percentage adjustment on Item 85 for Contractor's design, sourcing quotes, superintendence, and for overheads and profit (state as percentage an extend as amount)	%	75,000				
87	Control System	Provisional Sum			-	R	75,000.00
88	Percentage adjustment on Item 87 for Contractor's design, sourcing quotes, superintendence, and for overheads and profit (state as percentage an extend as amount)	%	75,000				
TOTAL OF SCHEDULE NO. A CARRIED TO SUMMARY							

ITEM	DESCRIPTION	UNIT	QTY	RATE R c	AMOUNT R c
	SCHEDULE B				
	SUNDRIES				
	Allow for all costs and expenses in connection with the following items:				
	Independent inspectorate for for equipment (inclusive of common equipment) specified in:				
1	Section A of the Works	Sum	-		
2	Section B of the Works	Sum	-		
3	Section C of the Works	Sum	-		
	Grouting in and/ or concreting in of equipment (inclusive of common equipment) for:				
4	Section A of the Works	Sum	-		
5	Section B of the Works	Sum	-		
6	Section C of the Works	Sum	-		
	Corrossion protection of equipment (inclusive of common equipment) for:				
7	Section A of the Works	Sum	-		
8	Section B of the Works	Sum	-		
9	Section C of the Works	Sum	-		
	Allow for all costs and expenses in connection with the following Servicing and/or Maintenance of the Works as instructed by Engineer				
	Provision shall be made for maintenance of plant as per the maintenance schedule. The tendered price shall include all costs associated with maintenance (consumables, spare parts, P&G's, etc.) as specified in Clause A51 (Volume 2A)				
10	Servicing of all equipment during the Defects Notification Period as ordered by the Engineer for Section A of the Works	No of visits	4		
11	Servicing of all equipment during the Defects Notification Period as ordered by the Engineer for Section B of the Works	No of visits	4		
Carried forward / ...					

ITEM	DESCRIPTION	UNIT	QTY	RATE R	RATE c	AMOUNT R	AMOUNT c
Brought forward / ...							
12	Servicing of all equipment during the Defects Notification Period as ordered by the for Engineer Section C of the Works	No of visits	4				
13	Servicing of all equipment during the Defects Notification Period as ordered by the Engineer for Equipment Common to Sections of the Works	No of visits	4				
	Provisional Sums in connection with the following Laboratory Equipment:						
	Automatic Samplers						
14	Portable Sampler 24 x 1L (Hach or similar approved by Engineer)	Prov Sum	-			R	120,000.00
15	Percentage adjustment on Item 14 for Contractor's design, sourcing quotes, superintendence, and for overheads and profit (state as percentage an extend as amount)	%	120,000				
16	Refrigerated Sampler 24 x 1L (Hach or similar approved by Engineer)	Prov Sum	-			R	160,000.00
17	Percentage adjustment on Item 16 for Contractor's design, sourcing quotes, superintendence, and for overheads and profit (state as percentage an extend as amount)	%	160,000				
	Analytical Equipment						
18	Ammonium Cartridge (Hach LZY694 or similar approved by Engineer)	Prov Sum	-			R	37,500.00
19	Percentage adjustment on Item 18 for Contractor's design, sourcing quotes, superintendence, and for overheads and profit (state as percentage an extend as amount)	%	37,500				
20	Nitrates Cartridge (Hach LZY694 or similar approved by Engineer)	Prov Sum	-			R	37,500.00
21	Percentage adjustment on Item 20 for Contractor's design, sourcing quotes, superintendence, and for overheads and profit (state as percentage an extend as amount)	%	37,500				
22	4No x Phosphate Reagents (Hach 6776100 or similar approved by Engineer) x 4 quantities	Prov Sum	-			R	60,000.00
Carried forward / ...							

ITEM	DESCRIPTION	UNIT	QTY	RATE R c	AMOUNT R c
Brought forward / ...					
23	Percentage adjustment on Item 22 for Contractor's design, sourcing quotes, superintendence, and for overheads and profit (state as percentage an extend as amount)	%	60,000		
24	Potable Starter Package with PHC201 pH Electrode, complete with field kit, buffer Solution, pH 10.01 (NIST), color-coded blue, 500 mL (Hach 8507530 or similar approved by Engineer)	Prov Sum	-		R 125,000.00
25	Percentage adjustment on Item 24 for Contractor's design, sourcing quotes, superintendence, and for overheads and profit (state as percentage an extend as amount)	%	125,000		
26	DR 1900 Portable Spectrophotometer complete with all associated equipment (Hach DR1900-01H or similar approved by Engineer)	Prov Sum	-		R 130,000.00
27	Percentage adjustment on Item 26 for Contractor's design, sourcing quotes, superintendence, and for overheads and profit (state as percentage an extend as amount)	%	130,000		
28	12No x Chlorine Reagents (Hach 2556900 or similar approved by Engineer)	Prov Sum	-		R 25,000.00
29	Percentage adjustment on Item 28 for Contractor's design, sourcing quotes, superintendence, and for overheads and profit (state as percentage an extend as amount)	%	25,000		
30	Moisture Analyser - % moisture, % solids, % Regain (Hach 2946404 or similar approved by Engineer)	Prov Sum	-		R 150,000.00
31	Percentage adjustment on Item 30 for Contractor's design, sourcing quotes, superintendence, and for overheads and profit (state as percentage an extend as amount)	%	150,000		
32	Portable Dissolved Oxygen Kit with Data Logger, complete with field kit/ carrying case, electrolyte solution for 5120 DO sensor, 25 mL, external supplier (Hach LPV4552DL.97.02 or similar approved by Engineer)	Prov Sum	-		R 125,000.00
33	Percentage adjustment on Item 32 for Contractor's design, sourcing quotes, superintendence, and for overheads and profit (state as percentage an extend as amount)	%	125,000		
Carried forward / ...					

ITEM	DESCRIPTION	UNIT	QTY	RATE R	RATE c	AMOUNT R	AMOUNT c
Brought forward / ...							
	Others sums stated provisionally by the Engineer:						
34	Provisional allowance for any additional work as directed by the Engineer	Prov Sum	-		-	R	175,000.00
35	Percentage adjustment on Item 34 for Contractor's design, sourcing quotes, superintendence, and for overheads and profit (state as percentage an extend as amount)	%	175,000				
TOTAL OF SCHEDULE B CARRIED TO SUMMARY							

ITEM	DESCRIPTION	UNIT	QTY	RATE R	RATE c	AMOUNT R	AMOUNT c
	SCHEDULE M1						
	LIFTING EQUIPMENT						
	Allow for all the costs and expenses in connection with the design, manufacture, painting, supplying, delivery, offloading and storage of the following materials and equipment:						
1	MBR fine screening gantry	No	1				
2	MBR B membrane tanks overhead travelling crane	No	1				
3	MBR B membrane tanks rails	m	120				
4	MBR B blower room overhead travelling crane	No	1				
5	MBR B blower room rails	m	120				
6	Dolly system including tracks,etc.	Sum	1				
7	External blower manual lifting equipment	No	1				
8	MBR B pump room mobile manual lifting equipment	No	1				
9	MBR B pump room gantry lifting equipment	No	1				
10	MBR A: Citric acid dosing room overhead travelling crane	No	1				
11	MBR B: Citric acid dosing room overhead travelling crane	No	1				
12	MBR B Ax-An recycle pumps gantry	No	3				
13	MBR B Ae-Ax recycle pumps gantry	No	3				
14	MBR B swing recycle mixed liquor recycle pumps gantry	No	1				
15	MBR B membrane tanks feed pumps manual lifting equipment	No	1				
16	MBR B mixer manual mobile lifting equipment	No	1				
17	MBR B membrane tanks feed pumps manual lifting equipment	No	1				
18	MBR B mixer manual mobile lifting equipment	No	1				
Carried forward / ...							

ITEM	DESCRIPTION	UNIT	QTY	RATE R c	AMOUNT R c
Brought forward / ...					
19	MBR B reactor basin cart	No	1		
20	Chlorine building overhead travelling crane	No	1		
21	Chlorine room rails	m	120		
22	Existing Dewatering building overhead travelling crane	No	1		
23	Existing Dewatering building support structure	Sum	-		
24	Existing Dewatering building rails	m	80		
	Allow for all costs and expenses in connection with the Site installation in terms of in terms of FIDIC and Part C3: Scope of Work (excluding pre-commissioning) for the following:				
25	MBR fine screening gantry	No	1		
26	MBR B membrane tanks overhead travelling crane	No	1		
27	MBR B membrane tanks rails	m	120		
28	MBR B blower room overhead travelling crane	No	1		
29	MBR B blower room rails	m	140		
30	Dolly system including tracks,etc.	Sum	-		
31	External blower manual lifting equipment	No	1		
32	MBR B pump room mobile manual lifting equipment	No	1		
33	MBR B pump room gantry lifting equipment	No	1		
34	MBR A: Citric acid dosing room overhead travelling crane	No	1		
35	MBR B: Citric acid dosing room overhead travelling crane	No	1		
36	MBR B Ax-An recycle pumps gantry	No	3		
37	MBR B Ae-Ax recycle pumps gantry	No	3		
38	MBR B swing recycle mixed liquor recycle pumps gantry	No	1		
Carried forward / ...					

ITEM	DESCRIPTION	UNIT	QTY	RATE R c	AMOUNT R c
Brought forward /...					
60	MBR B swing recycle mixed liquor recycle pumps gantry	No	1		
61	MBR B membrane tanks feed pumps manual lifting equipment	No	1		
62	MBR B mixer manual mobile lifting equipment	No	1		
63	MBR B reactor basin cart	No	1		
64	Chlorine building overhead travelling crane	No	1		
65	Chlorine room rails	m	80		
	Existing Dewatering building overhead travelling crane	No	1		
	Existing Dewatering building support structure	m	200		
	Existing Dewatering building rails	m	200		
	Storage of equipment as ordered by the Engineer including insurances where storage space is provided by:				
66	a. The Contractor	Month	3		
67	b. The City of Cape Town	Month	3		
68	All other items not included above but which are nevertheless necessary to meet the Scope of Work and/or are required for the proper, safe and effective operation of the plant *(Specify)*	Item			
TOTAL OF SCHEDULE M1 CARRIED TO SUMMARY					

Item	DESCRIPTION	UNIT	QTY	RATE R c	AMOUNT R c
	SCHEDULE M2				
	VALVES AND SLUICE GATES EQUIPMENT				
	Allow for all the costs and expenses in connection with the design, manufacture, painting, supplying, delivery, offloading and storage of the following materials and equipment:				
	Sluice Gate, Weir and Stop Logs for All Section of the Works				
	Channel-Mounted Sluice Gate Summary				
1	MBR B Upstream of Mixed Liquor Swing Recycle Pumps Isolation	No	1		
2	Actuator for item 1	No	1		
	Wall-Mounted Sluice Gate Summary				
3	MBR – Inlet of each fine screen	No	6		
4	Actuator for item 3	No	6		
5	MBR – Flow split to MBR A and MBR B downstream of fine screens.	No	3		
6	Actuator for item 5	No	3		
7	MBR B – Inlet to anaerobic zone	No	3		
8	Actuator for item 7	No	3		
9	MBR B – Outlet of aerobic zone to Membrane Tank Feed Pumps	No	3		
10	Actuator for item 9	No	3		
11	MBR B – Downward opening sluice gate upstream of Membrane tank feed pumps to WAS sump	No	1		
12	Actuator for item 11	No	1		
13	MBR B – Downward opening sluice gate at inlet of membrane filtration train	No	9		
14	Actuator for item 13	No	9		
Carried forward / ...					

Item	DESCRIPTION	UNIT	QTY	RATE R c	AMOUNT R c
Brought forward / ...					
15	MBR B – mixed liquor return to aerobic zone	No	3		
16	Actuator for Item 15	No	3		
17	MBR B – aerobic zone outlet to scum collection chamber (downward opening)	No	3		
18	Actuator for Item 17	No	3		
19	MBR B – Downstream of Mixed Liquor Swing Recycle Pumps Isolation	No	1		
20	Actuator for Item 19	No	1		
21	MBR B – membrane train outlet to WAS sump	No	1		
22	Actuator for Item 21	No	1		
23	MBR B – between WAS sump and membrane inspection sump	No	1		
24	MBR B - Scum Skimmer Outlet	No	1		
25	MBR A – Transfers Pump to MLSS Recycle Channel	No	3		
26	Actuator for Item 25	No	3		
27	MBR A - Downward opening sluice gate at inlet of membrane filtration train	No	6		
28	Actuator for Item 27	No	6		
29	MBR A – Recycle Channel to Anoxic Zone	No	5		
30	Actuator for Item 29	No	5		
31	MBR A – Recycle Channel to Aerobic Zone	No	4		
32	Actuator for Item 31	No	4		
33	CAS A – Outlet of reactor to SST	No	6		
34	CAS B – Outlet of Reactor to SST	No	6		
35	Final Effluent Collection Chamber – Outlet to CCT distribution chamber	No	2		
Carried forward / ...					

Item	DESCRIPTION	UNIT	QTY	RATE R	RATE C	AMOUNT R	AMOUNT C
Brought forward / ...							
36	Chlorine Contact Tank – Inlet to CCT distribution chamber	No	2				
37	Chlorine Contact Tank – Inlet and outlet of each CCT	No	1				
38	Chlorine Contact Tank – Inlet and outlet of each CCT	No	2				
	Tilting Weir Summary						
39	CAS A – Reactor Aerobic Zone Outlet	No	2				
40	CAS B – Reactor Aerobic Zone Outlet	No	2				
	Weir Plate Summary						
41	MBR B – Inlet to Anaerobic Zone	No	3				
42	MBR B – Anaerobic Zone 1 to Anaerobic Zone 2	No	3				
43	MBR B – Anaerobic Zone 2 to Anoxic Zone 1	No	3				
44	MBR B – Anoxic Zone 2 to Anoxic Zone 1	No	3				
45	MBR B – Anoxic Zone 2 to Aerobic Zone	No	3				
46	MBR B – Membrane tank Feed Pumps to MBR TANKS Distribution Channel	No	6				
47	MBR B – Filtration Train Inlet	No	9				
48	MBR B – Filtration Train Outlet	No	9				
49	MBR B – Ax-An Recycle Pump Outlet	No	9				
50	MBR B – Ae-Ax Recycle Pump Outlet	No	9				
51	MBR B – Membrane to Aerobic Zone Inlet	No	3				
52	MBR B – Swing Recycle Pump Outlet	No	4				
53	MBR A – Transfers Pump to Membrane Distribution Channel	No	3				
54	MBR A – Filtration Train Inlet	No	6				
55	MBR A – Filtration Train Outlet	No	6				
Carried forward / ...							

Item	DESCRIPTION	UNIT	QTY	RATE R	RATE C	AMOUNT R	AMOUNT C
Brought forward / ...							
56	CAS A – Reactor Aerobic Zone Outlet to SST	No	6				
57	CAS B – Reactor Aerobic Zone Outlet to SST	No	6				
58	CAS A – Emergency overflow to SST	No	6				
59	CAS B – Emergency overflow to SST	No	6				
60	Service Water Supply Chamber	No	1				
	Stop Log Summary						
61	CAS A – Aerobic zone to central WAS sump	No	1				
62	CAS B – Aerobic zone to central WAS sump	No	1				
63	CAS A – Emergency overflow to SST	No	6				
64	CAS B – Emergency overflow to SST	No	6				
	Valves for Section A of the Works						
	MBR Fine Screening Station						
65	MBR Fine Screening Station common wash water valves (isolation, pressure reducing and other)	Sum	-				
66	Actuators for Item 65	Sum	-				
	FBDA System						
67	FBDA V-Port knife gate valves (VAG or equal) for aeration control	No	9				
68	Actuators for Item 67	No	9				
69	FBDA Condensate drain valves	Sum	-				
70	FBDA Formic Acid valves	Sum	-				
71	FBDA Blower - all valves for one blower (non return valve, isolation valves etc.)	No	5				
72	Actuators for Item 71	No	5				
73	Scum Spray Valves	Sum	-				
74	Actuators for Item 73	Sum	-				
Carried forward / ...							

Item	DESCRIPTION	UNIT	QTY	RATE R	RATE C	AMOUNT R	AMOUNT C
Brought forward / ...							
	MBR Equipment						
75	Membrane Casette Air Scour Isolation Valve	No	108				
76	Membrane Filtration Train Sequential Aeration Valves per Train	No	9				
77	Actuators for item 76	No	9				
78	Membrane Filtration Train Sequential Aeration Isolation Valves	No	9				
79	Membrane Casette Permeate Isolation Valve	No	54				
80	Membrane Filtration Train Permeate Isolation Valves	No	9				
81	Chemical dosing diaphragm valves, Non return Valve and isolation valve	No	18				
82	Actuators for item 81	No	18				
83	Membrene Filtration Train Drain Isolation Valve	No	9				
84	Membrene Filtration Train Drain Isolation Valve (Actuated)	No	9				
85	Actuators for item 84	No	9				
86	Membrane plant ventilation/ air ejection system Valves	Sum	-				
87	Actuators for item 86	Sum	-				
88	Permeate Pump Safety Relief Valve	No	18				
89	Permeate Pump Isolation Valve	No	9				
90	Permeate Pump Isolation Valve (Actuated)	No	9				
91	Actuators for item 90	No	9				
92	Service Water Tank Make-up Valves	Sum	-				
93	Actuators for item 92	Sum	-				
94	Membrane Filtration Train Drain Pump Isolation Valve	No	6				
95	Membrane Filtration Train Drain Pump Non Return Valve Valve	No	3				
Carried forward / ...							

Item	DESCRIPTION	UNIT	QTY	RATE R c	AMOUNT R c
Brought forward / ...					
140	Membrane Filtration Train Permeate Isolation Valves	No	6		
141	Chemical dosing diaphragm valves, Non return Valve and isolation valve	No	12		
142	Actuators for item 141	No	12		
143	Membrene Filtration Train Drain Isolation Valve	No	6		
144	Membrene Filtration Train Drain (Actuated)	No	6		
145	Actuators for item 144	No	6		
146	Membrane plant ventilation/ air ejection system Valves	Sum	-		
147	Actuators for item 146	Sum	-		
148	Permeate Pump Safety Relief Valve	No	12		
149	Permeate Pump Isolation Valve	No	6		
150	Permeate Pump Isolation Valve (Actuated)	No	6		
151	Actuators for item 150	No	6		
152	Service Water Tank Make-up Valves	Sum	-		
153	Membrane Filtration Train Drain Pump Isolation Valve	No	4		
154	Membrane Filtration Train Drain Pump Non Return Valve Valve	No	2		
155	Membrane Inspection Sump to Membrane Filtration Drain Pump Set	No	2		
156	Actuators for item 155	No	2		
157	WAS Pump Isolation Valve	No	4		
158	WAS Pump Non Return Valve Valve	No	2		
159	WAS/Scum Sump Scum Spray Valves	Sum	-		
160	Actuators for item 159	Sum	-		
161	Air Scour - all valves for one blower (non return valve, isolation valves (VAG or equal) etc.)	No	3		
Carried forward / ...					

Item	DESCRIPTION	UNIT	QTY	RATE R c	AMOUNT R c
Brought forward / ...					
162	Actuators for item 161	No	3		
163	Air Scour Common Manifold Isolation valves	No	2		
164	All Sodium Hypochlorite Valves	Sum	-		
165	Actuators for item 164	Sum	-		
166	All Citric Acid Valves	Sum	-		
167	Actuators for item 166	Sum	-		
168	All Instrumetn Air Valves	Sum	-		
169	Actuators for item 168	Sum	-		
170	All Service Water Valves	Sum	-		
171	Actuators for item 170	Sum	-		
172	Scum Pump isolation	No	4		
173	Scum Pump non return	No	4		
174	Scum Telescopic Valve	No	5		
175	Scum Telescopic Valve Isolation Valve	No	5		
	Valves for Equipment Common to Sections of the Works				
176	All Ferric Chloride Valves	Sum	-		
177	Actuators for item 176	Sum	-		
178	All Sodium Hydroxide Valves	Sum	-		
179	Actuators for item 178	Sum	-		
Carried forward / ...					

Item	DESCRIPTION	UNIT	QTY	RATE R c	AMOUNT R c
Brought forward / ...					
	SPARES				
	MBR Fine Screening Station				
180	Two each type and size used <DN50	Sum	-		
	Fine Bubble Diffused Aeration				
	MBR B				
181	V-Port knife gate valves (Aeration zone 1)	No	2		
182	Actuators for item 181	No	2		
183	V-Port knife gate valves (Aeration zone 2)	No	2		
184	Actuators for item 183	No	2		
185	V-Port knife gate valves (Aeration zone 3)	No	2		
186	Actuators for item 185	No	2		
	MBR A				
187	V-Port knife gate valve for dropleg 1	No	1		
188	Actuators for item 187	No	1		
189	V-Port knife gate valve for dropleg 2	No	1		
190	Actuators for item 189	No	1		
191	V-Port knife gate valve for dropleg 3	No	1		
192	Actuators for item 191	No	1		
193	V-Port knife gate valve for dropleg 4	No	1		
194	Actuators for item 193	No	1		
	Blowers				
	MBR B				
195	FBDA Blower Isolation Valves	No	2		
196	Actuators for item 195	No	2		
197	FBDA Blower Non return Valves	No	2		
Carried forward / ...					

Item	DESCRIPTION	UNIT	QTY	RATE R	RATE C	AMOUNT R	AMOUNT C
Brought forward / ...							
198	Air Scour Blower Isolation Valves	No	2				
199	Actuators for item 198	No	2				
200	Air Scour Blower Non Return Valves	No	2				
	MBR A						
201	FBDA Blower Isolation Valves	No	2				
202	Actuators for item 201	No	2				
203	FBDA Blower Non return Valves	No	2				
204	Air Scour Blower Isolation Valves	No	2				
205	Actuators for item 204	No	2				
206	Air Scour Blower Non Return Valves	No	2				
	MBR Equipment						
	MBR B						
207	Permeate pump suction valve	No	2				
208	Permeate pump discharge valve	No	2				
209	Actuators for item 208	No	2				
210	Membrane cassette permeate isolation valve	No	6				
211	Membrane cassette air scour isolation valve	No	12				
212	Chemical dosing diaphragm valves complete	No	18				
213	Actuators for item 212	No	18				
214	Sequential aeration Valves Complete (Equal to twice the number installed)	Sum	-				
215	Actuators for item 214	Sum	-				
	MBR A						
216	Permeate pump suction valve	No	2				
217	Permeate pump discharge valve	No	2				
218	Actuators for item 217	No	2				
Carried forward / ...							

Item	DESCRIPTION	UNIT	QTY	RATE R c	AMOUNT R c
Brought forward / ...					
219	Membrane cassette permeate isolation valve	No	6		
220	Membrane cassette air scour isolation valve	No	12		
221	Chemical dosing diaphragm valves	No	12		
222	Actuators for Item 221	No	12		
223	Sequential aeration Valves (Equal to twice the number installed)	Sum	-		
224	Actuators for Item 223	Sum	-		
	Filtration Train Drain Pumps and Wasting Pumps (MBR B)				
225	Membrane Tank Drain Isolation valve	No	2		
226	Actuators for Item 225	No	2		
227	Membrane Tank Drain Isolation valve	No	2		
228	Membrane tank drain pump suction valve	No	1		
229	Membrane tank drain pump discharge valve	No	1		
230	Scum/WAS pump suction valve	No	1		
231	Scum/WAS pump discharge valve	No	1		
232	Scum/WAS pump non return valve	No	1		
233	Scum/WAS pump diverter valve (to WAS holding tank or mixed liquor recycle channel)	No	1		
234	Actuators for Item 233	No	1		
	Filtration Train Drain Pumps and Wasting Pumps (MBR A)				
235	Membrane Tank Drain Isolation valve	No	2		
236	Actuators for Item 235	No	2		
237	Membrane Tank Drain Isolation valve	No	2		
238	Membrane tank drain pump suction valve	No	1		
239	Membrane tank drain pump discharge valve	No	1		
Carried forward / ...					

Item	DESCRIPTION	UNIT	QTY	RATE R c	AMOUNT R c
Brought forward / ...					
	Chemical Dosing Systems MBR A and MBR B and CAS				
257	Four each type and size used	Sum	-		
258	Actuators for item 257	Sum	-		
	Existing Plant WAS Pumps (CAS)				
259	Suction valve	No	1		
260	Discharge valve	No	1		
261	Non return valve	No	1		
	Existing Plant Scum Pumps (CAS)				
262	Suction valve	No	1		
263	Discharge valve	No	1		
264	Non return valve	No	1		
	New Chlorination Equipment (CAS)				
265	One of each valve type and size used <DN50	Sum	-		
266	One of each actuated valve type and size used including actuator	Sum	-		
267	Blow-off (purge) valves	No	2		
	Sluice Gate, Weir and Stop Logs for All Section of the Works				
268	Actuators for sluice gates	No	8		
	Allow for all costs and expenses in connection with the Site installation in terms of in terms of FIDIC and Part C3: Scope of Work (excluding pre-commissioning) for the following:				
	Sluice Gate, Weir and Stop Logs for All Section of the Works				
	Channel-Mounted Sluice Gate Summary				
269	MBR B Upstream of Mixed Liquor Swing Recycle Pumps Isolation	No	1		
Carried forward / ...					

Item	DESCRIPTION	UNIT	QTY	RATE R c	AMOUNT R c
Brought forward / ...					
	Wall-Mounted Sluice Gate Summary				
270	MBR – Inlet of each fine screen	No	6		
271	MBR – Flow split to MBR A and MBR B downstream of fine screens.	No	3		
272	MBR B – Inlet to anaerobic zone	No	3		
273	MBR B – Outlet of aerobic zone to Membrane Tank Feed Pumps	No	3		
274	MBR B – Downward opening sluice gate upstream of Membrane tank feed pumps to WAS sump	No	1		
275	MBR B – Downward opening sluice gate at inlet of membrane filtration train	No	9		
276	MBR B – mixed liquor return to aerobic zone	No	3		
277	MBR B – aerobic zone outlet to scum collection chamber (downward opening)	No	3		
278	MBR B – Downstream of Mixed Liquor Swing Recycle Pumps Isolation	No	1		
279	MBR B – membrane train outlet to WAS sump	No	1		
280	MBR B – between WAS sump and membrane inspection sump	No	1		
281	MBR A – Transfers Pump to MLSS Recycle Channel	No	3		
282	MBR A - Downward opening sluice gate at inlet of membrane filtration train	No	6		
283	MBR A – Recycle Channel to Anoxic Zone	No	5		
284	MBR A – Recycle Channel to Aerobic Zone	No	4		
285	CAS A – Outlet of reactor to SST	No	6		
286	CAS B – Outlet of Reactor to SST	No	6		
287	Chlorine Contact Tank – Inlet and outlet of each CCT	No	1		
288	Chlorine Contact Tank – Inlet and outlet of each CCT	No	2		
	Tilting Weir Summary				
289	CAS A – Reactor Aerobic Zone Outlet	No	2		
Carried forward / ...					

Item	DESCRIPTION	UNIT	QTY	RATE R	RATE C	AMOUNT R	AMOUNT C
Brought forward / ...							
290	CAS B – Reactor Aerobic Zone Outlet	No	2				
	Weir Plate Summary						
291	MBR B – Inlet to Anaerobic Zone	No	3				
292	MBR B – Anaerobic Zone 1 to Anaerobic Zone 2	No	3				
293	MBR B – Anaerobic Zone 2 to Anoxic Zone 1	No	3				
294	MBR B – Anoxic Zone 2 to Anoxic Zone 1	No	3				
297	MBR B – Anoxic Zone 2 to Aerobic Zone	No	3				
298	MBR B – Membrane tank Feed Pumps to MBR TANKS Distribution Channel	No	6				
299	MBR B – Filtration Train Inlet	No	9				
300	MBR B – Filtration Train Outlet	No	9				
301	MBR B – AxAn Recycle Pump Outlet	No	9				
302	MBR B – AeAx Recycle Pump Outlet	No	9				
303	MBR B – Membrane to Aerobic Zone Inlet	No	3				
304	MBR B – Swing Recycle Pump Outlet	No	4				
305	MBR A – Transfers Pump to Membrane Distribution Channel	No	3				
306	MBR A – Filtration Train Inlet	No	6				
307	MBR A – Filtration Train Outlet	No	6				
308	CAS A – Reactor Aerobic Zone Outlet to SST	No	6				
309	CAS B – Reactor Aerobic Zone Outlet to SST	No	6				
310	CAS A – Emergency overflow to SST	No	6				
311	CAS B – Emergency overflow to SST	No	6				
312	Service Water Supply Chamber	No	1				
	Stop Log Summary						
313	CAS A – Aerobic zone to central WAS sump	No	1				
Carried forward / ...							

ITEM	DESCRIPTION	UNIT	QTY	RATE R c	AMOUNT R c
Brought forward / ...					
18	Spare bearing sets for screen screw conveyor	No	2		
19	Complete set of screenings press critical spares for each press (if different from the above)	No	2		
	Skip Dolly				
20	Complete drive unit (complete with motor, gearbox, etc.)	No	1		
	Mixers				
	Top Entry Mixers (MBR B)				
21	Complete Motor and gearbox assembly for Anaerobic zone mixer	No	1		
22	Complete Motor and gearbox assembly for Anoxic zone mixer	No	1		
23	Sets of recommended spares (one per mixer installed)	No	24		
	Submersible Mixers (CAS)				
24	Complete mixer units (Anoxic Zone 1 and Anoxic Zone 2)	No	2		
25	Complete mixer units (Anoxic Zone 3)	No	3		
26	Complete impeller assemblies (Anoxic Zone 1 and Anoxic Zone 2)	No	2		
27	Complete impeller assembiles (Anoxic Zone 3)	No	3		
28	Sets of recommended spares (one per mixer installed)	No	12		
	Top Entry Mixers (MBR A)				
29	Complete Anaerobic Zone Motor and gearbox assembly	No	1		
30	Complete Anoxic Zone Motor and gearbox assembly	No	1		
31	Sets of recommended spares (one per mixer installed)	No	12		
Carried forward / ...					

ITEM	DESCRIPTION	UNIT	QTY	RATE R	AMOUNT R
Brought forward / ...					
	Fine Bubble Diffused Aeration				
	Diffusers (MBR B)				
32	N/A	Sum	-		
	Diffusers (MBR A)				
33	N/A	Sum	-		
	Blowers				
	FBDA Centrifugal Blowers (MBR B)				
34	Oil for first oil change per unit	Sum	-		
35	Sets of OEM recommended spares	No	5		
36	Three Blower inlet filters per unit	Sum	-		
	Air Scour Rotary Lobe Blowers (MBR B)				
37	Oil for first oil change per unit	Sum	-		
38	Sets of OEM recommended spares	No	6		
39	Three Blower inlet filters per unit	Sum	-		
40	Two Sets of V-belts for each blower unit	No	2		
	Air Scour Rotary Lobe Blowers (MBR A)				
41	Oil for first oil change per unit	Sum	-		
42	Sets of OEM recommended spares	No	3		
43	Three Blower inlet filters per unit	Sum	-		
44	Two Sets of V-belts for each blower unit	Sum	-		
	FBDA Centrifugal Blowers (MBR B)				
45	Oil for first oil change per unit	Sum	-		
46	Sets of OEM recommended spares	No	3		
47	Three Blower inlet filters per unit	Sum	-		
Carried forward / ...					

ITEM	DESCRIPTION	UNIT	QTY	RATE R c	AMOUNT R c
Brought forward / ...					
	Common to Plant				
103	One Service kit per pump	Sum	-		
104	Set of recommended spares per dosing station	Sum	-		
	Lifting Equipment				
105	N/A	Sum	-		
	Ventilation Equipment (HVAC)				
106	N/A	Sum	-		
	Surface Mounted Aerators (CAS)				
107	N/A	Sum	-		
	Existing Plant WAS Pumps (CAS)				
108	Sets of V-Belts	No	4		
109	Set of recommended spares (if different from the above)	No	4		
	Existing Plant RAS Pumps (CAS)				
110	Sets of recommended spares (one per pump installed)	No	4		
111	Complete pump assemblies	No	2		
	Existing Plant Secondary Settling Tanks (CAS)				
112	Motor and gearbox assemblies (including torque switch)	No	2		
	New Chlorination Equipment (CAS)				
	Booster Pump				
113	N/A	Sum	-		
114	Sets of recommended (one for each pump provided)	No	4		
	Dosing Equipment				
115	N/A	Sum	-		
Carried forward / ...					

ITEM	DESCRIPTION	UNIT	QTY	RATE R c	AMOUNT R c
Brought forward / ...					
	Chlorine Scrubber				
116	N/A	Sum	-		
	Instrument Air				
117	Set of recommended spares per compressor	Sum	-		
118	Two Sets of spare compressor inlet filters per compressor	No	2		
	Storage of equipment as ordered by the Engineer including insurances where storage space is provided by:				
119	a. The Contractor	Month	3		
120	b. The City of Cape Town	Month	3		
	Other				
121	All other items not included above but which are nevertheless necessary to meet the Scope of Work and/or are required for the proper, safe and effective operation of the plant *(Specify)*	Item	-		
TOTAL OF SCHEDULE M3 CARRIED TO SUMMARY					

SECTION A OF THE WORKS: MODULE B MECHANICAL EQUIPMENT

Continued Overleaf

ITEM	DESCRIPTION	UNIT	QTY	RATE R	RATE c	AMOUNT R	AMOUNT c
	SCHEDULE M4						
	MBR FINE SCREENING FACILITY						
	Allow for all the costs and expenses in connection with the design, manufacture, painting, supplying, delivery, offloading and storage of the following materials and equipment:						
1	Fine Screen Inlet Pipework	No	6				
2	Fine Screen units with integrated instrumentation, conveyors etc.	No	6				
3	Overflow Pipework for all Fine Screens complete	Sum	-				
4	Screenings Conveyor units, with pipework and chutes	No	2				
5	Screenings Compactors/ Screw Presses with pipework and chutes	No	2				
6	All Washwater/ service water pipework as required	Sum	-				
7	All Drain Pipework as required	Sum	-				
8	Skip Dolly System, rails, etc.	No	2				
9	All Anchors and Supports	Sum	-				
10	All Pipe Flanges and Flexible Connections	Sum	-				
	Allow for all costs and expenses in connection with the Site installation in terms of in terms of FIDIC and Part C3: Scope of Work (excluding pre-commissioning) for the following:						
11	Fine Screen Inlet Pipework	No	6				
12	Fine Screen unit with integrated instrumentation, conveyor etc.	No	6				
13	Overflow Pipework for all Fine Screens complete	Sum	-				
14	Screenings Conveyor units, with pipework and chutes	No	2				
15	Screenings Compactors/ Screw Presses with pipework and chutes	No	2				
16	All Washwater/ service water pipework as required	Sum	-				
17	All Drain Pipework as required	Sum	-				
Carried forward / ...							

ITEM	DESCRIPTION	UNIT	QTY	RATE R c	AMOUNT R
Brought forward / …					
18	Skip Dolly System, rails, etc.	No	2		
19	All Anchors and Supports	Sum	-		
20	All Pipe Flanges and Flexible Connections	Sum	-		
	Allow for all costs and expenses in connection with pre-commsissioning in terms of FIDIC and Part C3: Scope of Work for the following:				
21	Complete Fine Screening Facility	Sum	-		
	Storage of equipment as ordered by the Engineer including insurances where storage space is provided by:				
22	a. The Contractor	Month	3		
23	b. The City of Cape Town	Month	3		
	Other:				
24	All other items not included above but which are nevertheless necessary to meet the Scope of Work and/or are required for the proper, safe and effective operation of the plant *(Specify)* …… …… …… …… ……	Item			
TOTAL OF SCHEDULE M4 CARRIED TO SUMMARY					

ITEM	DESCRIPTION	UNIT	QTY	RATE R	RATE c	AMOUNT R	AMOUNT c
	SCHEDULE M5						
	BIOREACTOR MIXING EQUIPMENT						
	Allow for all costs in connection with the following general items:						
1	CFD Analysis on Anoxic Zone mixers	Sum	-				
2	CFD Analysis on Anaerobic Zone mixers	Sum	-				
	Allow for all the costs and expenses in connection with the design, manufacture, painting, supplying, delivery, offloading and storage of the following materials and equipment:						
3	Anaerobic Zone Mixers	No	12				
4	Anoxic Zone Mixers	No	12				
	Allow for all costs and expenses in connection with the Site installation in terms of in terms of FIDIC and Part C3: Scope of Work (excluding pre-commissioning) for the following:						
5	Anaerobic Zone Mixers	No	12				
6	Anoxic Zone Mixers	No	12				
	Allow for all costs and expenses in connection with pre-commsissioning in terms of FIDIC and Part C3: Scope of Work for the following:						
7	Complete mixing system	Sum	-				
8	Mixing homogeneity tests	Sum	-				
	Storage of equipment as ordered by the Engineer including insurances where storage space is provided by:						
9	a. The Contractor	Month	3				
10	b. The City of Cape Town	Month	3				
Carried forward / ...							

ITEM	DESCRIPTION	UNIT	QTY	RATE R c	AMOUNT R c
Brought forward / ...					
	Other:				
11	All other items not included above but which are nevertheless necessary to meet the Scope of Work and/or are required for the proper, safe and effective operation of the plant *(Specify)*	Item			
TOTAL OF SCHEDULE M5 CARRIED TO SUMMARY					

ITEM	DESCRIPTION	UNIT	QTY	RATE R	RATE C	AMOUNT R	AMOUNT C
	SCHEDULE M6						
	FINE BUBBLE DIFFUSED AERATION (FBDA) EQUIPMENT						
	Allow for all the costs and expenses in connection with the design, manufacture, painting, supplying, delivery, offloading and storage of the following materials and equipment:						
	FBDA System						
1	Blowers	No	5				
2	Blower discharge pipework	Sum	-				
3	Main header/ manifold pipework	Sum	-				
4	Sub manifold pipework connecting B1 aerobic zones	Sum	-				
5	Sub manifold pipework connecting B2 & B3 aerobic zones	Sum	-				
6	Downlegs/ Droplegs Pipework	Sum	-				
7	Laterals pipework	Sum	-				
8	Diffusers and membrane assemblies etc.	Sum	-				
9	Condensate and Acid Injection System	Sum	-				
10	Manifold and downleg pipe supports	Sum	-				
11	Lateral supports	Sum	-				
12	Pipe specials such as flanges, blank flanges, stubs, reducers, lobsters, elbows, flexible connections, etc. required for a proper and safe functioning of the FBDA equipment	Sum	-				
	Aerobic Zone Scum Suppression Equipment						
13	Scum/Foam Suppression Spray equipment	Sum	-				
	Formic Acid Dosing Skid						
14	Formic Acid mobile dosing skid system, along with all the pipe connections, injection/ quick release fittings on the dropleg etc for safe and proper functioning of the FBDA equipment	Sum	-				
Carried forward / ...							

ITEM	DESCRIPTION	UNIT	QTY	RATE R	RATE C	AMOUNT R	AMOUNT C
Brought forward / ...							
15	Formic Acid for commissioning (at least 50L)	Sum	-				
16	Formic Acid Skid - one tank fill	No	-				
	Allow for all costs and expenses in connection with the Site Installation in terms of in terms of FIDIC and Part C3: Scope of Work (excluding pre-commissioning) for the following:						
17	Blowers	No	5				
18	Blower discharge pipework	Sum	-				
19	Main header/ manifold pipework	Sum	-				
20	Sub manifold pipework connecting B1 aerobic zones	Sum	-				
21	Sub manifold pipework connecting B2 & B3 aerobic zones	Sum	-				
22	Downlegs/ Droplegs Pipework	Sum	-				
23	Laterals pipework	Sum	-				
24	Diffusers and membrane assemblies etc.	Sum	-				
25	Condensate and Acid Injection System	Sum	-				
26	Manifold and downleg pipe supports	Sum	-				
27	Lateral supports	Sum	-				
	Aerobic Zone Scum Suppression Equipment						
28	Scum/Foam Suppression Spray equipment	Sum	-				
	Formic Acid Dosing Skid						
29	Formic Acid for commissioning (at least 50L)	Sum	-				
30	Formic Acid Skid - one tank fill	Sum	-				
Carried forward / ...							

ITEM	DESCRIPTION	UNIT	QTY	RATE R c	AMOUNT R c
Brought forward / ...					
	Allow for all costs and expenses in connection with pre-commsissioning in terms of FIDIC and Part C3: Scope of Work for the following:				
31	Complete FBDA System	Sum	-		
32	Oxygen transfer testing of entire FBDA system	Sum	-		
	Storage of equipment as ordered by the Engineer including insurances where storage space is provided by:				
33	a. The Contractor	Month	3		
34	b. The City of Cape Town	Month	3		
	Other:				
35	All other items not included above but which are nevertheless necessary to meet the Scope of Work and/or are required for the proper, safe and effective operation of the plant *(Specify)*	Item	1		
TOTAL OF SCHEDULE M6 CARRIED TO SUMMARY					

ITEM	DESCRIPTION	UNIT	QTY	RATE R c	AMOUNT R c
	SCHEDULE M7				
	MIXED LIQUOR RECYCLE (MLR) PUMP				
	Allow for all the costs and expenses in connection with the design, manufacture, painting, supplying, delivery, offloading and storage of the following materials and equipment:				
1	Ax-An Recycle Pumps	No	9		
2	Ae-Ax Recycle Pumps	No	9		
3	Mixed Liquor Swing-Recycle pumps	No	4		
	Allow for all costs and expenses in connection with the Site installation in terms of in terms of FIDIC and Part C3: Scope of Work (excluding pre-commissioning) for the following:				
4	Ax-An Recycle Pumps	No	9		
5	Ae-Ax Recycle Pumps	No	9		
6	Mixed Liquor Swing-Recycle pumps	No	4		
	Allow for all costs and expenses in connection with pre-commsissioning in terms of FIDIC and Part C3: Scope of Work for the following:				
7	Ax-An Recycle Pumps	Sum	-		
8	Ae-Ax Recycle Pumps	Sum	-		
9	Mixed Liquor Swing-Recycle pumps	Sum	-		
	Storage of equipment as ordered by the Engineer including insurances where storage space is provided by:				
10	a. The Contractor	Month	3		
11	b. The City of Cape Town	Month	3		
Carried forward / ...					

ITEM	DESCRIPTION	UNIT	QTY	RATE R c	AMOUNT R c
Brought forward / ...					
	Other:				
12	All other items not included above but which are nevertheless necessary to meet the Scope of Work and/or are required for the proper, safe and effective operation of the plant *(Specify)*	Item			
TOTAL OF SCHEDULE M7 CARRIED TO SUMMARY					

ITEM	DESCRIPTION	UNIT	QTY	RATE R	RATE c	AMOUNT R	AMOUNT c
Brought forward / ...							
12	Air scour main manifold	Sum	-				
13	Air scour distribution pipework to membrane casettes	Sum	-				
14	Air manifold pipe supports	Sum	-				
	Permeate/Backpulse Pumps						
15	Permeate / backpulse pump	No	9				
16	Permeate suction pipework	Sum	-				
17	Permeate discharge pipework	Sum	-				
18	Common permeate collection manifold to backpulse tank	Sum	-				
19	Pipe supports	Sum	-				
	Filtration Tanks Drain Pumps						
20	Flitration train drain pump	No	3				
21	Filtration train drain suction pipework	No	9				
22	Common suction manifold	Sum	-				
23	Pump suction pipework	No	3				
24	Pump discharge pipework	No	3				
25	Common discharge manifold	Sum	-				
26	Pipe supports	Sum	-				
	Scum/ WAS Pumps						
27	Scum/WAS pumps	No	2				
28	Common suction manifold	Sum	-				
29	Pump suction pipework	No	3				
30	Pump discharge pipework	No	3				
31	Common discharge manifold	Sum	-				
32	Pipe supports	Sum	-				
Carried forward / ...							

ITEM	DESCRIPTION	UNIT	QTY	RATE R C	AMOUNT R C
Brought forward / ...					
	GRP Covers				
33	GRP covers for membrane tanks	m²	700		
34	GRP covers for channels	m²	500		
	CIP: Sodium Hypochlorite Dosing Equipment				
35	Chemical room ventilation system	Sum	-		
36	CIP: Sodium hypochlorite dosing system (bunded skids and cabinet etc) as specified	Sum	-		
37	Scum suppression system: Sodium hypochlorite dosing system	Sum	-		
38	Storage tank	Sum	-		
39	Pipework	Sum	-		
40	Pipe supports	Sum	-		
41	Filling station pump and pipework	Sum	-		
42	Sodium hypochlorite required during the entire performance period (commissioning) of the MBR plant	Sum	-		
43	Sodium hypochlorite - one tank fill	Sum	-		
44	Access platform	Sum	-		
	CIP: Citric Acid Dosing Equipment				
45	Chemical room ventilation system	Sum	-		
46	CIP: Citric acid dosing system (bunded skids and cabinet etc) as specified	Sum	-		
47	Storage tank	Sum	-		
48	Pipework	Sum	-		
49	Supports	Sum	-		
50	Filling station pump and pipework	Sum	-		
51	Citric acid required during the entire performance period (commissioning) of the MBR plant	Sum	-		
Carried forward / ...					

ITEM	DESCRIPTION	UNIT	QTY	RATE R c	AMOUNT R c
Brought forward / ...					
52	Citric acid - one tank fill	Sum	-		
53	Citric acid Batching Equipment	Sum	-		
54	Citric acid batching dust collection system	Sum	-		
55	Access platform	Sum	-		
	Allow for all costs and expenses in connection with the Site installation in terms of in terms of FIDIC and Part C3: Scope of Work (excluding pre-commissioning) for the following:				
	Membrane Tanks Feed/ Mixed Liquor Transfer Pumps				
56	Membrane Tank Feed (Mixed Liquor Transfer) Pump	No	6		
	Ultra-Filtration Membrane Bioreactor Plant Equipment				
57	Membrane filtration units for one train	No	9		
58	Flow Control Baffle	No	9		
59	Membrane plant ventilation/air ejection system	Sum	-		
60	Membrane integrity testing equipment (excluding turbidity analysers which are scheduled elsewhere)	Sum	-		
61	On-line performance and process monitoring service and associated equipment	Sum	-		
62	Membrane unit lifting bracket / cradle	No	1		
63	Other membrane plant pipework and associated equipment (EN Grade 1.4401) not mentioned above, but are required for proper and safe operation of the membrane filtration system	Sum	-		
	Air Scour Equipment				
64	Blowers	No	6		
65	Blower discharge pipework	Sum	-		
66	Air scour main manifold	Sum	-		
Carried forward / ...					

ITEM	DESCRIPTION	UNIT	QTY	RATE R	RATE c	AMOUNT R	AMOUNT c
Brought forward / ...							
67	Air scour distribution pipework to membrane casettes	Sum	-				
68	Air manifold pipe supports	Sum	-				
	Permeate/Backpulse Pumps						
69	Permeate / backpulse pump	No	9				
70	Permeate suction pipework	Sum	-				
71	Permeate discharge pipework	Sum	-				
72	Common permeate collection manifold to backpulse tank	Sum	-				
73	Pipe supports	Sum	-				
	Filtration Tanks Drain Pumps						
74	Filtration train drain pump	No	3				
75	Filtration train drain suction pipework	No	9				
76	Common suction manifold	Sum	-				
77	Pump suction pipework	No	3				
78	Pump discharge pipework	No	3				
79	Common discharge manifold	Sum	-				
80	Supports	Sum	-				
	Scum/ WAS Pumps						
81	Scum/WAS pumps	No	2				
82	Common suction manifold	Sum	-				
83	Pump suction pipework	No	3				
84	Pump discharge pipework	No	3				
85	Common discharge manifold	Sum	-				
86	Pipe supports	Sum	-				
Carried forward / ...							

ITEM	DESCRIPTION	UNIT	QTY	RATE R c	AMOUNT R c
Brought forward / ...					
	GRP Covers				
87	GRP covers for membrane tanks	m²	700		
88	GRP covers for channels	m²	500		
	CIP: Sodium Hypochlorite Dosing Equipment				
89	Chemical room ventilation system	Sum	-		
90	CIP: Sodium hypochlorite dosing system (bunded skids and cabinet etc) as specified	Sum	-		
91	Scum spray: Sodium hypochlorite dosing system	Sum	-		
92	Storage tank	Sum	-		
93	Pipework	Sum	-		
94	Pipe supports	Sum	-		
95	Filling station pump	Sum	-		
96	Sodium hypochlorite required during the entire performance period (commissioning) of the MBR plant	Sum	-		
97	Sodium hypochlorite - one tank fill	Sum	-		
98	Access platform	Sum	-		
	CIP: Citric Acid Dosing Equipment				
99	Chemical room ventilation system	Sum	-		
100	CIP: Citric acid dosing system (bunded skids and cabinet etc) as specified	Sum	-		
101	Storage tank	Sum	-		
102	Pipework	Sum	-		
103	Pipe supports	Sum	-		
104	Filling station pump	Sum	-		
105	Citric acid required during the entire performance period (commissioning) of the MBR plant	Sum	-		
106	Citric acid - one tank fill	Sum	-		
Carried forward / ...					

ITEM	DESCRIPTION	UNIT	QTY	RATE R	RATE c	AMOUNT R	AMOUNT c
Brought forward / ...							
107	Citric acid Batching Equipment	Sum	-				
108	Citric acid batching dust collection system	Sum	-				
109	Access platform	Sum	-				
110	**Allow for all costs and expenses in connection with pre-commsissioning in terms of FIDIC and Part C3: Scope of Work for the following:**	Sum	-				
111	Membrane Tanks Feed/ Mixed Liquor Transfer Pumps	Sum	-				
112	Ultra-Filtration Membrane Bioreactor Plant Equipment	Sum	-				
113	Air Scour Equipment	Sum	-				
114	Permeate/Backpulse Pumps	Sum	-				
115	Filtration Tanks Drain Pumps	Sum	-				
116	Scum/ WAS Pumps	Sum	-				
117	CIP: Sodium Hypochlorite Dosing Equipment	Sum	-				
118	CIP: Citric Acid Dosing Equipment	Sum	-				
119	Other membrane plant and associated equipment not mentioned above, but are required for proper and safe operation of the membrane filtration system (Specify):	Item	-				
Carried forward / ...							

ITEM	DESCRIPTION	UNIT	QTY	RATE R	RATE c	AMOUNT R	AMOUNT c
Brought forward / ...							
	Storage of equipment as ordered by the Engineer including insurances where storage space is provided by:						
120	a. The Contractor	Month	4				
121	b. The City of Cape Town	Month	4				
	Other:						
122	All other items not included above but which are nevertheless necessary to meet the Scope of Work and/or are required for the proper, safe and effective operation of the plant *(Specify):*	Item					
TOTAL OF SCHEDULE M8 CARRIED TO SUMMARY							

ITEM	DESCRIPTION	UNIT	QTY	RATE R c	AMOUNT R c
	SCHEDULE M9				
	INSTRUMENT AIR EQUIPMENT				
	Allow for all the costs and expenses in connection with the design, manufacture, painting, supplying, delivery, offloading and storage of the following materials and equipment:				
	Instrument Air				
1	Compressors	No	2		
2	Desiccant driers complete	Sum	-		
3	Refrigerant driers complete	Sum	-		
4	Air receiver (moisture trap)	No	2		
5	Air receiver	No	2		
6	Condensate management system	Sum	-		
7	All connecting pipework	Sum	-		
8	Seperator units and filter sets	No	3		
	Pneumatic Actuation Equipment				
9	Pneumatic control system and SS solenoid valve terminal cabinet for each process area, complete with tubing, service unit, pressure regulator & auto-drain etc.	Sum	-		
	UV stabilized/ resistant flexible tubing and connections from vallve terminal cabinet to actuators	Sum	-		
	Allow for all costs and expenses in connection with the Site installation in terms of in terms of FIDIC and Part C3: Scope of Work (excluding pre-commissioning) for the following:				
	Instrument Air				
10	Compressors	No	2		
11	Desiccant driers complete	Sum	-		
12	Refrigerant driers complete	Sum	-		
	Carried forward / ...				

ITEM	DESCRIPTION	UNIT	QTY	RATE R	RATE c	AMOUNT R	AMOUNT c
Brought forward / ...							
13	Air receiver (moisture trap)	No	2				
14	Air receiver	No	2				
15	Condensate management system	Sum	-				
16	All connecting pipework	Sum	-				
17	Seperator units and filter sets	No	3				
	Pneumatic Actuation Equipment						
18	Pneumatic control system and SS solenoid valve terminal cabinet for each process area, complete with tubing, service unit, pressure regulator & auto-drain etc.	Sum	-				
	UV stabilized/ resistant flexible tubing and connections from vallve terminal cabinet to actuators	Sum	-				
	Pneumatic Actuation Equipment						
19	Pneumatic control system	Sum	-				
	Allow for all costs and expenses in connection with pre-commsissioning in terms of FIDIC and Part C3: Scope of Work for the following:						
20	Complete Process air system	Sum	-				
	Storage of equipment as ordered by the Engineer including insurances where storage space is provided by:						
21	a. The Contractor	Month	3				
22	b. The City of Cape Town	Month	3				
	Other:						
23	All other items not included above but which are nevertheless necessary to meet the Scope of Work and/or are required for the proper, safe and effective operation of the plant *(Specify)*	Item					
TOTAL OF SCHEDULE M9 CARRIED TO SUMMARY							

ITEM	DESCRIPTION	UNIT	QTY	RATE R	RATE c	AMOUNT R	AMOUNT c
	SCHEDULE M10						
	SERVICE WATER EQUIPMENT						
	Allow for all the costs and expenses in connection with the design, manufacture, painting, supplying, delivery, offloading and storage of the following materials and equipment:						
1	Service Water Pumps	No	4				
2	UV Disinfection Units	No	2				
3	Accumulators	No	2				
4	All pipework connections, fittings etc as shown on drawings	Sum	-				
5	Supports	Sum	-				
	Allow for all costs and expenses in connection with the Site installation in terms of in terms of FIDIC and Part C3: Scope of Work (excluding pre-commissioning) for the following:						
6	Service Water Pumps	No	4				
7	UV Disinfection Units	No	2				
8	Accumulators	No	2				
9	All pipework connections, fittings etc as shown on drawings	Sum	-				
10	Supports	Sum	-				
	Allow for all costs and expenses in connection with pre-commsissioning in terms of FIDIC and Part C3: Scope of Work for the following:						
11	Complete Service water system	Sum	-				
	Storage of equipment as ordered by the Engineer including insurances where storage space is provided by:						
12	a. The Contractor	Month	3				
13	b. The City of Cape Town	Month	3				
	Carried forward / ...						

ITEM	DESCRIPTION	UNIT	QTY	RATE R c	AMOUNT R c
Brought forward / ...					
	Other:				
14	All other items not included above but which are nevertheless necessary to meet the Scope of Work and/or are required for the proper, safe and effective operation of the plant *(Specify)*	Item			
TOTAL OF SCHEDULE M10 CARRIED TO SUMMARY					

ITEM	DESCRIPTION	UNIT	QTY	RATE R	c	AMOUNT R	c
	SCHEDULE M11						
	HEATING VENTILATION AND AIR-CONDITIONING (HVAC) EQUIPMENT						
	Allow for all the costs and expenses in connection with the design, manufacture, painting, supplying, delivery, offloading and storage of the following materials and equipment:						
1	Machine Building: MBR B MCC (Membrane Plant)	Sum	-				
2	Machine Building: MBR B MCC (Bioreactor and Blower Room)	Sum	-				
3	Machine Building: Control room	Sum	-				
4	Machine Building: Laboratory	Sum	-				
5	Machine Building: Chemical store and ablution facility	Sum	-				
6	Machine Building: MBR B blower room forced air cooling system	Sum	-				
7	Machine Building: MBR B pump room and membrane room forced air cooling system	Sum	-				
8	Refurbishment of Existing Dewatering Building ventilation system	Provisional Sum				R	175,400.00
9	Percentage adjustment on Item 8 for Contractor's design, sourcing quotes, superintendence, and for overheads and profit (state as percentage an extend as amount)	%	-				
10	Temporary air conditioning system for Existing Dewatering Building ventilation system	Provisional Sum				R	175,400.00
11	Percentage adjustment on Item 10 for Contractor's design, sourcing quotes, superintendence, and for overheads and profit (state as percentage an extend as amount)	%	-				

Carried forward / ...

ITEM	DESCRIPTION	UNIT	QTY	RATE R c	AMOUNT R c
Brought forward / ...					
	Allow for all costs and expenses in connection with the Site installation in terms of in terms of FIDIC and Part C3: Scope of Work (excluding pre-commissioning) for the following:				
12	Machine Building: MBR B MCC (Membrane Plant)	Sum	-		
13	Machine Building: MBR B MCC (Bioreactor and Blower Room)	Sum	-		
14	Machine Building: Control room	Sum	-		
15	Machine Building: Laboratory	Sum	-		
16	Machine Building: Chemical store and ablution facility	Sum	-		
17	Machine Building: MBR B blower room forced air cooling system	Sum	-		
18	Machine Building: MBR B pump room and membrane room forced air cooling system	Sum	-		
	Allow for all costs and expenses in connection with pre-commsissioning in terms of FIDIC and Part C3: Scope of Work for the following:				
19	Machine Building: MBR B MCC (Membrane Plant)	Sum	-		
20	Machine Building: MBR B MCC (Bioreactor and Blower Room)	Sum	-		
21	Machine Building: Control room	Sum	-		
22	Machine Building: Laboratory	Sum	-		
23	Machine Building: Chemical store and ablution facility	Sum	-		
24	Machine Building: MBR B blower room forced air cooling system	Sum	-		
25	Machine Building: MBR B pump room and membrane room forced air cooling system	Sum	-		
	Storage of equipment as ordered by the Engineer including insurances where storage space is provided by:				
26	a. The Contractor	Month	3		
27	b. The City of Cape Town	Month	3		
Carried forward / ...					

ITEM	DESCRIPTION	UNIT	QTY	RATE R	RATE C	AMOUNT R	AMOUNT C
Brought forward / ...							
	Other:						
28	All other items not included above but which are nevertheless necessary to meet the Scope of Work and/or are required for the proper, safe and effective operation of the plant *(Specify)*	Item					
TOTAL OF SCHEDULE M11 CARRIED TO SUMMARY							

ITEM	DESCRIPTION	UNIT	QTY	PRICE R c	AMOUNT R c
	SCHEDULE M12				
	MBR FINE SCREENING ODOUR CONTROL				
	Allow for all costs in connection with the following general items:				
1	Odour Control Study as specified	Sum	-		
2	Inspection reports as specified	Sum	-		
	Allow for all the costs and expenses in connection with the design, manufacture, painting, factory testing, supplying, delivery, offloading and storage of the following materials and equipment:				
5	Equipment covers as specified	m^2	75		
6	Extraction piping and supports	Sum	-		
7	Concrete slab with reinforcement for odour control equipment	m^3	20		
8	Brickwork and concrete slab for extraction pipe manifold and drain points chamber	Sum	-		
9	Biological or chemical odour control system including media (if applicable)	Sum	-		
10	Media / chemicals as required	Sum	-		
11	Extraction fans (incl. motor and supports)	Sum	-		
12	Nutrient supply for one year continuous operation (if required)	Sum	-		
	Allow for all costs and expenses in connection with the Site installation in terms of in terms of FIDIC and Part C3: Scope of Work (excluding pre-commissioning) for the following:				
13	Complete Odour Control Equipment	Sum	-		
Carried forward / ...					

ITEM	DESCRIPTION	UNIT	QTY	PRICE R	PRICE C	AMOUNT R	AMOUNT C
Brought forward / ...							
	Allow for all costs and expenses in connection with pre-commsissioning in terms of FIDIC and Part C3: Scope of Work for the following:						
14	Complete Odour Control Equipment	Sum	-		-		
	Storage of equipment as ordered by the Engineer including insurances where storage space is provided by:						
15	a. The Contractor	Month	3				
16	b. The City of Cape Town	Month	3				
	Provisional Sums:						
17	Odour Control Study	Provisional Sum			-	R	120,000.00
18	Percentage adjustment on Item 16 for Contractor's design, sourcing quotes, superintendence, and for overheads and profit (state as percentage an extend as amount)	%	-	120,000			
	Other:						
19	All other items not included above but which are nevertheless necessary to meet the Scope of Work and/or are required for the proper, safe and effective operation of the plant *(Specify)*	Item					
TOTAL OF SCHEDULE M12 CARRIED TO SUMMARY							

ITEM	DESCRIPTION	UNIT	QTY	RATE R c	AMOUNT R c
	SCHEDULE M13				
	SCUM REMOVAL EQUIPMENT				
	Allow for all the costs and expenses in connection with the design, manufacture, painting, supplying, delivery, offloading and storage of the following materials and equipment:				
1	Rotating Pipe Scum Skimmer	Sum	-		
	Allow for all costs and expenses in connection with the Site installation in terms of in terms of FIDIC and Part C3: Scope of Work (excluding pre-commissioning) for the following:				
2	Rotating Pipe Scum Skimmer	Sum	-		
	Allow for all costs and expenses in connection with pre-commsissioning in terms of FIDIC and Part C3: Scope of Work for the following:				
3	Rotating Pipe Scum Skimmer	Sum	-		
	Storage of equipment as ordered by the Engineer including insurances where storage space is provided by:				
4	a. The Contractor	Month	3		
5	b. The City of Cape Town	Month	3		
	Other:				
6	All other items not included above but which are nevertheless necessary to meet the Scope of Work and/or are required for the proper, safe and effective operation of the plant *(Specify)*	Item			
	TOTAL OF SCHEDULE M13 CARRIED TO SUMMARY				

SECTION B OF THE WORKS: CAS A AND B PLANTS MECHANICAL EQUIPMENT

Continued Overleaf

ITEM	DESCRIPTION	UNIT	QTY	RATE R c	AMOUNT R c
	SCHEDULE M14				
	EXISTING CAS REACTOR EQUIPMENT				
	Allow for all costs in connection with the following general items:				
1	Inspection reports as specified	Sum	-		
2	CFD Analysis as specified for mixers and aerators	Sum	-		
	Handling of Existing Equipment				
3	Dismantling, decommissioning and removal of existing equipment	Sum	-		
4	Transport of decommissioned equipment	km	250		
	Allow for all the costs and expenses in connection with the design, manufacture, painting, factory testing, supplying, delivery, offloading and storage of the following materials and equipment:				
5	CAS Reactor A Submersible Mixers for Anoxic Zone A1 and A2	No	2		
6	CAS Reactor A Submersible Mixers for Anoxic Zone A3	No	6		
7	CAS Reactor B Submersible Mixers for Anoxic Zone B1 and B2	No	2		
8	CAS Reactor B Submersible Mixers for Anoxic Zone B3	No	6		
9	CAS Reactor A: Surface-Mounted Aerators for Zone A1	No	3		
10	CAS Reactor A: Surface-Mounted Aerators for Zone A2	No	3		
11	CAS Reactor A: Surface-Mounted Aerators for Zone A3	No	4		
12	CAS Reactor B: Surface-Mounted Aerators for Zone B1	No	3		
13	CAS Reactor B: Surface-Mounted Aerators for Zone B2	No	3		
14	CAS Reactor B: Surface-Mounted Aerators for Zone B3	No	4		
Carried forward / ...					

ITEM	DESCRIPTION	UNIT	QTY	RATE R c	AMOUNT R c
Brought forward / ...					
15	CAS Reactor B: Surface-Mounted Aerators for Zone B2	No	3		
16	CAS Reactor B: Surface-Mounted Aerators for Zone B3	No	4		
17	CAS Reactor A: Internal Mixed Liquor Recycle (A-Recycle) Pumps including discharge pipework	No	3		
18	CAS Reactor B: Internal Mixed Liquor Recycle (A-Recycle) Pumps including discharge pipework	No	3		
19	CAS Reactor A & B Outlet Chamber: Provision and installation of new bridges over tilitng weirs	No	4		
	Allow for all costs and expenses in connection with the Site installation in terms of in terms of FIDIC and Part C3: Scope of Work (excluding pre-commissioning) for the following:				
20	CAS Reactor A Submersible Mixers for Anoxic Zone A1 and A2	No	2		
21	CAS Reactor A Submersible Mixers for Anoxic Zone A3	No	6		
22	CAS Reactor B Submersible Mixers for Anoxic Zone B1 and B2	No	2		
23	CAS Reactor B Submersible Mixers for Anoxic Zone B3	No	6		
24	CAS Reactor A: Surface-Mounted Aerators for Zone A1	No	3		
25	CAS Reactor A: Surface-Mounted Aerators for Zone A2	No	3		
26	CAS Reactor A: Surface-Mounted Aerators for Zone A3	No	4		
27	CAS Reactor B: Surface-Mounted Aerators for Zone B1	No	3		
28	CAS Reactor B: Surface-Mounted Aerators for Zone B2	No	3		
29	CAS Reactor B: Surface-Mounted Aerators for Zone B3	No	4		
Carried forward / ...					

ITEM	DESCRIPTION	UNIT	QTY	RATE R	RATE C	AMOUNT R	AMOUNT C
Brought forward / ...							
30	CAS Reactor A: Internal Mixed Liquor Recycle (A-Recycle) Pumps including discharge pipework	No	3				
31	CAS Reactor B: Internal Mixed Liquor Recycle (A-Recycle) Pumps including discharge pipework	No	3				
32	CAS Reactor A & B Outlet Chamber: Provision and installation of new bridges over tilting weirs	No	4				
33	CAS Reactor A & B Outlet : Provision and installation of new bridges over manual sluice gates at the outlet to SSTs **Allow for all costs and expenses in connection with pre-commsissioning in terms of FIDIC and Part C3: Scope of Work for the following:**	No	4				
34	CAS Reactor A Submersible Mixers	No	2				
35	CAS Reactor B Submersible Mixers	No	2				
36	CAS Reactor A Surface-Mounted Aerators	No	4				
37	CAS Reactor B Surface-Mounted Aerators	No	4				
38	CAS Reactor A: Internal Mixed Liquor Recycle (A-Recycle) Pumps including discharge pipework	No	3				
39	CAS Reactor B: Internal Mixed Liquor Recycle (A-Recycle) Pumps including discharge pipework	No	3				
40	CAS Reactor A & B Outlet Chamber: New bridges over tilting weirs **Storage of equipment as ordered by the Engineer including insurances where storage space is provided by:**	No	4				
41	a. The Contractor	Month	3				
42	b. The City of Cape Town	Month	3				
Carried forward / ...							

ITEM	DESCRIPTION	UNIT	QTY	RATE R	RATE C	AMOUNT R	AMOUNT C
Brought forward / ...							
	Other:						
43	All other items not included above but which are nevertheless necessary to meet the Scope of Work and/or are required for the proper, safe and effective operation of the plant *(Specify)*	Item					
TOTAL OF SCHEDULE M14 CARRIED TO SUMMARY							

ITEM	DESCRIPTION	UNIT	QTY	RATE R c	AMOUNT R c
	SCHEDULE M15				
	EXISTING RAS AND WAS PUMPSTATIONS EQUIPMENT				
	Handling of Existing Equipment				
1	Dismantling, decommissioning and removal of existing equipment	Sum	-		
2	Transport of decommissioned equipment	km	250		
	Allow for all the costs and expenses in connection with the design, manufacture, painting, factory testing, supplying, delivery, offloading and storage of the following materials and equipment:				
	RAS Pumpstation				
3	Vertical Shaft Axial Flow Pumps	No	4		
4	Pipework Refurbishment and modification	No	4		
	WAS Pumpstation				
5	Self-priming centrifugal pumps	No	4		
6	Suction pipework	No	2		
7	Delivery Pipework	No	2		
8	Supports	No	2		
	Allow for all costs and expenses in connection with the Site installation in terms of in terms of FIDIC and Part C3: Scope of Work (excluding pre-commissioning) for the following:				
9	RAS pumpstation complete (i.e. RAS A & RAS B)	No	2		
10	WAS pumpstation complete (i.e. WAS A & WAS B)	No	2		
	Allow for all costs and expenses in connection with pre-commsissioning in terms of FIDIC and Part C3: Scope of Work for the following:				
11	RAS pumpstation complete (i.e. RAS A & RAS B)	No	2		
12	WAS pumpstation complete (i.e. WAS A & WAS B)	No	2		
Carried forward / ...					

ITEM	DESCRIPTION	UNIT	QTY	RATE R	RATE c	AMOUNT R	AMOUNT c
Brought forward / ...							
	Storage of equipment as ordered by the Engineer including insurances where storage space is provided by:						
13	a. The Contractor	Month	3				
14	b. The City of Cape Town	Month	3				
	Other:						
15	All other items not included above but which are nevertheless necessary to meet the Scope of Work and/or are required for the proper, safe and effective operation of the plant *(Specify)*	Item					
TOTAL OF SCHEDULE M15 CARRIED TO SUMMARY							

ITEM	DESCRIPTION	UNIT	QTY	RATE R c	AMOUNT R c
	SCHEDULE M16				
	EXISTING SECONDARY SETTLING TANK EQUIPMENT				
	Allow for all costs and expenses in connection with the site inspection, opening up, removal if required, specialist input, determination of refurbishment required and reporting as specified of the following:				
1	Complete inspection of existing SST equipment and reporting as specified.	Sum	-		
	Handling of Existing Equipment (Provisional Sums):				
2	Dismantling, decommissioning and removal (including emtying of clarifier/ pumping to CAS plant) of existing equipment	Sum	-		
3	Transport of decommissioned equipment	km	250		
	Allow for all the costs and expenses in connection with the design, manufacture, painting, factory testing, supplying, delivery, offloading and storage of the following materials and equipment (Provisional Sums):				
4	Sloped-bottom clarifier Half Bridge and supports complete with centre bearings, sludge scrapers, end carriage, drive, access ladders and associated equipment	No	5		
5	Sloped-bottom clarifier Full Bridge and supports complete with centre bearings, sludge scrapers, end carriage, drive, access ladders and associated equipment	No	3		
6	Central inlet pipe and stilling well/ chamber for SST's (for one complete tank)	No	8		
7	SS V-notch weirs (75 mm deep) for full circumference of the clarifier	No	8		
8	SS Scum baffle plates for full circumference of the clarifier	No	8		
9	SS Scum scum trough/ box and draw-off mechanism	No	8		
Carried forward / ...					

ITEM	DESCRIPTION	UNIT	QTY	RATE R	RATE c	AMOUNT R	AMOUNT c
Brought forward / ...							
10	SS Scum withdrawal pipework, flanges and fittings (for all clarifiers)	Sum	-				
	Allow for all costs and expenses in connection with the Site installation in terms of FIDIC and Part C3: Scope of Work (excluding pre-commissioning) for the following (Provisional Sums):						
11	Sloped-bottom clarifier Half Bridge and supports complete with centre bearings, sludge scrapers, end carriage, drive, access ladders and associated equipment	No	5				
12	Sloped-bottom clarifier Full Bridge and supports complete with centre bearings, sludge scrapers, end carriage, drive, access ladders and associated equipment	No	3				
13	Central inlet pipe and stilling well/ chamber for SST's (for one complete tank)	No	8				
14	SS V-notch weirs (75 mm deep) for full circumference of the clarifier	No	8				
15	SS Scum baffle plates for full circumference of the clarifier	No	8				
16	SS Scum scum trough/ box and draw-off mechanism	No	8				
17	SS Scum withdrawal pipework, flanges and fittings (for all clarifiers)	Sum	-				
	Allow for all costs and expenses in connection with pre-commsissioning in terms of FIDIC and Part C3: Scope of Work for the following (Provisional Sums):						
	Complete Half Bridge Clarifier equipment	Sum	-				
	Complete Full Bridge Clarifier equipment	Sum	-				
	Storage of equipment as ordered by the Engineer including insurances where storage space is provided by (Provisional Sums):						
18	a. The Contractor	Month	3				
19	b. The City of Cape Town	Month	3				
Carried forward / ...							

ITEM	DESCRIPTION	UNIT	QTY	RATE R c	AMOUNT R c
Brought forward / ...					
	Other:				
20	All other items not included above but which are nevertheless necessary to meet the Scope of Work and/or are required for the proper, safe and effective operation of the plant *(Specify)*	Item			
TOTAL OF SCHEDULE M16 CARRIED TO SUMMARY					

ITEM	DESCRIPTION	UNIT	QTY	RATE R c	AMOUNT R c
	SCHEDULE M17				
	NEW SECONDARY SETTLING TANK EQUIPMENT				
	Allow for all costs in connection with the following general items:				
1	Grano Screeding of Clarifiers (SSTs) floors	Sum	-		
	Allow for all the costs and expenses in connection with the design, manufacture, painting, factory testing, supplying, delivery, offloading and storage of the following materials and equipment:				
2	Sloped-bottom clarifier Full Bridge and supports complete with centre bearings, sludge scrapers, end carriage, drive, access ladders and associated equipment	No	4		
3	Central inlet pipe and stilling well/ chamber for SST's (for one complete tank)	No	4		
4	SS V-notch weirs (75 mm deep) for full circumference of the clarifier	No	4		
5	SS Scum baffle plates for full circumference of the clarifier	No	4		
6	SS Scum scum trough/ box and draw-off mechanism (2No per clarifier)	No	8		
7	SS Scum withdrawal pipework, flanges and fittings (for all clarifiers)	Sum	-		
	Allow for all costs and expenses in connection with the Site installation in terms of in terms of FIDIC and Part C3: Scope of Work (excluding pre-commissioning) for the following:				
8	Sloped-bottom clarifier full bridge and supports complete with centre bearings, sludge scrapers, end carriage, drive and associated equipment	No	4		
9	Central inlet pipe and stilling well/ chamber for SST's (for one complete tank)	No	4		
10	SS V-notch weirs (75 mm deep) for full circumference of the clarifier	No	4		
Carried forward / ...					

ITEM	DESCRIPTION	UNIT	QTY	RATE R c	AMOUNT R c
Brought forward / ...					
11	SS Scum baffle plates for full circumference of the clarifier	No	4		
12	SS Scum scum trough/ box and draw-off mechanism (2No per clarifier)	No	8		
13	SS Scum withdrawal pipework, flanges and fittings (for all clarifiers)	Sum	-		
	Allow for all costs and expenses in connection with pre-commsissioning in terms of FIDIC and Part C3: Scope of Work for the following:				
14	Complete Clarifier equipment	Sum	-		
	Storage of equipment as ordered by the Engineer including insurances where storage space is provided by:				
15	a. The Contractor	Month	3		
16	b. The City of Cape Town	Month	3		
	Other:		-		
17	All other items not included above but which are nevertheless necessary to meet the Scope of Work and/or are required for the proper, safe and effective operation of the plant *(Specify)*	Item			
TOTAL OF SCHEDULE M17 CARRIED TO SUMMARY					

ITEM	DESCRIPTION	UNIT	QTY	RATE R c	AMOUNT R c
	SCHEDULE M18				
	CHLORINE DISINFECTION EQUIPMENT				
	Allow for all costs in connection with the following general items:				
	Handling of Existing Equipment				
1	Dismantling, decommissioning and removal of existing equipment	Sum	-		
2	Transport of decommissioned equipment	km	250		
	Allow for all the costs and expenses in connection with the design, manufacture, painting, factory testing, supplying, delivery, offloading and storage of the following materials and equipment:				
	High Pressure Room Chlorine Dosing Equipment:				
3	Auto Changeover Device	No	1		
4	Drum Cradles with Scales (mass meters)	No	6		
5	All chlorine gas pipework complete as specified, including valves, pressure reducing valves, catchpots, heaters, vaporisers, pigtails supportsetc., as required	Sum	-		
6	Vacuum Regulator	No	2		
	Low Pressure Room Chlorine Dosing Equipment:				
7	Chlorinator Skids Complete	No	2		
8	Injectors	No	2		
9	Complete Booster Pumps	No	3		
10	Chlorine dilution water pipework	Sum	-		
11	Pipework and supports as required	Sum	-		
12	Submerged dispersion bar pipe complete (located at the chlorine disinfection chamber)	Sum	-		
13	Residual chlorine meters	Sum	-		
Carried forward / ...					

ITEM	DESCRIPTION	UNIT	QTY	RATE R c	AMOUNT R c
Brought forward / ...					
	Low Pressure Room Chlorine Dosing Equipment:				
27	Chlorinator Skids Complete	No	2		
28	Injectors	No	2		
29	Complete Booster Pumps	No	3		
30	Chlorine dilution water pipework	Sum	-		
31	Pipework and supports as required	Sum	-		
32	Submerged dispersion bar pipe complete (located at the chlorine disinfection chamber)	Sum	-		
	Chlorine Dosing Safety Equipment:				
33	Gas Leak Detector, including beacon and siren	No	1		
34	Breathing Apparatus set including enclosure	No	2		
35	Windsock	No	1		
36	Emergency Closure Kit (safety equipment including weather proof cabinet, gas masks, eye wash bottle, etc.)	No	1		
37	Ventilation System (vent fan)	Sum	-		
	Safety Signage (wall charts)	Sum	-		
	Complete Shower Stainless Steel full body shower and eye bath (including Accumulator and Pumps)	Sum	-		
38	Residual chlorine meters	Sum	-		
	Temporary Chlorine Supply				
39	Chlorine Chip Doser (or similar approved) and Chlorine as specified	Sum	-		
	Chlorine Scrubber				
40	Dry Chlorine Scrubber as specified	Sum	-		
Carried forward / ...					

ITEM	DESCRIPTION	UNIT	QTY	RATE R c	AMOUNT R c
Brought forward / …					
	Allow for all costs and expenses in connection with pre-commsissioning in terms of FIDIC and Part C3: Scope of Work for the following:				
41	Chlorine Dosing System	Sum	-		
42	Dry Chlorine Scrubber system	Sum	-		
	Storage of equipment as ordered by the Engineer including insurances where storage space is provided by:				
43	a. The Contractor	Month	3		
44	b. The City of Cape Town	Month	3		
	Other:				
45	All other items not included above but which are nevertheless necessary to meet the Scope of Work and/or are required for the proper, safe and effective operation of the plant *(Specify)* …… …… …… …… …… …… …… …… ……	Item			
TOTAL OF SCHEDULE M18 CARRIED TO SUMMARY					

ITEM	DESCRIPTION	UNIT	QTY	RATE R c	AMOUNT R c
	SCHEDULE M19				
	CLARIFIERS SCUM PUMP STATION EQUIPMENT				
	Allow for all costs in connection with the following general items:				
	Handling of Existing Equipment				
1	Dismantling, decommissioning and removal of existing equipment	Sum	-		
2	Transport of decommissioned equipment	km	250		
	Allow for all the costs and expenses in connection with the design, manufacture, painting, factory testing, supplying, delivery, offloading and storage of the following materials and equipment:				
3	Self-priming centrifugal pumps	No	6		
4	Suction pipework	No	3		
5	Delivery Pipework	No	3		
6	Pipe supports	No	3		
	Allow for all costs and expenses in connection with the Site Installation in terms of in terms of FIDIC and Part C3: Scope of Work (excluding pre-commissioning) for the following:				
7	Scum Pumpstations complete	No	3		
	Allow for all costs and expenses in connection with pre-commissioning in terms of FIDIC and Part C3: Scope of Work for the following:				
8	Scum Pumpstations complete	Sum	-		
	Storage of equipment as ordered by the Engineer including insurances where storage space is provided by:				
9	a. The Contractor	Month	3		
10	b. The City of Cape Town	Month	3		
Carried forward / ...					

ITEM	DESCRIPTION	UNIT	QTY	RATE R	RATE c	AMOUNT R	AMOUNT c
Brought forward / ...							
	Other:						
11	All other items not included above but which are nevertheless necessary to meet the Scope of Work and/or are required for the proper, safe and effective operation of the plant *(Specify)*	Item					
TOTAL OF SCHEDULE M19 CARRIED TO SUMMARY							

ITEM	DESCRIPTION	UNIT	QTY	RATE R c	AMOUNT R c
	SCHEDULE M20				
	CHEMICAL DOSING EQUIPMENT				
	Allow for all costs in connection with the following general items:				
	Handling of Existing Equipment				
1	Dismantling, decommissioning and removal of existing equipment	Sum	-		
2	Transport of decommissioned equipment	km	250		
	Allow for all the costs and expenses in connection with the design, manufacture, painting, factory testing, supplying, delivery, offloading and storage of the following materials and equipment:				
	Sodium Hydroxide (Caustic Soda) Equipment				
3	Chemical room ventilation system	Sum	-		
4	Dosing system (bunded skids and cabinet etc) as specified	Sum	-		
5	Pressurised storage tanks	No	2		
6	All dosing pipework complete as specified, including valves, pressure reducing valves, etc.	Sum	-		
7	Filling station booster pump (inclusive of bunded skids and cabinet etc)	Sum	-		
8	Supports	Sum	-		
9	FRP banded grating and frame support	m^2	60		
10	Grating support beams (50 x 150 x 5mm) as shown on drawings	Sum	-		
11	Chemical required during the entire performance period (commissioning) of the plant	Sum	-		
12	Chemical - one tank fill	No	2		
	Coagulant for P-removal Equipment				
13	Chemical room ventilation system	Sum	-		
Carried forward / ...					

ITEM	DESCRIPTION	UNIT	QTY	RATE R	RATE c	AMOUNT R	AMOUNT c
Brought forward / ...							
14	Dosing system (bunded skids and cabinet etc) as specified	Sum	-				
15	Pressurised storage tanks	No	2				
16	All dosing pipework complete as specified, including valves, pressure reducing valves, etc.	Sum	-				
17	Filling station booster pump (inclusive of bunded skids and cabinet etc)	Sum	-				
18	Supports	Sum	-				
19	FRP banded grating and frame support	m^2	60				
20	Grating support beams (50 x 150 x 5mm) as shown on drawings	Sum	-				
21	Chemical required during the entire performance period (commissioning) of the plant	Sum	-				
22	Chemical - one tank fill	No	2				
	Allow for all costs and expenses in connection with the Site installation in terms of in terms of FIDIC and Part C3: Scope of Work (excluding pre-commissioning) for the following:						
	Sodium Hydroxide (Caustic Soda) Equipment						
23	Chemical room ventilation system	Sum	-				
24	Dosing system (bunded skids and cabinet etc) as specified	Sum	-				
25	Pressurised storage tanks	No	2				
26	All dosing pipework complete as specified, including valves, pressure reducing valves, etc.	Sum	-				
27	Filling station booster pump (inclusive of bunded skids and cabinet etc)	Sum	-				
28	Supports	Sum	-				
29	FRP banded grating and frame support	m^2	60				
30	Grating support beams (50 x 150 x 5mm) as shown on drawings	Sum	-				
Carried forward / ...							

ITEM	DESCRIPTION	UNIT	QTY	RATE R	RATE c	AMOUNT R	AMOUNT c
Brought forward / ...							
31	Chemical required during the entire performance period (commissioning) of the plant	Sum	-				
	Coagulant for P-removal Equipment						
32	Chemical room ventilation system	Sum	-				
33	Dosing system (bunded skids and cabinet etc) as specified	Sum	-				
34	Pressurised storage tanks	No	2				
35	All dosing pipework complete as specified, including valves, pressure reducing valves, etc.	Sum	-				
36	Filling station booster pump (inclusive of bunded skids and cabinet etc)	Sum	-				
37	Supports	Sum	-				
38	FRP banded grating and frame support	m^2	60				
39	Grating support beams (50 x 150 x 5mm) as shown on drawings	Sum	-				
40	Chemical required during the entire performance period (commissioning) of the plant	Sum	-				
	Allow for all costs and expenses in connection with pre-commsissioning in terms of FIDIC and Part C3: Scope of Work for the following:						
41	Entire Sodium Hydroxide System	Sum	-				
42	Entire Coagulant for P-removal System	Sum	-				
	Allow for all costs and expenses in connection with Chemical Dosing Safety Equipment for the following:						
	Sodium Hydroxide (Caustic Soda) Equipment						
43	Supply of full set of Chemical Handling PPE (Including Goggles, Aprons, Respirators, Masks, Aprons/Body Suits etc.) as required by chemical.	No	12				
44	Windsock	No	1				
45	Safety equipment including weather proof cabinet, gas masks, eye wash bottle, etc.)	No	2				
Carried forward / ...							

ITEM	DESCRIPTION	UNIT	QTY	RATE R c	AMOUNT R c
Brought forward / ...					
46	Safety Signage (wall charts)	Sum	-		
47	Complete Shower Stainless Steel full body shower and eye bath (including Accumulator and Pumps)	No	1		
	Coagulant for P-removal Equipment				
	Supply of full set of Chemical Handling PPE (including Goggles, Aprons, Respirators, Masks, Aprons/Body Suits etc.) as required by chemical.	No	12		
48	Windsock	No	1		
49	Safety equipment including weather proof cabinet, gas masks, eye wash bottle, etc.)	No	2		
50	Safety Signage (wall charts)	Sum	-		
51	Complete Shower Stainless Steel full body shower and eye bath (including Accumulator and Pumps)	No	1		
	Storage of equipment as ordered by the Engineer including insurances where storage space is provided by:				
52	a. The Contractor	Month	3		
53	b. The City of Cape Town	Month	3		
	Other:				
	All other items not included above but which are nevertheless necessary to meet the Scope of Work and/or are required for the proper, safe and effective operation of the plant *(Specify)*	Item			
TOTAL OF SCHEDULE M20 CARRIED TO SUMMARY					

SECTION C OF THE WORKS: MODULE A - MECHANICAL EQUIPMENT

Continued Overleaf

ITEM	DESCRIPTION	UNIT	QTY	RATE R C	AMOUNT R C
	SCHEDULE M21				
	BIOREACTOR MIXING EQUIPMENT				
	Allow for all costs in connection with the following general items:				
1	CFD Analysis on Anoxic Zone mixers	Sum	-		
2	CFD Analysis on Anaerobic Zone mixers	Sum	-		
	Handling of Existing Equipment				
3	Dismantling, decommissioning and removal (including emtying of reactor/ pumping to CAS plant) of existing equipment	Sum	-		
4	Transport of decommissioned equipment	km	250		
	Allow for all the costs and expenses in connection with the design, manufacture, painting, factory testing, supplying, delivery, offloading and storage of the following materials and equipment:				
5	Anaerobic Zone Mixer	No	12		
6	Anoxic Zone Mixer	No	12		
	Allow for all costs and expenses in connection with the Site installation in terms of in terms of FIDIC and Part C3: Scope of Work (excluding pre-commissioning) for the following:				
7	Anaerobic Zone Mixer	No	12		
8	Anoxic Zone Mixer	No	12		
	Allow for all costs and expenses in connection with pre-commsissioning in terms of FIDIC and Part C3: Scope of Work for the following:				
9	Complete mixing system	Sum	-		
10	Mixing homogeneity tests	Sum	-		
	Carried forward / ...				

ITEM	DESCRIPTION	UNIT	QTY	RATE R	AMOUNT R
Brought forward / ...					
	Storage of equipment as ordered by the Engineer including insurances where storage space is provided by:				
11	a. The Contractor	Month	3		
12	b. The City of Cape Town	Month	3		
TOTAL OF SCHEDULE M21 CARRIED TO SUMMARY					

ITEM	DESCRIPTION	UNIT	QTY	RATE R	RATE c	AMOUNT R	AMOUNT c
	SCHEDULE M22						
	FINE BUBBLE DIFFUSED AERATION (FBDA) EQUIPMENT						
	Allow for all costs in connection with the following general items:						
1	Inspection reports as specified	Sum	-				
	Handling of Existing Equipment						
2	Dismantling, decommissioning and removal (including emtying of reactor/ pumping to CAS plant) of existing equipment	Sum	-				
3	Transport of decommissioned equipment	km	250				
	Allow for all costs in connection with the following general items:						
4	Inspection reports (FBDA and Air Scour)	Sum	-				
	Allow for all the costs and expenses in connection with the design, manufacture, painting, factory testing, supplying, delivery, offloading and storage of the following materials and equipment:						
	Provisional Sums for FBDA equipment:						
5	Blowers	No	3				
6	Refurbishment of pipework	Sum	-				
7	Lateral pipework	Sum	-				
8	Diffusers and membrane assemblies etc.	Sum	-				
9	Condensate and Acid Injection System	Sum	-				
10	Manifold and downleg supports	Sum	-				
11	Lateral supports	Sum	-				
	Scum Spray System						
12	Scum/Foam Spray System	Sum	-				

Carried forward / ...

ITEM	DESCRIPTION	UNIT	QTY	RATE R c	AMOUNT R c
Brought forward / ...					
	Formic Acid				
13	Formic Acid mobile dosing skid system, along with all the pipe connections, injection/ quick release fittings on the dropleg etc for safe and proper functioning of the FBDA equipment	Sum	-		
14	Formic Acid for commissioning (at least 50L)	Sum	-		
15	Formic Acid Skid - one tank fill	No	-		
	Allow for all costs and expenses in connection with the Site Installation in terms of in terms of FIDIC and Part C3: Scope of Work (excluding pre-commissioning) for the following:				
	Provisional Sums for FBDA equipment:				
16	Blowers	No	5		
17	Refurbishment of pipework	Sum	-		
18	Lateral pipework	Sum	-		
19	Diffusers and membrane assemblies etc.	Sum	-		
20	Condensate System	Sum	-		
21	Manifold and downleg supports	Sum	-		
22	Lateral supports	Sum	-		
	Scum Spray System				
23	Scum/Foam Spray System	Sum	-		
	Formic Acid				
24	Formic Acid mobile dosing skid system, along with all the pipe connections, injection/ quick release fittings on the dropleg etc for safe and proper functioning of the FBDA equipment	Sum	-		
25	Formic Acid for commissioning (at least 50L)	Sum	-		
26	Formic Acid Skid - one tank fill	Sum	-		
Carried forward / ...					

ITEM	DESCRIPTION	UNIT	QTY	RATE R c	AMOUNT R c
Brought forward / ...					
	Allow for all costs and expenses in connection with the Site installation in terms of in terms of FIDIC and Part C3: Scope of Work (excluding pre-commissioning) for the following:				
27	Complete FBDA System	Sum	-		
28	Oxygen transfer testing of entire FBDA system	Sum	-		
	Storage of equipment as ordered by the Engineer including insurances where storage space is provided by:				
29	a. The Contractor	Month	3		
30	b. The City of Cape Town	Month	3		
	Other:				
31	All other items not included above but which are nevertheless necessary to meet the Scope of Work and/or are required for the proper, safe and effective operation of the plant *(Specify)*	Item	1		
TOTAL OF SCHEDULE M22 CARRIED TO SUMMARY					

ITEM	DESCRIPTION	UNIT	QTY	RATE R c	AMOUNT R c
	SCHEDULE M23				
	MIXED LIQUOR RECYCLE (MLR) PUMP EQUIPMENT				
	Allow for all costs in connection with the following general items:				
	Handling of Existing Equipment				
1	Dismantling, decommissioning and removal (including emtying of reactor/ pumping to CAS plant) of existing equipment	Sum	-		
2	Transport of decommissioned equipment	km	250		
	Allow for all the costs and expenses in connection with the design, manufacture, painting, factory testing, supplying, delivery, offloading and storage of the following materials and equipment:				
3	Ax-An Recycle Pump	No	2		
	Allow for all costs and expenses in connection with the Site installation in terms of in terms of FIDIC and Part C3: Scope of Work (excluding pre-commissioning) for the following:				
4	Ax-An Recycle Pump	No	2		
	Allow for all costs and expenses in connection with pre-commsissioning in terms of FIDIC and Part C3: Scope of Work for the following:				
5	Ax-An Recycle Pump	Sum	-		
	Storage of equipment as ordered by the Engineer including insurances where storage space is provided by:				
6	a. The Contractor	Month	3		
7	b. The City of Cape Town	Month	3		
	Carried forward /...				

ITEM	DESCRIPTION	UNIT	QTY	RATE R	RATE C	AMOUNT R	AMOUNT C
Brought forward / ...							
	Other:						
8	All other items not included above but which are nevertheless necessary to meet the Scope of Work and/or are required for the proper, safe and effective operation of the plant *(Specify)*	Item					
TOTAL OF SCHEDULE M23 CARRIED TO SUMMARY							

ITEM	DESCRIPTION	UNIT	QTY	RATE R	RATE c	AMOUNT R	AMOUNT c
	SCHEDULE M24						
	EXISTING ULTRA-FILTRATION (UF) MEMBRANE BIOREACTOR PLANT (MBR) EQUIPMENT						
	Allow for all the costs and expenses in connection with the following:						
1	Membrane supplier technical support and advisory services	Sum	-				
	Handling of Existing Equipment:						
2	Dismantling, decommissioning and removal (including emtying of reactor/ pumping to CAS plant) of existing equipment	Sum	-				
3	Transport of decommissioned equipment	km	250				
	Allow for all the costs and expenses in connection with the design, manufacture, painting, supplying, delivery, offloading and storage of the following materials and equipment:						
	Membrane Tanks Feed/ Mixed Liquor Transfer Pumps						
4	Membrane Tank Feed (Mixed Liquor Transfer) Pump	No	3				
	Ultra-Filtration Membrane Bioreactor Plant Equipment						
5	Membrane filtration trains	No	6				
6	Flow Control Baffle	No	6				
7	Membrane plant ventilation/air ejection system	Sum	-				
8	Membrane integrity testing equipment (excluding turbidity analysers which are scheduled elsewhere)	Sum	-				
9	On-line performance and process monitoring service and associated equipment	Sum	-				
10	Membrane unit lifting bracket / cradle	No	1				
11	Other membrane plant pipework and associated equipment (EN Grade 1.4401) not mentioned above, but are required for proper and safe operation of the membrane filtration system	Sum	-				
	Carried forward / ...						

ITEM	DESCRIPTION	UNIT	QTY	RATE R c	AMOUNT R c
Brought forward / ...					
	Air Scour Equipment (Provisional Sums)				
12	Blowers	No	3		
13	Refurbishment and modification of air scour pipework to and from membrane casettes	Sum	-		
14	Air scour distribution pipework to membrane casettes	Sum	-		
15	Supports	Sum	-		
	Permeate/Backpulse Pumps				
16	Permeate / backpulse pump	No	6		
17	Refurbishment and modification of permeate pipework from pumps up to membrane casettes headers	Sum	-		
18	Supports	Sum	-		
	Filtration Tanks Drain Pumps				
19	Filtration train drain pump	No	2		
20	Refurbishment and modification of pipework	Sum	-		
21	Supports	Sum	-		
	Scum/ WAS Pumps				
22	Scum/WAS pumps	No	2		
23	Refurbishment of pipework	Sum	-		
24	Supports	Sum	-		
	GRP Covers				
25	GRP covers for membrane tanks	m^2	300		
	CIP: Sodium Hypochlorite Dosing Equipment				
26	Chemical room ventilation system	Sum	-		
27	CIP: Sodium hypochlorite dosing system (bunded skids and cabinet etc) as specified	Sum	-		
Carried forward / ...					

ITEM	DESCRIPTION	UNIT	QTY	RATE R c	AMOUNT R c
Brought forward / ...					
28	Scum suppression system: Sodium hypochlorite dosing system	Sum	-		
29	Storage tank	Sum	-		
30	Pipework	Sum	-		
31	Pipe supports	Sum	-		
32	Filling station pump and pipework	Sum	-		
33	Sodium hypochlorite required during the entire performance period (commissioning) of the MBR plant	Sum	-		
34	Sodium hypochlorite - one tank fill	Sum	-		
35	Access platform	Sum	-		
	CIP: Citric Acid Dosing Equipment				
36	Chemical room ventilation system	Sum	-		
37	CIP: Citric acid dosing system (bunded skids and cabinet etc) as specified	Sum	-		
38	Storage tank	Sum	-		
39	Pipework	Sum	-		
40	Supports	Sum	-		
41	Filling station pump and pipework	Sum	-		
42	Citric acid required during the entire performance period (commissioning) of the MBR plant	Sum	-		
43	Citric acid - one tank fill	Sum	-		
44	Citric acid Batching Equipment	Sum	-		
45	Citric acid batching dust collection system	Sum	-		
46	Access platform	Sum	-		
Carried forward / ...					

ITEM	DESCRIPTION	UNIT	QTY	RATE R	RATE C	AMOUNT R	AMOUNT C
Brought forward / ...							
	Allow for all costs and expenses in connection with the Site installation in terms of in terms of FIDIC and Part C3: Scope of Work (excluding pre-commissioning) for the following:						
	Membrane Tanks Feed/ Mixed Liquor Transfer Pumps						
47	Membrane Tank Feed (Mixed Liquor Transfer) Pump	No	3				
	Ultra-Filtration Membrane Bioreactor Plant Equipment						
48	Membrane filtration units for one train	No	6				
49	Flow Control Baffle	No	6				
50	Membrane plant ventilation/air ejection system	Sum	-				
51	Filtration train protective lining	No	6				
52	Membrane integrity testing equipment (excluding turbidity analysers which are scheduled elsewhere)	Sum	-				
53	On-line performance and process monitoring service and associated equipment	Sum	-				
54	Membrane unit lifting bracket	No	1				
55	Other membrane plant pipework and associated equipment (EN Grade 1.4401) not mentioned above, but are required for proper and safe operation of the membrane filtration system	Sum	-				
	Air Scour Equipment (Provisional Sums)						
56	Blowers	No	3				
57	Refurbishment of pipework	Sum	-				
58	Air scour distribution pipework to membrane casettes	Sum	-				
59	Supports	Sum	-				
	Permeate/Backpulse Pumps						
60	Permeate / backpulse pump	No	6				
61	Refurbishment and modification of pipework	Sum	-				
Carried forward / ...							

ITEM	DESCRIPTION	UNIT	QTY	RATE R c	AMOUNT R c
Brought forward / ...					
62	Supports	Sum	-		
	Filtration Tanks Drain Pumps				
63	Filtration train drain pump	No	2		
64	Refurbishment and modification of pipework	Sum	-		
65	Supports	Sum	-		
	Scum/ WAS Pumps				
66	Scum/WAS pumps	No	2		
67	Refurbishment of pipework	Sum	-		
68	Supports	Sum	-		
	GRP Covers				
69	GRP covers for membrane tanks	m²	300		
	CIP: Sodium Hypochlorite Dosing Equipment				
70	Chemical room ventilation system	Sum	-		
71	CIP: Sodium hypochlorite dosing system (bunded skids and cabinet etc) as specified	Sum	-		
72	Scum suppression system: Sodium hypochlorite dosing system	Sum	-		
73	Storage tank	Sum	-		
74	Pipework	Sum	-		
75	Pipe supports	Sum	-		
76	Filling station pump and pipework	Sum	-		
77	Sodium hypochlorite required during the entire performance period (commissioning) of the MBR plant	Sum	-		
78	Sodium hypochlorite - one tank fill	Sum	-		
79	Access platform	Sum	-		
Carried forward / ...					

ITEM	DESCRIPTION	UNIT	QTY	RATE R	RATE C	AMOUNT R	AMOUNT C
Brought forward / ...							
	CIP: Citric Acid Dosing Equipment						
80	Chemical room ventilation system	Sum	-				
81	CIP: Citric acid dosing system (bunded skids and cabinet etc) as specified	Sum	-				
82	Storage tank	Sum	-				
83	Pipework	Sum	-				
84	Supports	Sum	-				
85	Filling station pump and pipework	Sum	-				
86	Citric acid required during the entire performance period (commissioning) of the MBR plant	Sum	-				
87	Citric acid - one tank fill	Sum	-				
88	Citric acid Batching Equipment	Sum	-				
89	Citric acid batching dust collection system	Sum	-				
90	Access platform	Sum	-				
	Allow for all costs and expenses in connection with pre-commsissioning in terms of FIDIC and Part C3: Scope of Work for the following:						
91	Complete membrane filtration train system including wasting systems, drain systems, etc.	Sum	-				
	Storage of equipment as ordered by the Engineer including insurances where storage space is provided by:						
92	a. The Contractor	Month	4				
93	b. The City of Cape Town	Month	4				
	Handling of Existing Equipment						
94	Decommissioning, removal and disposal of existing equipment	Sum	-				
95	Transport of decommissioned equipment	km	250.00				
Carried forward / ...							

ITEM	DESCRIPTION	UNIT	QTY	RATE R c	AMOUNT R c
Brought forward / ...					
	Other:				
96	All other items not included above but which are nevertheless necessary to meet the Scope of Work and/or are required for the proper, safe and effective operation of the plant *(Specify)*	Item			
TOTAL OF SCHEDULE M24 CARRIED TO SUMMARY					

ITEM	DESCRIPTION	UNIT	QTY	RATE R c	AMOUNT R c
	SCHEDULE M25				
	INSTRUMENT AIR EQUIPMENT				
	Allow for all costs in connection with the following general items:				
	Handling of Existing Equipment				
1	Dismantling, decommissioning and removal (including emtying of reactor/ pumping to CAS plant) of existing equipment	Sum	-		
2	Transport of decommissioned equipment	km	250		
	Allow for all the costs and expenses in connection with the design, manufacture, painting, factory testing, supplying, delivery, offloading and storage of the following materials and equipment:				
	Instrument Air				
3	Compressors	No	2		
4	Desiccant driers complete	Sum	-		
5	Refrigerant driers complete	Sum	-		
6	Air receiver (moisture trap)	No	2		
7	Air receiver	No	2		
8	Condensate management system	Sum	-		
9	All connecting pipework	Sum	-		
10	Seperator units and filter sets	No	3		
	Pneumatic Actuation Equipment				
11	Pneumatic control system and SS solenoid valve terminal cabinet for each process area, complete with tubing, service unit, pressure regulator & auto-drain etc.	Sum	-		
	UV stabilized/ resistant flexible tubing and connections from vallve terminal cabinet to actuators	Sum	-		
	Carried forward / ...				

ITEM	DESCRIPTION	UNIT	QTY	RATE R c	AMOUNT R c
Brought forward / ...					
	Allow for all costs and expenses in connection with the Site installation in terms of in terms of FIDIC and Part C3: Scope of Work (excluding pre-commissioning) for the following:				
	Instrument Air				
12	Compressors	No	2		
13	Desiccant driers complete	Sum	-		
14	Refrigerant driers complete	Sum	-		
15	Air receiver (moisture trap)	No	2		
16	Air receiver	No	2		
17	Condensate management system	Sum	-		
18	All connecting pipework	Sum	-		
19	Seperator units and filter sets	No	3		
	Pneumatic Actuation Equipment				
20	Pneumatic control system and SS solenoid valve terminal cabinet for each process area, complete with tubing, service unit, pressure regulator & auto-drain etc.	Sum	-		
21	UV stabilized/ resistant flexible tubing and connections from vallve terminal cabinet to actuators	Sum	-		
	Pneumatic Actuation Equipment				
22	Pneumatic control system	Sum	-		
	Allow for all costs and expenses in connection with pre-commsissioning in terms of FIDIC and Part C3: Scope of Work for the following:				
23	Complete Process air system	Sum	-		
	Storage of equipment as ordered by the Engineer including Insurances where storage space is provided by:				
24	a. The Contractor	Month	3		
25	b. The City of Cape Town	Month	3		
Carried forward / ...					

ITEM	DESCRIPTION	UNIT	QTY	RATE R	RATE c's	AMOUNT R	AMOUNT c's
Brought forward / ...							
	Other:						
26	All other items not included above but which are nevertheless necessary to meet the Scope of Work and/or are required for the proper, safe and effective operation of the plant *(Specify)*	Item					
TOTAL OF SCHEDULE M25 CARRIED TO SUMMARY							

ITEM	DESCRIPTION	UNIT	QTY	RATE R c	AMOUNT R c
	SCHEDULE M26				
	SERVICE WATER EQUIPMENT				
	Allow for all costs in connection with the following general items:				
	Handling of Existing Equipment:				
1	Dismantling, decommissioning and removal of existing equipment	Sum	-		
2	Transport of decommissioned equipment	km	250		
	Allow for all the costs and expenses in connection with the design, manufacture, painting, factory testing, supplying, delivery, offloading and storage of the following materials and equipment:				
3	Service Water Pumps	Sum	-		
4	Accumulators	No	2		
5	Pipework	Sum	-		
6	Supports	Sum	-		
	Allow for all costs and expenses in connection with the Site installation in terms of in terms of FIDIC and Part C3: Scope of Work (excluding pre-commissioning) for the following:				
7	Service Water Pumps	Sum	-		
8	Accumulators	No	2		
9	Pipework	Sum	-		
10	Supports	Sum	-		
	Allow for all costs and expenses in connection with pre-commissioning in terms of FIDIC and Part C3: Scope of Work for the following:				
11	Complete Service water system	Sum	-		
Carried forward / ...					

ITEM	DESCRIPTION	UNIT	QTY	RATE R	RATE C	AMOUNT R	AMOUNT C
Brought forward / ...							
	Storage of equipment as ordered by the Engineer including insurances where storage space is provided by:						
12	a. The Contractor	Month	3				
13	b. The City of Cape Town	Month	3				
	Handling of Existing Equipment						
14	Decommissioning, removal and disposal of existing equipment	Sum	-				
15	Transport of decommissioned equipment	km	250.00				
	Other:						
16	All other items not included above but which are nevertheless necessary to meet the Scope of Work and/or are required for the proper, safe and effective operation of the plant *(Specify)*	Item					
TOTAL OF SCHEDULE M26 CARRIED TO SUMMARY							

ITEM	DESCRIPTION	UNIT	QTY	RATE R c	AMOUNT R c
	SCHEDULE M27				
	SCUM REMOVAL EQUIPMENT				
	Allow for all costs in connection with the following general items:				
	Handling of Existing Equipment				
1	Dismantling, decommissioning and removal (including emtying of reactor/ pumping to CAS plant) of existing equipment	Sum	-		
2	Transport of decommissioned equipment	km	250		
	Allow for all the costs and expenses in connection with the design, manufacture, painting, factory testing, supplying, delivery, offloading and storage of the following materials and equipment:				
3	Suspended Telescopic Valve Structure - Aerobic Zone	No	2		
4	Suction pipework from Telescopic Valves to pump suction - Aerobic Zone	Sum	-		
5	Scum Pump - Aerobic Zone	No	1		
6	Discharge pipework from pumps to WAS Discharge Line - Aerobic Zone	Sum	-		
7	Suspended Telescopic Valve Structure - Anoxic Zone	No	3		
8	Suction pipework from Telescopic Valves to pump suction - Anoxic Zone	Sum	-		
9	Scum Pump - Anoxic Zone	No	1		
10	Discharge pipework from pumps to WAS Discharge Line - Anoxic Zone	Sum	-		
	Allow for all costs and expenses in connection with the Site installation in terms of in terms of FIDIC and Part C3: Scope of Work (excluding pre-commissioning) for the following:				
11	Suspended Telescopic Valve Structure - Aerobic Zone	No	2		
12	Suction pipework from Telescopic Valves to pump suction - Aerobic Zone	Sum	-		
Carried forward / ...					

ITEM	DESCRIPTION	UNIT	QTY	RATE R	RATE c	AMOUNT R	AMOUNT c
Brought forward / ...							
13	Scum Pump - Aerobic Zone	No	1				
14	Discharge pipework from pumps to WAS Discharge Line - Aerobic Zone	Sum	-				
15	Suspended Telescopic Valve Structure - Anoxic Zone	No	3				
16	Suction pipework from Telescopic Valves to pump suction - Anoxic Zone	Sum	-				
17	Scum Pump - Anoxic Zone	No	1				
18	Discharge pipework from pumps to WAS Discharge Line - Anoxic Zone	Sum	-				
	Allow for all costs and expenses in connection with pre-commsissioning in terms of FIDIC and Part C3: Scope of Work for the following:						
19	Complete Scum removal System - Aerobic Zone	Sum	-				
20	Complete Scum removal System - Anoxic Zone	Sum	-				
	Storage of equipment as ordered by the Engineer including insurances where storage space is provided by:						
21	a. The Contractor	Month	3				
22	b. The City of Cape Town	Month	3				
	Other:						
23	All other items not included above but which are nevertheless necessary to meet the Scope of Work and/or are required for the proper, safe and effective operation of the plant *(Specify)*	Item					
TOTAL OF SCHEDULE M27 CARRIED TO SUMMARY							

SECTION A OF THE WORKS: MODULE B ELECTRICAL AND ELECTRONIC EQUIPMENT

Continued Overleaf

ITEM	DESCRIPTION	UNIT	QTY	RATE R	RATE c	AMOUNT R	AMOUNT c
	SCHEDULE E1						
	MINIATURE SUBSTATIONS						
	Allow for all the costs and expenses in connection with the following:						
1	Protection coordination specialist at Zandvliet WWTW, including site test report and protection settings	Sum	1				
	Allow for all the costs and expenses in connection with the design, manufacture, painting, supplying, delivery, offloading and storage of the following materials and equipment:						
	Mini-Subs						
	Supply Mini-Subs complete						
2	1000 kVA	No	2				
3	1250kVA	No	4				
4	1600kVA	No	1				Rate Only
	Transformers						
	Supply Oil-filled transformer complete						
5	1800 kVA (11kV/420V)	No	1				Rate Only
	Allow for all costs and expenses in connection with the Site installation in terms of in terms of FIDIC and Part C3: Scope of Work (excluding pre-commissioning) for the following:						
	Mini-Subs						
6	1000 kVA	No	2				
7	1250kVA	No	4				
8	1600kVA	No	1				Rate Only
	Transformers						
	Install Oil-filled transformer complete						
Carried forward / ...							

ITEM	DESCRIPTION	UNIT	QTY	RATE R c	AMOUNT R c
Brought forward / ...					
9	1800 kVA (11kV/420V)	No	1		Rate Only
10	Supply, factory acceptance testing, delivery, installation and commissioning of 4-way, 11 kV, indoor SF6 insulated RMU, 2 x 200A incomer vacuum circuit breaker, 2 x 200A feeder vacuum circuit breaker; OC/EF protection **Allow for all costs and expenses in connection with pre-commsissioning in terms of FIDIC and Part C3: Scope of Work for the following:**	Sum	1		Rate Only
11	1000 kVA Mini-sub	No	2		
12	1250kVA Mini-sub	No	4		
13	1600kVA Mini-sub	No	1		Rate Only
14	1800kVA Transformer	No	1		Rate Only
	Transformers				
15	Transformers for the MBR-B supply as directed by the Engineer	Provisional Sum			175,400.00
16	Percentage adjustment on Item 15 for Contractor's design, sourcing quotes, superintendence, and for overheads and profit (state as percentage an extend as amount)	%	175,400		
	MV switchgear				
17	MV Switchgear for the MBR-B transformers supply as directed by the Engineer	Prov Sum	1		175,400.00
18	Percentage adjustment on Item 17 for Contractor's design, sourcing quotes, superintendence, and for overheads and profit (state as percentage an extend as amount) **Allow for all the costs and expenses in connection with the design, manufacture, painting, supplying, delivery, offloading, storage and installation of the following miscellanious items:**	%	175,400		
19	Earthing of all MV cable terminations	Sum	1		
20	Earthing (per mini-sub)	No	6		
Carried forward / ...					

ITEM	DESCRIPTION	UNIT	QTY	RATE R c	AMOUNT R c
Brought forward / ...					
21	Plinth (per mini-sub)	No	6		
	Allow for all costs and expenses in connection with pre-commsissioning in terms of FIDIC and Part C3: Scope of Work for the following:				
22	For equipment scheduled above	Sum	-		
23	All other items not included above but which are nevertheless necessary to meet the Scope of Work and/or are required for the proper, safe and effective operation of the plant (Specify):-	Item			
TOTAL OF SCHEDULE E1 CARRIED TO SUMMARY					

ITEM	DESCRIPTION	UNIT	QTY	RATE R c	AMOUNT R c
	SCHEDULE E2				
	MV RETICULATION				
	Allow for all the costs and expenses in connection with the design, manufacture, painting, supplying, delivery, offloading and storage of the following materials and equipment:				
	Medium Voltage Cables				
	6.35/11kV, cable with stranded conductors;				
1	95mm² x 3 core; Cu/XLPE, SWA	m	800		
2	185mm² x 3 core; Cu/XLPE, SWA	m	1		Rate Only
3	185mm² x 3 core; Cu/PILC, DSTA	m	350		
	Cable terminations for 6.35/11kV, cable with stranded conductors complete, including shroud, lugs, number tags, etc. and connection.				
4	95mm² x 3 core; Cu/XLPE, SWA	No	14		
5	185mm² x 3 core; Cu/XLPE, SWA	m	1		Rate Only
6	185mm² x 3 core; Cu/PILC, DSTA	No	2		
	Cable Joints				
	Cable joints for 6.35/11kV; complete with all necessary items for installation				
7	95mm² x 3 core; Cu/XLPE, SWA	No	4		
8	185mm² x 3 core; Cu/XLPE, SWA	No	1		Rate Only
9	185mm² x 3 core; Cu/PILC, DSTA	No	2		
	Earth Conductors				
	Bare Copper Earth conductor with stranded conductors.				
10	70mm²	m	1150		
Carried forward / ...					

ITEM	DESCRIPTION	UNIT	QTY	RATE R c	AMOUNT R c
	SCHEDULE E3				
	MV RETICULATION INSTALLATION				
	Allow for all costs and expenses in connection with the Site installation in terms of in terms of FIDIC and Part C3: Scope of Work (excluding pre-commissioning) for the following:				
	General				
1	Liaison with local authorities, Eskom, plant operators for power outages and switching of MV switchgear	Sum	1		
2	Liaison with Civil Contractor for cable route coordination	Sum	1		
	Medium Voltage Cables				
	Install Cu/PILC, DSTA, 6.35/11kV; cable with stranded conductors fixed to cable tray, drawn into sleeves or laid into trenches.				
3	95mm² x 3 core; Cu/XLPE, SWA	m	800		
4	185mm² x 3 core; Cu/PILC, DSTA	m	350		
	Install cable terminations for Cu/PILC; DSTA, 6.35/11kV, cable with stranded conductors complete, including shroud, lugs, number tags, etc. and connection.				
5	95mm² x 3 core; Cu/XLPE, SWA	No	14		
6	185mm² x 3 core; Cu/PILC, DSTA	No	2		
	Cable Joints				
	Install Cable joints for Cu/PILC, DSTA, 6.35/11kV; complete with all necessary items for installation				
7	95mm² x 3 core; Cu/XLPE, SWA	No	4		
8	185mm² x 3 core; Cu/PILC, DSTA	No	2		
	Carried forward / ...				

ITEM	DESCRIPTION	UNIT	QTY	RATE R c	AMOUNT R c
Brought forward / ...					
	Earthing				
	Install Bare Copper Earth conductor with stranded conductors.				
9	70mm²	m	1150		
	Install Cable terminations for bare copper earth conductor, complete, including gland shroud, lugs, number tags, etc. and connection.				
10	70mm²	No	16		
	Earth resistivity reading at mini-sub location, and reporting thereof				
11	70mm²	No	5		
	Excavations, etc.				
	Excavate and set excavated material aside for re-use as filling for cable or sleeve trench not exceeding 1m deep				
12	In earth	m	1150		
13	In soft rock	m³	100		
14	In rock	m³	25		
15	Selected and approved material for backfilling, bedding and cover	m³	460		
16	Cement compacted backfilling (3%) material mix	m³	20		
17	Surplus excavated material spread and leveled on site as directed	m³	50		
18	Danger tape - 400mm wide overlapping	m	1265		
19	Cement slabs as part of backfill	m	100		
20	Cable marker, with engraved aluminium plate	No	30		
21	900mm x 900mm Manhole with cast iron cover	No	1		
Carried forward / ...					

ITEM	DESCRIPTION	UNIT	QTY	RATE R c	AMOUNT R c
Brought forward / ...					
	Allow for all costs and expenses in connection with pre-commsissioning in terms of FIDIC and Part C3: Scope of Work for the following:				
22	For equipment scheduled above	Sum	1		
23	All other items not included above but which are nevertheless necessary to meet the Scope of Work and/or are required for the proper, safe and effective operation of the plant (Specify):-	Item			
	TOTAL OF SCHEDULE E3 CARRIED TO SUMMARY				-

ITEM	DESCRIPTION	UNIT	QTY	RATE R c	AMOUNT R c
	SCHEDULE E4				
	LV ELECTRICAL AND CONTROL CABLES				
	Allow for all the costs and expenses in connection with the design, manufacture, painting, supplying, delivery, offloading and storage of the following materials and equipment:				
	LV Cables				
	Cu/PVC Insulated/PVC Bedded/SWA/PVC Sheathed 600/1000V multicore cable with stranded conductors.				
1	2.5mm² x 4 core	m	10000		
2	4.0mm² x 4 core	m	1200		
3	6mm² x 4 core	m	200		
4	10mm² x 4 core	m	3500		
5	16mm² x 4 core	m	900		
6	16mm² x 3 core	m	400		
7	25mm² x 4 core	m	200		
8	35mm² x 4 core	m	400		
9	50mm² x 4 core	m	200		
10	75mm² x 4 core	m	1		Rate Only
11	95mm² x 4 core	m	1		Rate Only
12	120mm² x 4 core	m	250		
13	150mm² x 4 core	m	1		Rate Only
14	185mm² x 4 core	m	250		
Carried forward / ...					

ITEM	DESCRIPTION	UNIT	QTY	RATE R c	AMOUNT R c
Brought forward / ...					
	Cable terminations for Cu/PVC Insulated/PVC Bedded/SWA/PVC Sheathed 600/1000V multicore cables, complete, including gland shroud, lugs, number tags, etc. and connection.				
15	2.5mm² x 4 core	No	330		
16	4.0mm² x 4 core	No	36		
17	6mm² x 4 core	No	8		
18	10mm² x 4 core	No	60		
19	16mm² x 4 core	No	40		
20	16mm² x 3 core	No	1		Rate Only
21	25mm² x 4 core	No	1		Rate Only
22	35mm² x 4 core	No	20		
23	50mm² x 4 core	No	2		
24	75mm² x 4 core	No	1		Rate Only
25	95mm² x 4 core	No	1		Rate Only
26	120mm² x 4 core	No	6		
27	150mm² x 4 core	No	1		Rate Only
28	185mm² x 4 core	No	6		
	Cu/PVC Insulated/PVC Bedded/AWA/PVC Sheathed 600/1000V single core cable with stranded conductors.				
29	150mm² x 1 core	m	1		Rate Only
30	185mm² x 1 core	m	1		Rate Only
31	240mm² x 1 core	m	1		Rate Only
32	300mm² x 1 core	m	1		Rate Only
33	400mm² x 1 core	m	1		Rate Only
Carried forward / ...					

ITEM	DESCRIPTION	UNIT	QTY	RATE R c	AMOUNT R c
Brought forward / ...					
34	500mm² x 1 core	m	2700		
35	630mm² x 1 core	m	1		Rate Only
	Cable terminations for Cu/PVC Insulated/PVC Bedded/AWA/PVC Sheathed 600/1000V single core cables, complete, including gland shroud, lugs, number tags, etc. and connection.				
36	150mm² x 1 core	No	1		Rate Only
37	185mm² x 1 core	No	1		Rate Only
38	240mm² x 1 core	No	1		Rate Only
39	300mm² x 1 core	No	1		Rate Only
40	400mm² x 1 core	No	1		Rate Only
41	500mm² x 1 core	No	72		
42	630mm² x 1 core	No	1		Rate Only
	Bare Copper Earth cable with stranded conductors.				
43	4mm²	m	275		
44	6mm²	m	1		Rate Only
45	10mm²	m	180		
46	16mm²	m	400		
47	25mm²	m	1		Rate Only
48	35mm²	m	1		Rate Only
49	50mm²	m	150		
50	70mm²	m	250		
51	95mm²	m	1		Rate Only
52	120mm²	m	630		
Carried forward / ...					

ITEM	DESCRIPTION	UNIT	QTY	RATE R c	AMOUNT R c
Brought forward / ...					
53	150mm²	m	1		Rate Only
54	185mm²	m	1		Rate Only
55	240mm²	m	1		Rate Only
	Cable terminations for bare copper earth cables, complete, including gland shroud, lugs, number tags, etc. and connection.				
56	4mm²	No	10		
57	6mm²	No	1		Rate Only
58	10mm²	No	10		
59	16mm²	No	16		
60	25mm²	No	1		Rate Only
61	35mm²	No	1		Rate Only
62	50mm²	No	8		
63	70mm²	No	6		
64	95mm²	No	1		Rate Only
65	120mm²	No	18		
66	150mm²	No	1		Rate Only
67	185mm²	No	1		Rate Only
68	240mm²	No	1		Rate Only
	Control Cables - Supply				
	Cu/PVC Insulated/PVC Bedded/SWA/PVC Sheathed 600/1000V multicore control cables with stranded conductors.				
69	1.5mm² x 2 core	m	1		Rate Only
70	1.5mm² x 3 core	m	1		Rate Only
71	2.5mm² x 3 core	m	4000		
Carried forward / ...					

ITEM	DESCRIPTION	UNIT	QTY	RATE R	RATE c	AMOUNT R	AMOUNT c
Brought forward / ...							
72	1.5mm² x 4 core	m	1				Rate Only
73	1.5mm² x 7 core	m	15000				
74	1.5mm² x 10core	m	1				Rate Only
75	1.5mm² x 19 core	m	1				Rate Only
76	1.5mm² x 24 core	m	1				Rate Only
77	1.5mm² x 30 core	m	1				Rate Only
	Cable terminations for multicore control cable complete, including gland shroud, lugs, number tags, etc. and connection.						
78	1.5mm² x 2 core	No	1				Rate Only
79	1.5mm² x 3 core	No	1				Rate Only
80	2.5mm² x 3 core	No	160				
81	1.5mm² x 4 core	No	1				Rate Only
82	1.5mm² x 7 core	No	400				
83	1.5mm² x 10core	No	1				Rate Only
84	1.5mm² x 19 core	No	1				Rate Only
85	1.5mm² x 24 core	No	1				Rate Only
86	1.5mm² x 30 core	No	1				Rate Only
	Extra low voltage instrumentation cable.						
87	1 mm² 2-pair	m	1				Rate Only
88	1.5 mm² 1-pair	m	13000				
89	1.5mm² 2-pair	m	1000				
90	1.5mm² 3-pair	m	2000				
91	1.5mm² 12-pair	m	1				Rate Only
92	1.5mm² 19-pair	m	1				Rate Only
Carried forward / ...							

ITEM	DESCRIPTION	UNIT	QTY	RATE R c	AMOUNT R c
Brought forward / ...					
93	1 x Triad	m	1		Rate Only
	Terminations for Extra low voltage instrumentation cable				
94	1 mm² 2-pair	No	1		Rate Only
95	1.5 mm² 1-pair	No	500		
96	1.5mm² 2-pair	No	20		
97	1.5mm² 3-pair	No	30		
98	1.5mm² 12-pair	No	1		Rate Only
99	1.5mm² 19-pair	No	1		Rate Only
100	1 x Triad	No	1		Rate Only
	Instrumentation Power cable Cu/PVC Insulated/PVC Bedded/SWA/PVC Sheathed 600/1000V multicore with stranded conductors.				
101	2.5mm² x 3 core	m	7800		
102	4mm² x 3 core	m	1		Rate Only
	Terminations for Instrumentation Power cable Cu/PVC Insulated/PVC Bedded/SWA/PVC Sheathed 600/1000V multicore with stranded conductors.				
103	2.5mm² x 3 core	No	250		
104	4mm² x 3 core	No	1		Rate Only
105	All other items not included above but which are nevertheless necessary to meet the Scope of Work and/or are required for the proper, safe and effective operation of the plant (Specify):-	Item			
TOTAL OF SCHEDULE E4 CARRIED TO SUMMARY					

ITEM	DESCRIPTION	UNIT	QTY	RATE R c	AMOUNT R c
	SCHEDULE E5				
	LV ELECTRICAL INSTALLATION				
	General				
1	Liaison with Civil Contractor for cable routes coordination	Sum	1		
	Allow for all the costs and expenses in connection with the design, manufacture, painting, supplying, delivery, offloading and storage of the following materials and equipment:				
	Heavy Duty Cable Ladder				
	100 x 100mm (W x H)				
2	Straight length	m	200		
3	Extras: Tee piece or 90° deg Horizontal elbow or Internal Riser or Dropper	No	10		
4	4 Way cross over	No	3		
	200 x 100mm (W x H)				
5	Straight length	m	200		
6	Extras: Tee piece or 90° deg Horizontal elbow or Internal Riser or Dropper	No	10		
7	4 Way cross over	No	3		
	300 x 100mm (W x H)				
8	Straight length	m	200		
9	Extras: Tee piece or 90° deg Horizontal elbow or Internal Riser or Dropper	No	10		
10	4 Way cross over	No	3		
	600 x 100mm (W x H)				
11	Straight length	m	200		
12	Extras: Tee piece or 90° deg Horizontal elbow or Internal Riser or Dropper	No	10		
Carried forward / ...					

ITEM	DESCRIPTION	UNIT	QTY	RATE R	RATE c	AMOUNT R	AMOUNT c
Brought forward / ...							
13	4 Way cross over	No	3				
	800 x 100mm (W x H)						
14	Straight length	m	500				
15	Extras: Tee piece or 90° deg Horizontal elbow or Internal Riser or Dropper	No	14				
16	4 Way cross over	No	7				
	1000 x 100mm (W x H)						
17	Straight length	m	350				
18	Extras: Tee piece or 90° deg Horizontal elbow or Internal Riser or Dropper	No	14				
19	4 Way cross over	No	11				
	Welded Wire Mesh Cable Tray						
	100 x 50mm (W x H), Ø 4mm Wire						
20	Straight length	m	200				
	200 x 50mm (W x H), Ø 4mm Wire						
21	Straight length	m	300				
	300 x 50mm (W x H), Ø 4mm Wire						
22	Straight length	m	200				
	400 x 50mm (W x H), Ø 4mm Wire						
23	Straight length	m	400				
	Conduit - Supply						
	Supply the following conduit, including all mounting brackets, fastening materials, elbows, etc.						
24	PVC , 20mm	m	50				
25	PVC, 25mm	m	50				
Carried forward / ...							

ITEM	DESCRIPTION	UNIT	QTY	RATE R c	AMOUNT R c
Brought forward / ...					
26	PVC, 32mm	m	50		
27	Galvanised Steel, 20mm	m	500		
28	Stainless Steel, 20mm	m	300		
29	Galvanised Steel, 25mm	m	300		
30	Stainless Steel 316, 25mm	m	300		
	Allow for all costs and expenses in connection with the Site installation in terms of in terms of FIDIC and Part C3: Scope of Work (excluding pre-commissioning) for the following:				
	LV Cables				
	Cu/PVC Insulated/PVC Bedded/SWA/PVC Sheathed 600/1000V multicore cable with stranded conductors. Cable fixed to cable tray, drawn into sleeves or laid into trenches.				
31	2.5mm² x 4 core	m	10000		
32	4.0mm² x 4 core	m	1200		
33	6mm² x 4 core	m	200		
34	10mm² x 4 core	m	3500		
35	16mm² x 4 core	m	900		
36	16mm² x 3 core	m	400		
37	25mm² x 4 core	m	200		
38	35mm² x 4 core	m	400		
39	50mm² x 4 core	m	200		
40	75mm² x 4 core	m	1		
41	95mm² x 4 core	m	1		
42	120mm² x 4 core	m	250		
Carried forward / ...					

ITEM	DESCRIPTION	UNIT	QTY	RATE R c	AMOUNT R c
Brought forward / ...					
43	150mm² x 4 core	m	1		Rate Only
44	185mm² x 4 core	m	1		Rate Only
	Cable terminations for Cu/PVC Insulated/PVC Bedded/SWA/PVC Sheathed 600/1000V multicore cables, complete, including gland shroud, lugs, number tags, etc. and connection.				
45	2.5mm² x 4 core	No	330		
46	4.0mm² x 4 core	No	36		
47	6mm² x 4 core	No	8		
48	10mm² x 4 core	No	60		
49	16mm² x 4 core	No	40		
50	16mm² x 3 core	No	1		
51	25mm² x 4 core	No	1		
52	35mm² x 4 core	No	20		
53	50mm² x 4 core	No	2		
54	75mm² x 4 core	No	1		
55	95mm² x 4 core	No	1		
56	120mm² x 4 core	No	6		
57	150mm² x 4 core	No	1		Rate Only
58	185mm² x 4 core	No	1		Rate Only
	Cu/PVC Insulated/PVC Bedded/AWA/PVC Sheathed 600/1000V single core cable with stranded conductors. Cable fixed to cable tray, drawn into sleeves or laid into trenches.				
59	150mm² x 1 core	m	1		Rate Only
60	185mm² x 1 core	m	1		Rate Only
61	240mm² x 1 core	m	1		Rate Only
Carried forward / ...					

ITEM	DESCRIPTION	UNIT	QTY	RATE R c	AMOUNT R c
Brought forward / ...					
62	300mm² x 1 core	m	1		Rate Only
63	400mm² x 1 core	m	1		Rate Only
64	500mm² x 1 core	m	2700		
65	630mm² x 1 core	m	1		Rate Only
	Cable terminations for Cu/PVC Insulated/PVC Bedded/AWA/PVC Sheathed 600/1000V single core cables, complete, including gland shroud, lugs, number tags, etc. and connection.				
66	150mm² x 1 core	No	1		Rate Only
67	185mm² x 1 core	No	1		Rate Only
68	240mm² x 1 core	No	1		Rate Only
69	300mm² x 1 core	No	1		Rate Only
70	400mm² x 1 core	No	1		Rate Only
71	500mm² x 1 core	No	72		
72	630mm² x 1 core	No	1		Rate Only
	Bare Copper Earth cable with stranded conductors.				
73	4mm²	m	275		
74	6mm²	m	1		Rate Only
75	10mm²	m	180		
76	16mm²	m	400		
77	25mm²	m	1		Rate Only
78	35mm²	m	1		Rate Only
79	50mm²	m	150		
80	70mm²	m	250		
81	95mm²	m	1		Rate Only
Carried forward / ...					

ITEM	DESCRIPTION	UNIT	QTY	RATE R	RATE c	AMOUNT R	AMOUNT c
Brought forward / ...							
82	120mm²	m	630				
83	150mm²	m	1			Rate Only	
84	185mm²	m	1			Rate Only	
85	240mm²	m	1			Rate Only	
	Cable terminations for bare copper earth cables, complete, including gland shroud, lugs, number tags, etc. and connection.						
86	4mm²	No	10				
87	6mm²	No	1			Rate Only	
88	10mm²	No	10				
89	16mm²	No	16				
90	25mm²	No	1			Rate Only	
91	35mm²	No	1			Rate Only	
92	50mm²	No	8				
93	70mm²	No	6				
94	95mm²	No	1			Rate Only	
95	120mm²	No	18				
96	150mm²	No	1			Rate Only	
97	185mm²	No	1			Rate Only	
98	240mm²	No	1			Rate Only	
	Cu/PVC Insulated/PVC Bedded/SWA/PVC Sheathed 600/1000V multicore control cables with stranded conductors. Cable fixed to cable tray, drawn into sleeves or laid into trenches.						
99	1.5mm² x 2 core	m	1			Rate Only	
100	1.5mm² x 3 core	m	1			Rate Only	
101	2.5mm² x 3 core	m	4000				
Carried forward / ...							

ITEM	DESCRIPTION	UNIT	QTY	RATE R c	AMOUNT R c
Brought forward / ...					
102	1.5mm² x 4 core	m	1		Rate Only
103	1.5mm² x 7 core	m	15000		
104	1.5mm² x 10core	m	1		Rate Only
105	1.5mm² x 19 core	m	1		Rate Only
106	1.5mm² x 24 core	m	1		Rate Only
107	1.5mm² x 30 core	m	1		Rate Only
	Cable terminations for multicore control cable complete, including gland shroud, lugs, number tags, etc. and connection.				
108	1.5mm² x 2 core	No	1		Rate Only
109	1.5mm² x 3 core	No	1		Rate Only
110	2.5mm² x 3 core	No	160		
111	1.5mm² x 4 core	No	1		Rate Only
112	1.5mm² x 7 core	No	400		
113	1.5mm² x 10core	No	1		Rate Only
114	1.5mm² x 19 core	No	1		Rate Only
115	1.5mm² x 24 core	No	1		Rate Only
116	1.5mm² x 30 core	No	1		Rate Only
	Extra low voltage instrumentation cable fixed to cable tray, drawn into sleeves or power skirting.				
117	1 mm² 2-pair	m	1		Rate Only
118	1.5 mm² 1-pair	m	13000		
119	1.5mm² 2-pair	m	1000		
120	1.5mm² 3-pair	m	2000		
121	1.5mm² 12-pair	m	1		Rate Only
Carried forward / ...					

ITEM	DESCRIPTION	UNIT	QTY	RATE R c	AMOUNT R c
Brought forward / ...					
122	1.5mm² 19-pair	m	1		Rate Only
123	1 x Triad	m	1		Rate Only
	Terminations for Extra low voltage instrumentation cable				
124	1 mm² 2-pair	No	1		Rate Only
125	1.5 mm² 1-pair	No	500		
126	1.5mm² 2-pair	No	20		
127	1.5mm² 3-pair	No	30		
128	1.5mm² 12-pair	No	1		Rate Only
129	1.5mm² 19-pair	No	1		Rate Only
130	1 x Triad	No	1		Rate Only
	Instrumentation Power cable Cu/PVC insulated/PVC Bedded/SWA/PVC Sheathed 600/1000V multicore with stranded conductors. Cable fixed to cable tray, drawn into sleeves or laid into trenches.				
131	2.5mm² x 3 core	m	0		
132	4mm² x 3 core	m	1		
	Terminations for Instrumentation Power cable Cu/PVC Insulated/PVC Bedded/SWA/PVC Sheathed 600/1000V multicore with stranded conductors.				
133	2.5mm² x 3 core	No	250		
134	4mm² x 3 core	No	1		
	Heavy Duty Cable Ladder				
	100 x 100mm (W x H)				
135	Straight length	m	200		
136	Extras: Tee piece or 90° deg Horizontal elbow or Internal Riser or Dropper	No	10		
Carried forward / ...					

ITEM	DESCRIPTION	UNIT	QTY	RATE R c	AMOUNT R c
Brought forward / ...					
137	4 Way cross over	No	3		
	200 x 100mm (W x H)				
138	Straight length	m	200		
139	Extras: Tee piece or 90° deg Horizontal elbow or Internal Riser or Dropper	No	10		
140	4 Way cross over	No	3		
	300 x 100mm (W x H)				
141	Straight length	m	200		
142	Extras: Tee piece or 90° deg Horizontal elbow or Internal Riser or Dropper	No	10		
143	4 Way cross over	No	3		
	600 x 100mm (W x H)				
144	Straight length	m	200		
145	Extras: Tee piece or 90° deg Horizontal elbow or Internal Riser or Dropper	No	10		
146	4 Way cross over	No	2		
	800 x 100mm (W x H)				
147	Straight length	m	500		
148	Extras: Tee piece or 90° deg Horizontal elbow or Internal Riser or Dropper	No	14		
149	4 Way cross over	No	7		
	1000 x 100mm (W x H)				
150	Straight length	m	350		
151	Extras: Tee piece or 90° deg Horizontal elbow or Internal Riser or Dropper	No	14		
152	4 Way cross over	No	11		
Carried forward / ...					

ITEM	DESCRIPTION	UNIT	QTY	RATE R	RATE c	AMOUNT R	AMOUNT c
Brought forward / ...							
	Welded Wire Mesh Cable Tray						
	100 x 50mm (W x H), Ø 4mm Wire						
153	Straight length	m	200				
	200 x 50mm (W x H), Ø 4mm Wire						
154	Straight length	m	300				
	300 x 50mm (W x H), Ø 4mm Wire						
155	Straight length	m	100				
	400 x 50mm (W x H), Ø 4mm Wire						
156	Straight length	m	400				
	Conduit - Install						
	Install the following conduit, including all mounting brackets, fastening materials, elbows, etc.						
157	PVC , 20mm	m	50				
158	PVC, 25mm	m	50				
159	PVC, 32mm	m	50				
160	Galvanised Steel, 20mm	m	500				
161	Stainless Steel 316, 20mm	m	300				
162	Galvanised Steel, 25mm	m	300				
163	Stainless Steel 316, 25mm	m	300				
	Excavation						
	Excavate and set excavated material aside for re-use as filling for cable or sleeve trench not exceeding 1m deep						
164	In earth/sand	m^3	500				
165	In soft rock	m^3	50				
Carried forward / ...							

ITEM	DESCRIPTION	UNIT	QTY	RATE R c	AMOUNT R c
Brought forward / ...					
166	In rock	m³	25		
167	Selected and approved material for backfilling	m³	200		
168	Danger tape - 400mm wide overlapping	m	1000		
169	Cable marker with engraved steel plate	No	25		
170	1000mm x 1000mm manhole with cast iron cover	No	5		
	General				
171	Bonding of all extraneous conductive parts.	Sum	1		
172	Labelling of Cables and Equipment	Sum	1		
	Allow for all costs and expenses in connection with pre-commsissioning in terms of FIDIC and Part C3: Scope of Work for the following:				
173	For equipment scheduled above	Sum	1		
174	All other items not included above but which are nevertheless necessary to meet the Scope of Work and/or are required for the proper, safe and effective operation of the plant (Specify):-	Item			
TOTAL OF SCHEDULE E5 CARRIED TO SUMMARY					

ITEM	DESCRIPTION	UNIT	QTY	RATE R	RATE C	AMOUNT R	AMOUNT C
	SCHEDULE E6						
	STANDBY POWER GENERATOR						
	Allow for all the costs and expenses in connection with the design, manufacture, painting, supplying, delivery, offloading and storage of the following materials and equipment:						
	New Diesel Generator Sets						
1	Diesel generator for MBR-B Biological Reactor	No	1				
2	Diesel generator for MBR-B Air Scour	No	1				
3	Diesel generator for MBR-B	No	1				
4	Diesel generator - 2000 kVA Prime Power	No	1				Rate Only
5	Modified Exhaust System	No	3				
6	Radiator Ducting	No	3				
7	Sound Attenuated Louvres	No	6				
8	Electrical fuel transfer pump	No	1				Rate Only
9	Fire extinguishers	No	6				
10	Service and Maintenance Contract for installation	Months	12				
	Diesel tank						
11	Free standing diesel storage tank complete with instrumentation (MBR-B Biological Reactor genset)	No	1				Rate Only
12	Fuel (enough for testing and commissioning and a full tank with handover) (MBR-B Biological Reactor genset)	Sum	1				
13	Fuel transfer system (MBR-B Biological Reactor genset)	Sum	1				
14	Free standing diesel storage tank complete with instrumentation (Air Scour genset)	No	1				Rate Only
15	Fuel (enough for testing and commissioning and a full tank with handover) (Air Scour genset)	Sum	1				
	Carried forward / ...						

ITEM	DESCRIPTION	UNIT	QTY	RATE R c	AMOUNT R c
Brought forward / ...					
16	Fuel transfer system (Air Scour genset)	Sum	1		
17	Free standing diesel storage tank complete with instrumentation (MBR-B tank)	No	1		Rate Only
18	Fuel (enough for testing and commissioning and a full tank with handover) (MBR-B tank)	Sum	1		
19	Fuel transfer system (Air Scour genset)	Sum	1		
20	Allow for separate return flights, car hire, accommodation and subsistence costs incurred in optional factory inspections or routine test witnessing, outside the Cape Metropolitan Area, by the City of Cape Town Engineer and his representative (two persons) for equipment in this schedule	Prov Sum			75,000.00
	Temporary Construction power				
21	Provision of temporary power during electrical changeovers as directed by the Engineer	Provisional Sum			175,400.00
22	Percentage adjustment on Item 15 for Contractor's costs, sourcing quotes, management, and for overheads and profit (state as percentage an extend as amount)	%	175,400		
	Allow for all costs and expenses in connection with the Site installation in terms of in terms of FIDIC and Part C3: Scope of Work (excluding pre-commissioning) for the following:				
23	For equipment scheduled above	Sum	1		
24	Earthing and bonding of the installation	Sum	1		
	Allow for all costs and expenses in connection with pre-commsissioning in terms of FIDIC and Part C3: Scope of Work for the following:				
25	For equipment scheduled above	Sum	1		
Carried forward / ...					

ITEM	DESCRIPTION	UNIT	QTY	RATE R	RATE C	AMOUNT R	AMOUNT C
Brought forward / ...							
26	**All other items not included above but which are nevertheless necessary to meet the Scope of Work and/or are required for the proper, safe and effective operation of the plant (Specify):-**	Item					
TOTAL OF SCHEDULE E6 CARRIED TO SUMMARY							

ITEM	DESCRIPTION	UNIT	QTY	RATE R	RATE C	AMOUNT R	AMOUNT C
	SCHEDULE E7						
	LV SWITCHGEAR AND CONTROLGEAR						
	Allow for all the costs and expenses in connection with the design, manufacture, painting, supplying, delivery, offloading and storage of the following materials and equipment:						
	Refered to as "Supply" in this schedule						
	Allow for all costs and expenses in connection with the Site installation in terms of in terms of FIDIC and Part C3: Scope of Work (excluding pre-commissioning) for the following:						
	Refered to as "Install" in this schedule						
	Allow for all costs and expenses in connection with pre-commsissioning in terms of FIDIC and Part C3: Scope of Work for the following:						
	Refered to as "Pre-Commissioning" in this schedule						
	New Switchgear Assemblies						
	MCC BR-B1- complete						
1	Supply	Sum	1				
2	Install	Sum	1				
3	Pre-Commissioning	Sum	1				
	MCC BR-B2 complete						
4	Supply	Sum	1				
5	Install	Sum	1				
6	Pre-Commissioning	Sum	1				
	MCC BR-B3 complete						
7	Supply	Sum	1				
8	Install	Sum	1				
9	Pre-Commissioning	Sum	1				
Carried forward / ...							

ITEM	DESCRIPTION	UNIT	QTY	RATE R c	AMOUNT R c
Brought forward / ...					
	MCC FBDA complete				
10	Supply	Sum	1		
11	Install	Sum	1		
12	Pre-Commissioning	Sum	1		
	FBDA Variable Frequency Converters complete				
13	Main offer: Supply AFE VFC	No	5		
14	Alternative offer: Supply DFE VFC with passive or inline low pass broadband filter per drive	No	1		Rate Only
15	Install	No	5		
16	Pre-Commissioning	No	5		
	MCC MBR-B AIR SCOUR complete				
17	Supply	Sum	1		
18	Install	Sum	1		
19	Pre-Commissioning	Sum	1		
	AIR SCOUR Variable Frequency Converters complete				
20	Main offer: Supply AFE VFC	No	6		
21	Alternative offer: Supply DFE VFC with passive or inline low pass broadband filter per drive	No	1		Rate Only
22	Install	No	6		
23	Pre-Commissioning	No	6		
	MCC MBR-B complete				
24	Supply	Sum	1		
25	Install	Sum	1		
26	Pre-Commissioning	Sum	1		
Carried forward / ...					

ITEM	DESCRIPTION	UNIT	QTY	RATE R c	AMOUNT R c
Brought forward / ...					
	MCC MBR-FS complete				
27	Supply	Sum	1		
28	Install	Sum	1		
29	Pre-Commissioning	Sum	1		
	MCC MBR-B-CITRIC ACID complete				
30	Supply	Sum	1		
31	Install	Sum	1		
32	Pre-Commissioning	Sum	1		
	MCC MBR-B-SOIDUM HYPOCHLORIDE complete				
33	Supply	Sum	1		
34	Install	Sum	1		
35	Pre-Commissioning	Sum	1		
	MCC FERRIC CHLORIDE complete				
36	Supply	Sum	1		
37	Install	Sum	1		
38	Pre-Commissioning	Sum	1		
	MCC SODIUM HYDROXIDE complete				
39	Supply	Sum	1		
40	Install	Sum	1		
41	Pre-Commissioning	Sum	1		
Carried forward / ...					

ITEM	DESCRIPTION	UNIT	QTY	RATE R	RATE C	AMOUNT R	AMOUNT C
Brought forward / ...							
	Field Control Stations						
	Local E-Stop/Stop/Start Control Station (including 3CR12 pedestal mount)						
42	Supply	No	110				
43	Install	No	110				
44	Pre-Commissioning	No	110				
45	**Local Forward/Reverse Station (including 3CR12 pedestal mount)**	No	6				
46	Supply	No	6				
47	Install	No	6				
48	Pre-Commissioning	No	6				
	Local E-Stop/Stop/Start Control Station (including Stainless Steel 316 pedestal mount)						
49	Supply	No	32				
50	Install	No	32				
51	Pre-Commissioning	No	32				
	Busbar trunking						
52	Busbar trunking for the MBR MCC as directed by the Engineer	Provisional Sum					175,400.00
53	Percentage adjustment on Item 52 for Contractor's design, sourcing quotes, superintendence, and for overheads and profit (state as percentage an extend as amount)	%	175,400				
54	Supply, install and Pre-Commission Cast Resin insulated busbar trunking (3200A, 50 kA, 3 phase + Neutral)	m²	1				Rate Only
Carried forward / ...							

ITEM	DESCRIPTION	UNIT	QTY	RATE R c	AMOUNT R c
Brought forward / ...					
	MCC busbar and controlgear				
55	MCC busbar and controlgear changes resultant from equipment changes during mechanical design	Prov Sum	1		R 150,000.00
56	Percentage adjustment on Item 55 for Contractor's design, sourcing quotes, superintendence, and for overheads and profit (state as percentage an extend as amount)	%	150,000		
	Cable Trench Covers				
	Meranti Wood slabs over cable trenches in MCC rooms				
57	Supply	m²	40		
58	Install	m²	40		
	Certificates of compliance for all switchgear panels included under Schedule E7				
59	For equipment scheduled above	Sum	1		
60	**All other items not included above but which are nevertheless necessary to meet the Scope of Work and/or are required for the proper, safe and effective operation of the plant (Specify):-**	Item			
TOTAL OF SCHEDULE E7 CARRIED TO SUMMARY					

ITEM	DESCRIPTION	UNIT	QTY	RATE R	RATE C	AMOUNT R	AMOUNT C
	SCHEDULE E8						
	PROGRAMMABLE LOGIC CONTROLLERS						
	Allow for all the costs and expenses in connection with the design, manufacture, painting, supplying, delivery, offloading and storage of the following materials and equipment:						
	Refered to as "Supply" in this schedule						
	Allow for all costs and expenses in connection with the Site installation in terms of in terms of FIDIC and Part C3: Scope of Work (excluding pre-commissioning) for the following:						
	Refered to as "Install" in this schedule						
	Allow for all costs and expenses in connection with pre-commsissioning in terms of FIDIC and Part C3: Scope of Work for the following:						
	Refered to as "Pre-Commissioning" in this schedule						
	PLC - Fine Bubble Diffused Aeration Blowers (PLC-FBDA)						
	PLC Panel						
1	Supply	No	1				
2	Install	No	1				
	PLC hardware complete						
3	Supply	No	1				
4	Install	No	1				
5	Supply and Install PLC Software Complete	Sum	1				
6	Programming of PLC	Sum	1				
7	Simulation Testing of PLC Programming	Sum	1				
8	Pre-Commissioning	Sum	1				

Carried forward / ...

ITEM	DESCRIPTION	UNIT	QTY	RATE R c	AMOUNT R c
Brought forward / ...					
	PLC - Biological reactors (PLC-BR-B1, PLC-BR-B2, PLC-BR-B3)				
	PLC Panel				
9	Supply	No	3		
10	Install	No	3		
	PLC hardware complete				
11	Supply	No	3		
12	Install	No	3		
13	Supply and Install PLC Software Complete	Sum	3		
14	Programming of PLC	Sum	3		
15	Simulation Testing of PLC Programming	Sum	3		
16	Pre-Commissioning	Sum	3		
	PLC - MBR B Air Scour Blowers (PLC-B-AIR SCOUR)				
	PLC Panel				
17	Supply	No	1		
18	Install	No	1		
	PLC hardware complete				
19	Supply	No	1		
20	Install	No	1		
21	Supply and Install PLC Software Complete	Sum	1		
22	Programming of PLC	Sum	1		
23	Simulation Testing of PLC Programming	Sum	1		
24	Pre-Commissioning	Sum	1		
Carried forward / ...					

ITEM	DESCRIPTION	UNIT	QTY	RATE R c	AMOUNT R c
Brought forward / ...					
	PLC - Membrane Bioreactor (MBR) B (PLC-MBR-B)				
	PLC Panel				
25	Supply	No	1		
26	Install	No	1		
	PLC hardware complete				
27	Supply	No	1		
28	Install	No	1		
29	Supply and Install PLC Software Complete	Sum	1		
30	Programming of PLC	Sum	1		
31	Simulation Testing of PLC Programming	Sum	1		
32	Pre-Commissioning	Sum	1		
	PLC - MBR B Citric Acid (PLC-Citric Acid)				
	PLC Panel				
33	Supply	No	1		
34	Install	No	1		
	PLC hardware complete				
35	Supply	No	1		
36	Install	No	1		
37	Supply and Install PLC Software Complete	Sum	1		
38	Programming of PLC	Sum	1		
39	Simulation Testing of PLC Programming	Sum	1		
40	Pre-Commissioning	Sum	1		
Carried forward / ...					

ITEM	DESCRIPTION	UNIT	QTY	RATE R	RATE C	AMOUNT R	AMOUNT C
Brought forward / ...							
	PLC - MBR B Sodium Hypochlorite (PLC-Sodium Hypochlorite)						
	PLC Panel						
41	Supply	No	1				
42	Install	No	1				
	PLC hardware complete						
43	Supply	No	1				
44	Install	No	1				
45	Supply and Install PLC Software Complete	Sum	1				
46	Programming of PLC	Sum	1				
47	Simulation Testing of PLC Programming	Sum	1				
48	Pre-Commissioning	Sum	1				
	PLC - Ferric Chloride (PLC Ferric Chloride)						
	PLC Panel						
49	Supply	No	1				
50	Install	No	1				
	PLC hardware complete						
51	Supply	No	1				
52	Install	No	1				
53	Supply and Install PLC Software Complete	Sum	1				
54	Programming of PLC	Sum	1				
55	Simulation Testing of PLC Programming	Sum	1				
56	Pre-Commissioning	Sum	1				
Carried forward / ...							

ITEM	DESCRIPTION	UNIT	QTY	RATE R	RATE C	AMOUNT R	AMOUNT C
Brought forward / ...							
	PLC - Sodium Hydroxide (PLC-Sodium Hydroxide)						
	PLC Panel						
57	Supply	No	1				
58	Install	No	1				
	PLC hardware complete						
59	Supply	No	1				
60	Install	No	1				
61	Supply and Install PLC Software Complete	Sum	1				
62	Programming of PLC	Sum	1				
63	Simulation Testing of PLC Programming	Sum	1				
64	Pre-Commissioning	Sum	1				
	PLC - MBR B Fine Screens (PLC-MBR-FS)						
	PLC Panel						
65	Supply	No	1				
66	Install	No	1				
	PLC hardware complete						
67	Supply	No	1				
68	Install	No	1				
69	Supply and Install PLC Software Complete	Sum	1				
70	Programming of PLC	Sum	1				
71	Simulation Testing of PLC Programming	Sum	1				
72	Pre-Commissioning	Sum	1				
Carried forward / ...							

ITEM	DESCRIPTION	UNIT	QTY	RATE R c	AMOUNT R c
Brought forward / ...					
	Supply and install of General PLC Components as in the PLCs above				
73	CPU M580	No	1		Rate Only
74	CPU M340	No	1		Rate Only
75	Backplane	No	1		Rate Only
76	8 Analogue Inputs Card	No	1		Rate Only
77	8 Analogue Outputs Card	No	1		Rate Only
78	16 Digital Inputs Card	No	1		Rate Only
79	16 Digital Outputs Card	No	1		Rate Only
80	Modbus RTU Card	No	1		Rate Only
81	2 port Ethernet Card	No	1		Rate Only
	UPS for PLC, HMI and other control accessories				
	UPS Panel and LV assembly				
82	Supply	No	11		
83	Install	No	11		
84	Pre-Commissioning	Sum	1		
	UPS complete				
85	Supply	No	11		
86	Install	No	11		
87	Pre-Commissioning	Sum	1		
	HMI (Citric Acid Dosing)				
88	Supply	No	1		
89	Install	No	1		
90	Configuring Mimics	No	1		
Carried forward / ...					

ITEM	DESCRIPTION	UNIT	QTY	RATE R	RATE c	AMOUNT R	AMOUNT c
Brought forward / ...							
91	Simulation Testing of HMI	Sum	1				
92	Pre-Commissioning	Sum	1				
	HMI (Sodium Hypochlorite)						
93	Supply	No	1				
94	Install	No	1				
95	Configuring Mimics	No	1				
96	Simulation Testing of HMI	Sum	1				
97	Pre-Commissioning	Sum	1				
	HMI (Fine Screens)						
98	Supply	No	1				
99	Install	No	1				
100	Configuring Mimics	No	1				
101	Simulation Testing of HMI	Sum	1				
102	Pre-Commissioning	Sum	1				
	HMI (Ferric Chloride & Sodium Hydroxide Combined)						
103	Supply	No	1				
104	Install	No	1				
105	Configuring Mimics	No	1				
106	Simulation Testing of HMI	Sum	1				
107	Pre-Commissioning	Sum	1				
	Industrial Network						
	Armoured 12 Core Multimode fibre optic cable						
108	Supply	m	5000				
Carried forward / ...							

ITEM	DESCRIPTION	UNIT	QTY	RATE R c	AMOUNT R c
Brought forward / ...					
109	Install	m	5000		
110	Fibre Optic Splicing per core	No	24		
	CAT5 Cables complete with industrial type terminations				
111	Supply	m	2000		
112	Install	m	2000		
	Switches (including fibre optic media converters SFP, fibre terminations, fibre and CAT5 patch panel) complete				
113	Supply	No	15		
114	Install	No	15		
	Miscellaneous Industrial Network hardware items (lugs, plugs, terminals and installation consumables)				
115	Supply	Sum	1		
116	Install	Sum	1		
117	Pre-commissioning of complete industrial network system	Sum	1		
118	Conversion of existing Modbus Plus network to Ethernet network	Provisional Sum			175,400.00
119	Percentage adjustment on Item 118 for Contractor's design, sourcing quotes, superintendence, and for overheads and profit (state as percentage an extend as amount)	%	175,400		
120	**All other items not included above but which are nevertheless necessary to meet the Scope of Work and/or are required for the proper, safe and effective operation of the plant (Specify):-**	Item			
TOTAL OF SCHEDULE E8 CARRIED TO SUMMARY					

ITEM	DESCRIPTION	UNIT	QTY	RATE R c	AMOUNT R c
	SCHEDULE E9				
	SCADA				
	Allow for all the costs and expenses in connection with the following:				
	SCADA Software				
1	Upgrade of existing SCADA software for new master SCADA	Sum	1		
2	Mimics Configuration at Zandvliet WWTW new Main Control Station (Main SCADA)	Sum	1		
3	Integration/Configuration of Mimics for Hardekraaltjie Control Centre	Sum	1		
4	Integration/Configuration of Mimics for Blackmac Screening Station	Sum	1		
5	Integration/Configuration of Mimics for Dewatering Remote View SCADA	Sum	1		
6	Integration/Configuration of Mimics for MBR-A Remote View SCADA	Sum	1		
7	Alarms and Events Configuration	Sum	1		
8	Report Configuration	Sum	1		
9	Data logging and trends display configuration	Sum	1		
10	SCADA security (firewall, intruder detection, and anti-virus)	Sum	1		
11	Simulation Testing of SCADA Programming	Sum	1		
12	SCADA software: remote view node at New MBR-B SCADA station	Sum	1		
13	Mimics Configuration for remote view nodes	Sum	1		
14	All other software programming and configuration required for complete and secure SCADA system with hot standby	Sum	1		
	Carried forward / ...				

ITEM	DESCRIPTION	UNIT	QTY	RATE R c	AMOUNT R c
Brought forward / ...					
	Allow for all the costs and expenses in connection with the design, manufacture, painting, supplying, delivery, offloading and storage of the following materials and equipment:				
	Refered to as "Supply" in this schedule				
	Allow for all costs and expenses in connection with the Site installation in terms of in terms of FIDIC and Part C3: Scope of Work (excluding pre-commissioning) for the following:				
	Refered to as "Install" in this schedule				
	Master SCADA Hardware				
	SCADA Operator all-in-one computer (workstation) complete with all accessories				
15	Supply	No	4		
16	Install	No	4		
	SCADA OPC Server, rack mounted hot standby configuration complete with all accessories				
17	Supply	No	2		
18	Install	No	2		
	Main Supervisory Network Switch complete				
19	Supply	No	2		
20	Install	No	2		
	Data Network Switch Complete				
21	Supply	No	2		
22	Install	No	2		
	SCADA Administrative rack-mounted computer (workstation) complete with all accessories				
23	Supply	No	1		
Carried forward / ...					

ITEM	DESCRIPTION	UNIT	QTY	RATE R	RATE C	AMOUNT R	AMOUNT C
Brought forward / ...							
24	Install 42U, 19" rack cabinet for all network and computer equipment	No	1				
25	Supply	No	4				
26	Install 50" LED Backlit LCD Display	No	4				
27	Supply	No	4				
28	Install SCADA Computer UPS	No	4				
29	Supply	No	2				
30	Install KVM media switch complete with all accessories	No	2				
31	Supply	No	2				
32	Install SCADA printer	No	2				
33	Supply	No	1				
34	Install	No	1				
35	Workstation furniture **Remote View SCADA Hardware at MBR-B**	Sum	1				
36	Remote View SCADA operator all-in-one computer (workstation) complete with all accessories Supply	No	2				
37	Install	No	2				
38	Data Network Switch Complete Supply	No	1				
Carried forward / ...							

ITEM	DESCRIPTION	UNIT	QTY	RATE R c	AMOUNT R c
Brought forward / ...					
39	Install 19" rack cabinet for all network and computer equipment - mounted under desk or wall mounted	No	1		
40	Supply	No	1		
41	Install 23" LED Backlit LCD Displays	No	1		
42	Supply	No	4		Rate Only
43	Install Remote View SCADA Computer UPS	No	4		Rate Only
44	Supply	No	1		
45	Install Remote View SCADA printer	No	1		
46	Supply	No	1		
47	Install	No	1		
48	Remote View SCADA Workstation furniture	Sum	1		
49	Other network accessories, switches, routers etc. necessary for a complete SCADA system	Sum	1		
	Allow for all costs and expenses in connection with pre-commssissioning in terms of FIDIC and Part C3: Scope of Work for the following:				
50	Complete SCADA System	Sum	1		
51	Installation, Relocation, Congfiguration and Commissioning of the Temporary Master SCADA system	Provisional Sum			175,400.00
52	Percentage adjustment on Item 51 for Contractor's design, sourcing quotes, superintendence, and for overheads and profit (state as percentage an extend as amount)	%	175,400		
Carried forward / ...					

ITEM	DESCRIPTION	UNIT	QTY	RATE R	RATE c	AMOUNT R	AMOUNT c
Brought forward / ...							
53	Decommissioning of the existing SCADA system	Provisional Sum					50,000.00
54	Percentage adjustment on Item 53 for Contractor's design, sourcing quotes, superintendence, and for overheads and profit (state as percentage an extend as amount)	%	50,000				
55	Decommissioning of the Temporary SCADA system	Provisional Sum					50,000.00
56	Percentage adjustment on Item 55 for Contractor's design, sourcing quotes, superintendence, and for overheads and profit (state as percentage an extend as amount)	%	50,000				
57	**All other items not included above but which are nevertheless necessary to meet the Scope of Work and/or are required for the proper, safe and effective operation of the plant (Specify):-**	Item					
TOTAL OF SCHEDULE E9 CARRIED TO SUMMARY							

ITEM	DESCRIPTION	UNIT	QTY	RATE R c	AMOUNT R c
	SCHEDULE E10				
	TELEMETRY				
	Allow for all the costs and expenses in connection with the following:				
	Telemetry				
1	Upgrade of Telemetry as directed by the Engineer	Provisional Sum			175,400.00
2	Percentage adjustment on Item 1 for Contractor's design, sourcing quotes, superintendence, and for overheads and profit (state as percentage an extend as amount)	%	175,400		
3	**All other items not included above but which are nevertheless necessary to meet the Scope of Work and/or are required for the proper, safe and effective operation of the plant (Specify):-**	Item			
	TOTAL OF SCHEDULE E10 CARRIED TO SUMMARY				

ITEM	DESCRIPTION	UNIT	QTY	PRICE R	PRICE C	AMOUNT R	AMOUNT C
	SCHEDULE E11						
	INSTRUMENTATION						
	Allow for all the costs and expenses in connection with the design, manufacture, painting, supplying, delivery, offloading and storage of the following materials and equipment:						
	Refered to as "Supply" in this schedule						
	Allow for all costs and expenses in connection with the Site installation in terms of in terms of FIDIC and Part C3: Scope of Work (excluding pre-commissioning) for the following:						
	Refered to as "Install" in this schedule						
	Biological Reactor Stream B1,2,&3						
	Analytical Dissolved Oxygen Optical Meter including sensor, temperature sensor built-in (PT 100), transmitter and mounting materials						
1	Supply	No	15				
2	Install	No	15				
	Analytical pH Meter including sensor, transmitter, temperature sensor built-in (PT 100), 3 relay output, and mounting materials.						
3	Supply	No	5				
4	Install	No	5				
	Area Velocity Flow meter including sensor, transmitter and mounting materials (Recycle Channel)						
5	Supply	No	3				
6	Install	No	3				
	Area Velocity Flow meter including sensor, transmitter, 3 channel outputs, and mounting materials (Aerobic Discharge Sump Channel)						
7	Supply	No	3				

Carried forward / ...

ITEM	DESCRIPTION	UNIT	QTY	PRICE R	PRICE c	AMOUNT R	AMOUNT c
Brought forward / ...							
8	Install **Ultrasonic Level Meter including sensor, transmitter, 3 channel outputs, and mounting materials (MBR Feed sump Level and Aerobic Discharge Sump)**	No	3				
9	Supply	No	6				
10	Install **Hydrostatic Level Meter including sensor, transmitter, 3 channel outputs, and mounting materials (Aerobic Discharge Sump)**	No	6				
11	Supply	No	3				
12	Install **Flow Diffirential Pressure Pitot Tube Meter including sensor, transmitter, and mounting materials (Aerobic Airflow Meter)**	No	3				
13	Supply	No	9				
14	Install **Linear Variable Diffirential Position Transmitter (in conjunction with mechanical equipment) complete including sensor, transmitter, and mounting materials (Scum withdrawal Gate Aerobic Zone)**	No	9				
15	Supply	No	3				
16	Install **Proximity Sensor complete including mounting materials**	No	3				
17	Supply	No	10				
18	Install	No	10				
Carried forward / ...							

ITEM	DESCRIPTION	UNIT	QTY	PRICE R c	AMOUNT R c
Brought forward / ...					
	Fine Bubble Diffused Aeration				
	Pressure Transmitter complete including mounting materials (FBDA Blower) - piezoelectric / capactive				
19	Supply	No	7		
20	Install	No	7		
	Differential Pressure Transmitter complete including mounting materials (FBDA Blower) - piezoelectric / capactive				
21	Supply	No	6		
22	Install	No	6		
	Vibration Transmitter (in conjunction with mechanical equipment) complete including sensor, transmitter, and mounting material- Piezoelectric Accelerometer				
23	Supply	No	6		
24	Install	No	6		
	Thermal Mass Flow Meter including sensor, transmitter, temperature sensor built-in (PT 100) and mounting materials				
25	Supply	No	5		
26	Install	No	5		
	Proximity Sensor (in conjunction with mechanical torque switch) complete including mounting materials				
27	Supply	No	10		
28	Install	No	10		
Carried forward / ...					

ITEM	DESCRIPTION	UNIT	QTY	PRICE R c	AMOUNT R c
Brought forward / ...					
	Air Scour Blowers				
	Thermal Mass Flow Meter including sensor, transmitter, temperature sensor built-in (PT 100) and mounting materials (Air Scour Train and common manifold)				
29	Supply	No	10		
30	Install	No	10		
	Pressure Transmitter complete including mounting materials (Air Scour Blower) - piezoelectric / capactive				
31	Supply	No	25		
32	Install	No	25		
	Pressure Switch complete including mounting materials (Air Scour Blower) - piezoelectric / capactive				
33	Supply	No	7		
34	Install	No	7		
	Membrane Biological Reactor				
	Analytical Turbidity Optical Meter including sensor, temperature sensor built-in (PT 100), transmitter and mounting materials (Mixed Liquor Channel)				
35	Supply	No	1		
36	Install	No	1		
	Analytical Turbidity Optical Meter including sensor, transmitter and mounting materials (Filtration Tank Filtrate)				
37	Supply	No	9		
38	Install	No	9		
Carried forward / ...					

ITEM	DESCRIPTION	UNIT	QTY	PRICE R c	AMOUNT R c
Brought forward / ...					
	Analytical Analyzer NHOX Panel complete, including sensor, transmitter and mounting materials (Permeate Line)				
39	Supply	No	1		
40	Install	No	1		
	Analytical Analyzer NH4 Panel complete, including sensor, transmitter and mounting materials (Permeate Line)				
41	Supply	No	1		
42	Install	No	1		
	Analytical Analyzer Phosphate Panel complete, including sensor, transmitter and mounting materials (Permeate Line)				
43	Supply	No	1		
44	Install	No	1		
	Analytical Dew Point Transmitter complete, including sensor, transmitter and mounting materials (Air Desicant Dryer)				
45	Supply	No	2		
46	Install	No	2		
	Electromagnetic Flow meter including sensor, transmitter, temperature sensor built-in (PT 100), and mounting materials (Permeate Flow)				
47	Supply	No	10		
48	Install	No	10		
	Electromagnetic Flow meter including sensor, transmitter, and mounting materials (Scum to was Sump)				
49	Supply	No	1		
50	Install	No	1		
Carried forward / ...					

ITEM	DESCRIPTION	UNIT	QTY	PRICE R	PRICE C	AMOUNT R	AMOUNT C
Brought forward / ...							
	Electromagnetic Flow meter including sensor, transmitter, and mounting materials (Service water Line)						
51	Supply	No	1				
52	Install	No	1				
	Area Velocity Flow meter including sensor, transmitter, and mounting materials (Mixed Liquor Channel)						
53	Supply	No	1				
54	Install	No	1				
	Thermal Flow Switch including sensor and mounting materials (Filtration Air Scour)						
55	Supply	No	9				
56	Install	No	9				
	Flow Switch (inductive proximity on NRV) including sensor and mounting materials (Drain Pump Delivery)						
57	Supply	No	3				
58	Install	No	3				
	Flow Switch (inductive proximity on NRV) including sensor and mounting materials (Scum						
59	Supply	No	3				
60	Install	No	3				
	Flow Switch (inductive proximity on NRV) including sensor and mounting materials (Service Water Pump)						
61	Supply	No	3				
62	Install	No	3				
Carried forward / ...							

ITEM	DESCRIPTION	UNIT	QTY	PRICE R	PRICE C	AMOUNT R	AMOUNT C
Brought forward / ...							
	Flow Switch (inductive proximity on NRV) including sensor and mounting materials (Service						
63	Supply	No	2				
64	Install	No	2				
	Hydrostatic Level Meter including sensor, transmitter, 3 channel relay outputs, and mounting materials (Filtration Tanks)						
65	Supply	No	9				
66	Install	No	9				
	Hydrostatic Level Meter including sensor, transmitter, 3 channel relay outputs, and mounting materials (Membrane Tank Feed Sump)						
67	Supply	No	2				
68	Install	No	2				
	Hydrostatic Level Meter including sensor, transmitter, 3 channel relay outputs, and mounting materials (Mixed Liquor Channel)						
69	Supply	No	1				
70	Install	No	1				
	Hydrostatic Level Meter including sensor, transmitter, and mounting materials (Scum Was Membrane Tank)						
71	Supply	No	1				
72	Install	No	1				
	Ultrasonic Level Meter including sensor, transmitter, and mounting materials (Permeate Back Pulse Tank)						
73	Supply	No	1				
74	Install	No	1				
Carried forward / ...							

ITEM	DESCRIPTION	UNIT	QTY	PRICE R	C	AMOUNT R	C
Brought forward / ...							
	Ultrasonic Level Meter including sensor, transmitter, and mounting materials (Service Water Tank)						
75	Supply	No	1				
76	Install	No	1				
	Hydrostatic Level Switch including sensor, and mounting materials (Scum Was Membrane Tank)						
77	Supply	No	1				
78	Install	No	1				
	Conductive Probe Level Switch including sensor, high and low relay outputs, and mounting materials (Filtration Tanks)						
79	Supply	No	18				
80	Install	No	18				
	Float Level Switch including mounting materials (Permeate and service tank)						
81	Supply	No	3				
82	Install	No	3				
	Pressure Piezoelectric/Capacitive Transmitter complete, including sensor, transmitter, and mounting materials (Drain Pump)						
83	Supply	No	3				
84	Install	No	3				
	Pressure Piezoelectric/Capacitive Transmitter complete, including sensor, transmitter, and mounting materials (Scum Pump)						
85	Supply	No	3				
86	Install	No	3				
Carried forward / ...							

ITEM	DESCRIPTION	UNIT	QTY	PRICE R	PRICE c	AMOUNT R	AMOUNT c
Brought forward / ...							
	Pressure Piezoelectric/Capacitive Transmitter complete, including sensor, transmitter, and mounting materials (Back pulse pumps)						
87	Supply	No	18				
88	Install	No	18				
	Pressure Piezoelectric/Capacitive Transmitter complete, including sensor, transmitter, and mounting materials (Air Plant)						
89	Supply	No	5				
90	Install	No	5				
	Pressure Piezoelectric/Capacitive Transmitter complete, including sensor, transmitter, and mounting materials (Service Water / Wash Water)						
91	Supply	No	4				
92	Install	No	4				
	Hydrostatic Pressure Transmitter complete, including sensor, transmitter, and mounting materials(Service Water / Wash Water)						
93	Supply	No	9				
94	Install	No	9				
	Pressure Piezoelectric / Capactive Switch complete including mounting materials (Scum Spray Water)						
95	Supply	No	1				
96	Install	No	1				
	Pressure Piezoelectric / Capactive Switch complete including mounting materials (Vacum Ejector Priming)						
97	Supply	No	1				
98	Install	No.	1				
Carried forward / ...							

ITEM	DESCRIPTION	UNIT	QTY	PRICE R c	AMOUNT R c
Brought forward / ...					
	Pressure Piezoelectric / Capactive Switch complete including mounting materials (Back pulse pumps)				
99	Supply	No	18		
100	Install	No	18		
	Pressure Piezoelectric / Capactive Switch complete including mounting materials (Air Plant)				
101	Supply	No	8		
102	Install	No	8		
	Temperature Meter including sensor, transmitter, and mounting materials (Permeate Line)				
103	Supply	No	1		
104	Install	No	1		
	Temperature Meter including sensor, transmitter, and mounting materials (Final Effluent)				
105	Supply	No	1		
106	Install	No	1		
	Inductive Proximity Sensor complete including mounting materials (Monitored Actuated Valves)				
107	Supply	No	150		
108	Install	No	150		
	Linear Variable Diffirential Position Transmitter (in conjunction with mechanical equipment) complete including sensor, transmitter, and mounting materials (MBR Tank Feed Sump Gate)				
109	Supply	No	1		
110	Install	No	1		
Carried forward / ...					

ITEM	DESCRIPTION	UNIT	QTY	PRICE R	PRICE C	AMOUNT R	AMOUNT C
Brought forward / ...							
	Linear Variable Diffirential Position Transmitter (in conjunction with mechanical equipment) complete including sensor, transmitter, and mounting materials (Mixed Liquor Recycle Channel Gate)						
111	Supply	No	1				
112	Install	No	1				
	MBR - Citric Acid Dosing						
	Coriolis Mass Flow meters including sensor, transmitter and mounting materials (CIP Dosing)						
113	Supply	No	1				
114	Install	No	1				
	Electromagnetic Flow meter including sensor, transmitter and mounting materials (CIP Dosing)						
115	Supply	No	1				
116	Install	No	1				
	Ultrasonic Level Meter including sensor, transmitter, and mounting materials (Mixer Tank)						
117	Supply	No	1				
118	Install	No	1				
	Float Level Switch including mounting materials (Mixer Tank)						
119	Supply	No	3				
120	Install	No	3				
	MBR - Sodium Hypochrolite Dosing						
	Coriolis Mass Flow meters including sensor, transmitter and mounting materials (SH Dosing)						
121	Supply	No	2				
122	Install	No	2				
Carried forward / ...							

ITEM	DESCRIPTION	UNIT	QTY	PRICE R c	AMOUNT R c
Brought forward / ...					
	Ultrasonic Level Meter including sensor, transmitter, and mounting materials (Mixer Tank)				
123	Supply	No	1		
124	Install	No	1		
	Float Level Switch including mounting materials (Mixer Tank)				
125	Supply	No	1		
126	Install	No	1		
	Pressure Piezoelectric / Capactive Switch complete including mounting materials (Dosing Pressure)				
127	Supply	No	1		
128	Install	No	1		
	Ferric Chloride Dosing				
	Coriolis Mass Flow meters including sensor, transmitter and mounting materials (CAS A/B Dosing)				
129	Supply	No	2		
130	Install	No	2		
	Coriolis Mass Flow meters including sensor, transmitter and mounting materials (MBR A/B Dosing)				
131	Supply	No	2		
132	Install	No	2		
	Coriolis Mass Flow meters including sensor, transmitter and mounting materials (PST Dosing)				
133	Supply	No	1		
134	Install	No	1		
Carried forward / ...					

ITEM	DESCRIPTION	UNIT	QTY	PRICE R C	AMOUNT R C
Brought forward / ...					
	Ultrasonic Level Meter including sensor, transmitter, and mounting materials (Mixer Tanks)				
135	Supply	No	2		
136	Install	No	2		
	Float Level Switch including mounting materials (Mixer Tanks)				
137	Supply	No	2		
138	Install	No	2		
	Sodium Hydroxide Dosing				
	Coriolis Mass Flow meters including sensor, transmitter and mounting materials (CAS A/B Dosing)				
139	Supply	No	2		
140	Install	No	2		
	Coriolis Mass Flow meters including sensor, transmitter and mounting materials (MBR A/B Dosing)				
141	Supply	No	2		
142	Install	No	2		
	Coriolis Mass Flow meters including sensor, transmitter and mounting materials (PST Dosing)				
143	Supply	No	1		
144	Install	No	1		
	Ultrasonic Level Meter including sensor, transmitter, and mounting materials (Mixer Tanks)				
145	Supply	No	2		
146	Install	No	2		
Carried forward / ...					

ITEM	DESCRIPTION	UNIT	QTY	PRICE R	PRICE C	AMOUNT R	AMOUNT C
Brought forward / ...							
	Float Level Switch including mounting materials (Mixer Tanks)						
147	Supply	No	2				
148	Install	No	2				
	Fine Screens						
	Electromagnetic Flow meter including sensor, transmitter and mounting materials (MBR A Flow)						
149	Supply	No	1				
150	Install	No	1				
	Electromagnetic Flow meter including sensor, transmitter and mounting materials (MBR B Flow)						
151	Supply	No	1				
152	Install	No	1				
	Thermal Mass Flow Switch including and mounting materials (Wash Water)						
153	Supply	No	1				
154	Install	No	1				
	Ultrasonic Level Meter including sensor, transmitter, and mounting materials (Wash Water Sump)						
155	Supply	No	1				
156	Install	No	1				
	Conductive Probe Level Switch including sensor, high and low relay outputs, and mounting materials (Fine Screens)						
157	Supply	No	6				
158	Install	No	6				
Carried forward / ...							

ITEM	DESCRIPTION	UNIT	QTY	PRICE R	AMOUNT R
Brought forward / ...					
	Pressure Piezoelectric/Capacitive Transmitter complete, including sensor, transmitter, and mounting materials (Wash Water)				
159	Supply	No	1		
160	Install	No	1		
	Pressure Piezoelectric/Capacitive Transmitter complete, including sensor, transmitter, and mounting materials (Screenings Compactor)				
161	Supply	No	2		
162	Install	No	2		
	Pressure Switch complete including mounting materials (Wash Water Line)				
163	Supply	No	1		
164	Install	No	1		
	Proximity Sensor (in conjunction with mechanical torque switch) complete including mounting materials (Screenings Conveyor overtorque)				
165	Supply	No	6		
166	Install	No	6		
	Proximity Sensor (in conjunction with mechanical torque switch) complete including mounting materials (Screw Conveyor overtorque)				
167	Supply	No	6		
168	Install	No	6		
	Proximity Sensor (in conjunction with mechanical torque switch) complete including mounting materials (MBR Fine Screw Press Overtorque)				
169	Supply	No	2		
170	Install	No	2		
Carried forward / ...					

ITEM	DESCRIPTION	UNIT	QTY	PRICE R	PRICE C	AMOUNT R	AMOUNT C
Brought forward / ...							
	Proximity Sensor (in conjunction with mechanical torque switch) complete including mounting materials (MBR Fine Screen Press Overtorque)						
171	Supply	No	2				
172	Install	No	2				
	Proximity Sensor complete including mounting materials (Skip Dollies)						
173	Supply	No	4				
174	Install	No	4				
	Proximity Sensor (in conjunction with mechanical torque switch) complete including mounting materials (Skip Dollies)						
175	Supply	No	2				
176	Install	No	2				
	Linear Variable Diffirential Position Transmitter (in conjunction with mechanical equipment) complete including sensor, transmitter, and mounting materials (Screened Waste Water Sluice Gate)						
177	Supply	No	3				
178	Install	No	3				
	<u>General</u>						
	Room Temperature sensor for MCC Rooms						
179	Supply	No	2				
180	Install	No	2				
	Instrumentation and Control junction box for Solenoid Valve Station complete with terminations and accessories etc.						
181	Supply	No	20				
182	Install	No	20				
Carried forward / ...							

ITEM	DESCRIPTION	UNIT	QTY	PRICE R	PRICE C	AMOUNT R	AMOUNT C
Brought forward / ...							
	Instrumentation and Control junction box complete with terminations and accessories etc.						
183	Supply	No	50				
184	Install	No	50				
	Instrumentation Transmitter outdoor housing complete with terminations and accessories etc.						
185	Supply	No	50				
186	Install	No	50				
	Allow for all costs and expenses in connection with pre-commsissioning in terms of FIDIC and Part C3: Scope of Work for the following:						
187	For instrumentation scheduled above	Sum	1				
188	Additional instrumentation as directed by the Engineer	Provisional Sum			-	R	175,000.00
189	Percentage adjustment on Item 188 for Contractor's design, sourcing quotes, superintendence, and for overheads and profit (state as percentage an extend as amount)	%	175,000				
190	**All other items not included above but which are nevertheless necessary to meet the Scope of Work and/or are required for the proper, safe and effective operation of the plant (Specify):-**	Item					
TOTAL OF SCHEDULE E11 CARRIED TO SUMMARY							

ITEM	DESCRIPTION	UNIT	QTY	RATE R c	AMOUNT R c
	SCHEDULE E12				
	AREA LIGHTING				
	Allow for all the costs and expenses in connection with the following:				
1	Removal and decommisioning of existing streetlight and concrete pole	No	5		
2	Refurbishment of existing streetlights	No	30		
3	Refurbishment of existing high mast lights	No	6		
	Allow for all the costs and expenses in connection with the design, manufacture, painting, supplying, delivery, offloading and storage of the following materials and equipment:				
	Refered to as "Supply" in this schedule				
	Allow for all costs and expenses in connection with the Site installation in terms of in terms of FIDIC and Part C3: Scope of Work (excluding pre-commissioning) for the following:				
	Refered to as "Install" in this schedule				
	Street and Area Lighting				
	70W HPS streetlight				
4	Supply	No	90		
5	Install	No	90		
	100W HPS streetlight				
6	Supply	No	1		
7	Install	No	1		
	7m high GRP pole complete				
8	Supply	No	90		
9	Install	No	90		
	Wall mounted Photocell (Day/night switch)				
10	Supply	No	4		
Carried forward / ...					

ITEM	DESCRIPTION	UNIT	QTY	RATE R c	AMOUNT R c
Brought forward / ...					
11	Install	No	4		
12	Upgrading of existing area lighting as directed by the Engineer	Prov	1		175,400.00
13	Percentage adjustment on Item 12 for Contractor's design, sourcing quotes, superintendence, and for overheads and profit (state as percentage an extend as amount)	%	175,400		
	Kiosks				
	Area lighting Distribution Kiosk (Kiosk DP)				
14	Supply	No	1		
15	Install	No	1		
	Area lighting Distribution Kiosk (Kiosk CR)				
16	Supply	No	1		
17	Install	No	1		
	Allow for all costs and expenses in connection with pre-commsissioning in terms of FIDIC and Part C3: Scope of Work for the following:				
18	For equipment scheduled above	Sum	1		
19	Certificates of compliance	Sum	1		
20	**All other items not included above but which are nevertheless necessary to meet the Scope of Work and/or are required for the proper, safe and effective operation of the plant (Specify):-**	Item			
TOTAL OF SCHEDULE E12 CARRIED TO SUMMARY					

SECTION B OF THE WORKS: CAS A & B PLANTS ELECTRICAL AND ELECTRONIC EQUIPMENT

Continued Overleaf

ITEM	DESCRIPTION	UNIT	QTY	RATE R c	AMOUNT R c
	SCHEDULE E13				
	REFURBISHMENT AND UPGRADES				
	Allow for all the costs and expenses in connection with the design, manufacture, painting, supplying, delivery, offloading and storage of the following materials and equipment:				
	Refered to as "Supply" in this schedule				
	Allow for all costs and expenses in connection with the Site installation in terms of in terms of FIDIC and Part C3: Scope of Work (excluding pre-commissioning) for the following:				
	Refered to as "Install" in this schedule				
	Allow for all costs and expenses in connection with pre-commsissioning in terms of FIDIC and Part C3: Scope of Work for the following:				
	Refered to as "Pre-Commissioning" in this schedule				
	LV ELECTRICAL INSTALLATION				
	Submersible Mixers replacement				
1	MCC starter cubicle changes or upgrades to incorporate pump changes, as directed by the Engineer	Prov Sum			80,000.00
2	Percentage adjustment on Item 1 for Contractor's design, sourcing quotes, superintendence, and for overheads and profit (state as percentage an extend as amount)	%	80,000		
3	Disconnecting cable at motor, reconnection to new motor and re-commissioning	Sum	16		
	CAS reactor aerators replacement				
	55kW IP54/55 VFC (including load side harmonic filter) for Aerator				
4	Supply	Sum	8		
5	Install	Sum	8		
6	Pre-commissioning	Sum	8		

Carried forward / ...

ITEM	DESCRIPTION	UNIT	QTY	RATE R	AMOUNT R c
Brought forward / ...					
7	Refurbishment and reconfiguration to existing MCC DOL cubicle and starter to incorporate new VFC	Sum	8		
8	Disconnecting cable at motor, reconnection to new motor and re-commissioning	Sum	8		
	75kW IP54/55 VFC (including load side harmonic filter) for Aerator				
9	Supply	Sum	6		
10	Install	Sum	6		
11	Pre-commissioning	Sum	6		
12	Refurbishment and reconfiguration to existing MCC DOL cubicle and starter to incorporate new VFC	Sum	6		
13	Disconnecting cable at motor, reconnection to new motor and re-commissioning	Sum	6		
	90kW IP54/55 VFC (including load side harmonic filter) for Aerator				
14	Supply	Sum	6		
15	Install	Sum	6		
16	Pre-commissioning	Sum	6		
17	Refurbishment and reconfiguration to existing MCC DOL cubicle and starter to incorporate new VFC	Sum	6		
18	Disconnecting cable at motor, reconnection to new motor and re-commissioning	Sum	6		
	A-Recycle Pumps replacement				
19	MCC starter cubicle changes or upgrades to incorporate pump changes, as directed by the Engineer	Prov Sum			100,000.00
20	Percentage adjustment on Item 19 for Contractor's design, sourcing quotes, superintendence, and for overheads and profit (state as percentage an extend as amount)	%	100,000		
Carried forward / ...					

ITEM	DESCRIPTION	UNIT	QTY	RATE R c	AMOUNT R c
Brought forward / ...					
21	Disconnecting cable at motor, reconnection to new motor and re-commissioning	Sum	16		
	New A-Recycle pumps				
	Population of existing MCC spare cubicle for new A-Recycle pump starter (18.5 kW DOL)				
22	Supply	Sum	2		
23	Install	Sum	2		
24	Pre-commissioning	Sum	2		
	(Cabling and cabling support systems for new A-recycle pumps are included under Schedules E3 and E4)				
	Secondary Settling Tanks				
	Replacement of existing SST bridges				
25	Replacement of power cabling, control cabling, bridge slip rings and cable support systems for each SST bridge and associated bridge motor replacement	Sum	8		
	Population of existing MCC spare cubicle for new SST motor drive				
26	Supply	Sum	4		
27	Install	Sum	4		
28	Pre-commissioning	Sum	4		
	(Cabling and cabling support systems for new SSTs are included under Schedules E3 and E4)				
Carried forward / ...					

ITEM	DESCRIPTION	UNIT	QTY	RATE R	RATE c	AMOUNT R	AMOUNT c
Brought forward / ...							
	RAS Pumps replacement						
29	MCC starter cubicle changes or upgrades to incorporate pump changes, as directed by the Engineer	Prov Sum				100,000.00	
30	Percentage adjustment on Item 29 for Contractor's design, sourcing quotes, superintendence, and for overheads and profit (state as percentage an extend as amount)	%	100,000				
31	Disconnecting cable at motor, reconnection to new motor and re-commissioning	Sum	4				
	WAS Pumps replacement						
32	MCC starter cubicle changes or upgrades to incorporate pump changes, as directed by the Engineer	Prov Sum				80,000.00	
33	Percentage adjustment on Item 32 for Contractor's design, sourcing quotes, superintendence, and for overheads and profit (state as percentage an extend as amount)	%	80,000				
34	Disconnecting cable at motor, reconnection to new motor and re-commissioning	Sum	4				
	Scum Pumps replacement						
35	MCC starter cubicle changes or upgrades to incorporate pump changes, as directed by the Engineer	Prov Sum				30,000.00	
36	Percentage adjustment on Item 35 for Contractor's design, sourcing quotes, superintendence, and for overheads and profit (state as percentage an extend as amount)	%	30,000				
37	Disconnecting cable at motor, reconnection to new motor and re-commissioning	Sum	2				
	Population of existing MCC spare cubicle for new Scum removal pump (1.5kW DOL)						
38	Supply	Sum	4				
Carried forward / ...							

ITEM	DESCRIPTION	UNIT	QTY	RATE R	c	AMOUNT R	c
Brought forward / ...							
39	Install	Sum	4				
40	Pre-commissioning	Sum	4				
	(Cabling and cabling support systems for new SSTs are included under Schedules E3 and E4)						
	Electrical Actuators and Telescopic modulating valves						
41	MCC starter cubicle changes or upgrades to incorporate pump changes, as directed by the Engineer	Prov Sum				40,000.00	
42	Percentage adjustment on Item 41 for Contractor's design, sourcing quotes, superintendence, and for overheads and profit (state as percentage an extend as amount)	%	40,000				
43	Disconnecting cable at motor, reconnection to new motor and re-commissioning	Sum	12				
	Field Control Stations						
44	Supply and install Local E-Stop/Stop/Start Control Station (excluding pedestal mount)	No	68				
45	Supply and install Local E-Stop/Stop/Start Control Station (mounted against handrailing of SST bridge)	No	12				
46	Supply and install Local Forward/Reverse Station (excluding pedestal mount)	No	1			Rate Only	
	GENERAL LV ELECTRICAL INSTALLATION						
47	Refurbishment of general items of the CAS plant LV electrical installation as directed by the Engineer	Prov Sum				175,000.00	
48	Percentage adjustment on Item 47 for Contractor's design, sourcing quotes, superintendence, and for overheads and profit (state as percentage an extend as amount)	%	175,000				
49	Certificates of compliance for all new and modified switchgear panels included this Section B of the works	Sum	1				
Carried forward / ...							

ITEM	DESCRIPTION	UNIT	QTY	RATE R	RATE C	AMOUNT R	AMOUNT C
Brought forward / ...							
	ELECTRONIC INSTALLATION						
	PLC - CAS PLANT A and B						
	Replacement of PLC complete (including allowance for additional equipment added under this Section B of the Works, in order to achieve the intended control philosophy of this plant)						
50	Supply	No	2				
51	Install	No	2				
52	Supply and Install PLC Software	Sum	2				
53	Programming of PLC	Sum	2				
54	Simulation Testing of PLC Programming	Sum	2				
55	Pre-commissioning	Sum	2				
	SCADA Software						
56	Mimics Configuration at Zandvliet WWTW Main Control Station (Main SCADA) upgrade to include additional equipment added under this Section B of the Works	Sum	1				
	INDUSTRIAL NETWORK INSTALLATION						
57	Refurbishment of CAS plant network cabling and switches installation as directed by the Engineer	Prov Sum				175,000.00	
58	Percentage adjustment on Item 57 for Contractor's design, sourcing quotes, superintendence, and for overheads and profit (state as percentage an extend as amount)	%	175,000				
	GENERAL ELECTRONIC INSTALLATION						
59	Refurbishment of general items of the CAS plant Electronic installation as directed by the Engineer	Prov Sum				175,000.00	
60	Percentage adjustment on Item 59 for Contractor's design, sourcing quotes, superintendence, and for overheads and profit (state as percentage an extend as amount)	%	175,000				
Carried forward / ...							

ITEM	DESCRIPTION	UNIT	QTY	RATE R c	AMOUNT R c
Brought forward / ...					
	INSTRUMENTATION				
61	Refurbishment of instrumenation of the CAS plant installation as directed by the Engineer	Prov Sum			175,000.00
62	Percentage adjustment on Item 61 for Contractor's design, sourcing quotes, superintendence, and for overheads and profit (state as percentage an extend as amount)	%	175,000		
	Ultrasonic Level Meter including sensor, transmitter and mounting materials (RAS / WAS Pump Station)				
63	Supply	No	4		
64	Install	No	4		
	Level Switch complete including mounting materials (RAS / WAS Pump Station)				
65	Supply	No	4		
66	Install	No	4		
	Flow Switch complete including mounting materials (WAS Pump Station)				
67	Supply	No	3		
68	Install	No	3		
	Pressure Switch complete including mounting materials (WAS Pump Station)				
69	Supply	No	3		
70	Install	No	3		
	Pressure Transmitter complete including mounting materials (WAS Pump Station)				
71	Supply	No	3		
72	Install	No	3		
Carried forward / ...					

ITEM	DESCRIPTION	UNIT	QTY	RATE R c	AMOUNT R c
Brought forward / ...					
	Electromagnetic Flow Meter including sensor, transmitter and mounting materials (WAS common delivery)				
73	Supply	No	1		
74	Install	No	1		
	Analytical TSS Meter including sensor, transmitter and mounting materials (WAS common delivery)				
75	Supply	No	1		
76	Install	No	1		
	Area Velocity Flow Meter including sensor, transmitter and mounting materials (Settled Sewage Channel to CAS Reactor Anoxic zone)				
77	Supply	No	2		
78	Install	No	2		
	Analytical Turbidity Optical Meter including sensor, transmitter and mounting materials (CAS Reactor Anoxic Basin, Aeration Basin)				
79	Supply	No	8		
80	Install	No	8		
	Sludge Blanket Level meter including sensor, transmitter and mounting materials (Secondary Settling tanks)				
81	Supply	No	12		
82	Install	No	12		
	Proximity Sensor (in conjunction with mechanical torque switch on SST bridge) complete including mounting materials				
83	Supply	No	12		
84	Install	No	12		
Carried forward / ...					

ITEM	DESCRIPTION	UNIT	QTY	RATE R	RATE C	AMOUNT R	AMOUNT C
Brought forward / ...							
	CHLORINATION						
	MCC CHLORINATION complete						
85	Supply	Sum	1				
86	Install	Sum	1				
87	Pre-commissioning	Sum	1				
	Temporary Chlorination Facility						
88	Provision of temporary chlorination facility control during the construction of new chlorination facility	Prov Sum	1			175,000.00	
89	Percentage adjustment on Item 88 for Contractor's design, sourcing quotes, superintendence, and for overheads and profit (state as percentage an extend as amount)	%	175,000				
	REMOTE IO - CHLORINATION						
	New remote IO complete (to be connected to CAS A PLC)						
90	Remote IO panel (integrated into Chlorination MCC) - Supply	No	1				
91	Remote IO panel (integrated into Chlorination MCC) - Install	No	1				
92	Remote IO Hardware (integrated into Chlorination MCC) - Supply	No	1				
93	Remote IO hardware (integrated into Chlorination MCC) - Install	No	1				
94	Supply and Install Remote I/O Software	Sum	1				
95	Programming of Remote I/O	Sum	1				
96	Simulation Testing of Programming	Sum	1				
97	Pre-commissioning	Sum	1				
Carried forward / ...							

ITEM	DESCRIPTION	UNIT	QTY	RATE R c	AMOUNT R c
Brought forward / ...					
	Chlorination network switch (including fibre optic media converters, fibre terminations, panel) complete				
98	Supply	No	1		
99	Install	No	1		
	Pressure Transmitter complete including mounting materials (Chlorination)				
100	Supply	No	8		
101	Install	No	8		
	Proximity Sensor complete including mounting materials (Chlorination)				
102	Supply	No	2		
103	Install	No	2		
	Analytical Cl2 Meter including sensor, transmitter and mounting materials (Chlorination and Final Effluent)				
104	Supply	No	3		
105	Install	No	3		
	Analytical Turbidity Optical Meter including sensor, transmitter and mounting materials (Final Effluent)				
106	Supply	No	1		
107	Install	No	1		
	Flow Switch complete including mounting materials (Chlorination)				
108	Supply	No	2		
109	Install	No	2		
Carried forward / ...					

ITEM	DESCRIPTION	UNIT	QTY	RATE R c	AMOUNT R c
Brought forward / ...					
	Pressure Transmitter complete including mounting materials (Chlorination and Instrument Air Supply)				
110	Supply	No	3		
111	Install	No	3		
	Pressure Transmitter complete including mounting materials (Instrument Air Supply)				
112	Supply	No	1		
113	Install	No	1		
	Ultrasonic Level Meter including sensor, transmitter and mounting materials (Final Effluent Flow meter)				
114	Supply	No	2		
115	Install	No	2		
	Allow for all costs and expenses in connection with pre-commsissioning in terms of FIDIC and Part C3: Scope of Work for the following:				
116	For equipment scheduled above and not billed seperately	Sum	1		
117	**All other items not included above but which are nevertheless necessary to meet the Scope of Work and/or are required for the proper, safe and effective operation of the plant (Specify):-**	Item			
TOTAL OF SCHEDULE E13 CARRIED TO SUMMARY					

Section C OF THE WORKS: MODULE A ELECTRICAL AND ELECTRONIC EQUIPMENT

Continued Overleaf

ITEM	DESCRIPTION	UNIT	QTY	RATE R c	AMOUNT R c
	SCHEDULE E14				
	REFURBISHMENT AND UPGRADES				
	Allow for all the costs and expenses in connection with the design, manufacture, painting, supplying, delivery, offloading and storage of the following materials and equipment:				
	Refered to as "Supply" in this schedule				
	Allow for all costs and expenses in connection with the Site installation in terms of in terms of FIDIC and Part C3: Scope of Work (excluding pre-commissioning) for the following:				
	Refered to as "Install" in this schedule				
	Allow for all costs and expenses in connection with pre-commsissioning in terms of FIDIC and Part C3: Scope of Work for the following:				
	Refered to as "Pre-Commissioning" in this schedule				
	LV ELECTRICAL INSTALLATION				
	Surface Mounted Mixers replacement				
1	Replacement of motor starter cubicle and associated panel conductors, from 4kW DOL to 7.5kW DOL	Sum	12		
2	Disconnecting cable at motor, reconnection to new motor and re-commissioning	Sum	12		
	(LV Cabling and cabling support systems are included under Schedules E3 and E4)				
	A-Recycle Pumps replacement				
3	MCC starter cubicle changes or upgrades to incorporate pump changes, as directed by the Engineer	Prov Sum			30,000.00
4	Percentage adjustment on Item 3 for Contractor's design, sourcing quotes, superintendence, and for overheads and profit (state as percentage an extend as amount)	%	30,000		
5	Disconnecting cable at motor, reconnection to new motor and re-commissioning	Sum	2		

Carried forward / ...

ITEM	DESCRIPTION	UNIT	QTY	RATE R c	AMOUNT R c
Brought forward / ...					
	WAS Pumps replacement				
6	MCC starter cubicle changes or upgrades to incorporate pump changes, as directed by the Engineer	Prov Sum			30,000.00
7	Percentage adjustment on Item 6 for Contractor's design, sourcing quotes, superintendence, and for overheads and profit (state as percentage an extend as amount)	%	30,000		
8	Disconnecting cable at motor, reconnection to new motor and re-commissioning	Sum	2		
	FBDA Blowers replacement				
9	MCC starter cubicle changes or upgrades to incorporate pump changes, as directed by the Engineer	Prov Sum			120,000.00
10	Percentage adjustment on Item 9 for Contractor's design, sourcing quotes, superintendence, and for overheads and profit (state as percentage an extend as amount)	%	120,000		
	Membrane Tank Feed Pumps replacement				
11	Replacement of motor starter cubicle and associated panel conductors, from 37kW VFC to 55kW VFC (with line side reactor)	Sum	3		
12	Disconnecting cable at motor, reconnection to new motor and re-commissioning	Sum	3		
	(LV Cabling and cabling support systems are included under Schedules E3 and E4)				
	Air Scour Blowers replacement				
13	MCC starter cubicle changes or upgrades to incorporate pump changes, as directed by the Engineer	Prov Sum			120,000.00
14	Percentage adjustment on Item 13 for Contractor's design, sourcing quotes, superintendence, and for overheads and profit (state as percentage an extend as amount)	%	120,000		
Carried forward / ...					

ITEM	DESCRIPTION	UNIT	QTY	RATE R	RATE c	AMOUNT R	AMOUNT c
Brought forward / ...							
	Membrane Tank Drain Pumps replacement						
15	MCC starter cubicle changes or upgrades to incorporate pump changes, as directed by the Engineer	Prov Sum				50,000.00	
16	Percentage adjustment on Item 15 for Contractor's design, sourcing quotes, superintendence, and for overheads and profit (state as percentage an extend as amount)	%	50,000				
17	Disconnecting cable at motor, reconnection to new motor and re-commissioning	Sum	2				
	MBR Permeate/Backpulse pumps replacement						
18	Replacement of motor starter cubicle and associated panel conductors, from 30kW VFC to 45kW VFC (with line side reactor)	Sum	6				
19	Disconnecting cable at motor, reconnection to new motor and re-commissioning	Sum	6				
	(LV Cabling and cabling support systems are included under Schedules E3 and E4)						
	Service Water / Ground Water Pumps replacement						
20	MCC starter cubicle changes or upgrades to incorporate pump changes, as directed by the Engineer	Prov Sum				75,000.00	
21	Percentage adjustment on Item 20 for Contractor's design, sourcing quotes, superintendence, and for overheads and profit (state as percentage an extend as amount)	%	75,000				
	CIP Equipment replacement						
22	MCC starter cubicle changes or upgrades to incorporate pump changes, as directed by the Engineer	Prov Sum				150,000.00	
23	Percentage adjustment on Item 22 for Contractor's design, sourcing quotes, superintendence, and for overheads and profit (state as percentage an extend as amount)	%	150,000				
Carried forward / ...							

ITEM	DESCRIPTION	UNIT	QTY	RATE R	RATE c	AMOUNT R	AMOUNT c
Brought forward / ...							
	Compressed Air Equipment replacement						
24	MCC starter cubicle changes or upgrades to incorporate pump changes, as directed by the Engineer	Prov Sum					50,000.00
25	Percentage adjustment on Item 24 for Contractor's design, sourcing quotes, superintendence, and for overheads and profit (state as percentage an extend as amount)	%	50,000				
26	Disconnecting cable at motor, reconnection to new motor and re-commissioning	Sum	2				
	Electrical Actuators						
27	MCC starter cubicle changes or upgrades to incorporate pump changes, as directed by the Engineer	Prov Sum					100,000.00
28	Percentage adjustment on Item 27 for Contractor's design, sourcing quotes, superintendence, and for overheads and profit (state as percentage an extend as amount)	%	100,000				
29	Disconnecting cable at motor, reconnection to new motor and re-commissioning	Sum	9				
	Field Control Stations						
30	Supply and install Local E-Stop/Stop/Start Control Station (excluding pedestal mount)	No	35				
31	Supply and install Local Forward/Reverse Station (excluding pedestal mount)	No	6				
	GENERAL LV ELECTRICAL INSTALLATION						
32	Refurbishment of general items of the MBR-A plant LV electrical installation as directed by the Engineer	Prov Sum					175,000.00
33	Percentage adjustment on Item 32 for Contractor's design, sourcing quotes, superintendence, and for overheads and profit (state as percentage an extend as amount)	%	175,000				
Carried forward / ...							

ITEM	DESCRIPTION	UNIT	QTY	RATE R c	AMOUNT R c
Brought forward / ...					
	ELECTRONIC INSTALLATION				
	PLC - MBR-A				
	Replacement of PLC complete (including allowance for additional equipment added under this Section C of the Works, in order to achieve the intended control philosophy of this plant)				
34	Supply	No	1		
35	Install	No	1		
36	Supply and install PLC Software	Sum	1		
37	Programming of PLC	Sum	1		
38	Simulation Testing of PLC Programming	Sum	1		
39	Pre-commissioning	Sum	1		
	SCADA Hardware - MBR-A remote view				
40	Upgrade of SCADA hardware installation as directed by the Engineer	Prov Sum			175,000.00
41	Percentage adjustment on Item 40 for Contractor's design, sourcing quotes, superintendence, and for overheads and profit (state as percentage an extend as amount)	%	175,000		
	SCADA Software - MBR-A remote view				
42	License upgrade to Adroit 8	Sum	1		
43	Mimics Re-Configuration at MBR-A control room	Sum	1		
44	Alarms and Events Configuration	Sum	1		
45	Report Configuration	Sum	1		
46	Data logging and trends display configuration	Sum	1		
47	SCADA security (firewall, intruder detection and anti-virus)	Sum	1		
48	Simulation Testing of SCADA Programming	Sum	1		
Carried forward / ...					

ITEM	DESCRIPTION	UNIT	QTY	RATE R c	AMOUNT R
Brought forward / ...					
49	All other software programming and configuration required for complete and secure SCADA system	Sum	1		
	INDUSTRIAL NETWORK INSTALLATION				
50	Refurbishment of MBR-A plant network cabling and switches installation as directed by the Engineer	Prov Sum			175,000.00
51	Percentage adjustment on Item 50 for Contractor's design, sourcing quotes, superintendence, and for overheads and profit (state as percentage an extend as amount)	%	175,000		
	GENERAL ELECTRONIC INSTALLATION				
52	Refurbishment of general items of the MBR-A plant Electronic installation as directed by the Engineer	Prov Sum			175,000.00
53	Percentage adjustment on Item 52 for Contractor's design, sourcing quotes, superintendence, and for overheads and profit (state as percentage an extend as amount)	%	175,000		
54	Technical inputs and software development overview of MBR-A control system upgrade by MBR screen provider control engineer	Sum	1		
	INSTRUMENTATION				
55	Refurbishment of instrumenation of the MBR-A plant installation as directed by the Engineer	Prov Sum			175,000.00
56	Percentage adjustment on Item 55 for Contractor's design, sourcing quotes, superintendence, and for overheads and profit (state as percentage an extend as amount)	%	175,000		
	Analytical Turbidity Optical Meter including sensor, transmitter and mounting materials (Anaerobic Basin)				
57	Supply	No	1		
58	Install	No	1		
Carried forward / ...					

ITEM	DESCRIPTION	UNIT	QTY	RATE R c	AMOUNT R c
Brought forward / ...					
	Analytical Turbidity Optical Meter including sensor, temperature sensor built-in (PT 100), transmitter and mounting materials (Aerobic Zone)				
59	Supply	No	3		
60	Install	No	3		
	Pressure Switch for Scum delivery line complete including mounting materials - piezoelectric / capactive				
61	Supply	No	2		
62	Install	No	2		
	Electromagnetic Flow Meter for Scum pipeline, complete including mounting materials (45-FT-111,112)				
63	Supply	No	2		
64	Install	No	2		
	Mass Flow Meter for FBDA Blowers common delivery, including sensor, transmitter and mounting materials				
65	Supply	No	3		
66	Install	No	3		
	Flow Switch on Air Scour main, complete with mounting materials (Filtration Tank Supply)				
67	Supply	No	6		
68	Install	No	6		
	Analytical Turbidity Optical Meter including sensor, transmitter and mounting materials (Filtration Tank Filtrate)				
69	Supply	No	6		
70	Install	No	6		
Carried forward / ...					

ITEM	DESCRIPTION	UNIT	QTY	RATE R	RATE C	AMOUNT R	AMOUNT C
Brought forward / ...							
	Hydrostatic Level Switch including sensor, and mounting materials (Filtration Tanks)						
71	Supply	No	6				
72	Install	No	6				
	Conductive Probe Level Switch including sensor, high and low relay outputs, and mounting materials (Filtration Tanks)						
73	Supply	No	6				
74	Install	No	6				
	Pressure Switch on Compressed Air line, complete with mounting materials						
75	Supply	No	1				
76	Install	No	1				
	Conductive Probe Level Switch including sensor, high and low relay outputs, and mounting						
77	Supply	No	6				
78	Install	No	6				
	Bi-directional Electromagnetic Flow meter, including sensor, and mounting materials (Permeate Pumps)						
79	Supply	No	6				
80	Install	No	6				
	Pressure Transmitter, including sensor, and mounting materials (Permeate Pumps)						
81	Supply	No	6				
82	Install	No	6				
Carried forward / ...							

ITEM	DESCRIPTION	UNIT	QTY	RATE R	RATE c	AMOUNT R	AMOUNT c
Brought forward / ...							
	Pressure Switch, including sensor, and mounting materials (Permeate Pumps)						
83	Supply	No	12				
84	Install	No	12				
	Temperature Transmitter, including sensor, and mounting materials (Permeate Pumps)						
85	Supply	No	6				
86	Install	No	6				
	Ultrasonic Level Transmitter, including sensor, and mounting materials (BP/MC Tank)						
87	Supply	No	1				
88	Install	No	1				
	Pressure Transmitter, including sensor, and mounting materials (Drain Pumps)						
89	Supply	No	2				
90	Install	No	2				
	Flow Switch, including sensor, and mounting materials (Drain Pumps)						
91	Supply	No	2				
92	Install	No	2				
	Pressure Switch, including sensor, and mounting materials (WAS Pumps)						
93	Supply	No	4				
94	Install	No	4				
	TSS meter including sensor, transmitter, temperature sensor built-in (PT 100), and mounting materials (WAS Pumps)						
95	Supply	No	1				
Carried forward / ...							

ITEM	DESCRIPTION	UNIT	QTY	RATE R c	AMOUNT R c
Brought forward / ...					
96	Install **Pressure Transmitter, including sensor, and mounting materials (Air Scour Blowers)**	No	1		
97	Supply	No	4		
98	Install **Pressure Switch, including sensor, and mounting materials (Air Scour Blowers)**	No	4		
99	Supply	No	3		
100	Install **Temperature Switch, including sensor, and mounting materials (Air Scour Blowers)**	No	3		
101	Supply	No	1		
102	Install **Thermal Mass Flow Meter including sensor, transmitter, temperature sensor built-in (PT 100) and mounting materials (Air Scour Train and common manifold)**	No	1		
103	Supply	No	4		
104	Install **Pressure Transmitter, including sensor, and mounting materials (FBDA Blowers)**	No	4		
105	Supply	No	1		
106	Install **Pressure Switch, including sensor, and mounting materials (FBDA Blowers)**	No	1		
107	Supply	No	1		
108	Install	No	1		
Carried forward / ...					

ITEM	DESCRIPTION	UNIT	QTY	RATE R C	AMOUNT R C
Brought forward / ...					
	Thermal Mass Flow Meter including sensor, transmitter and mounting materials (FBDA Blowers)				
109	Supply	No	1		
110	Install	No	1		
	Allow for all costs and expenses in connection with pre-commissioning in terms of FIDIC and Part C3: Scope of Work for the following:				
111	For equipment scheduled above and not billed seperately	Sum	1		
112	**All other items not included above but which are nevertheless necessary to meet the Scope of Work and/or are required for the proper, safe and effective operation of the plant (Specify):-**	Item			
TOTAL OF SCHEDULE E14 CARRIED TO SUMMARY					

MBR PLANT AND BOTTLENECK ALLEVIATION AT ZANDVLIET WASTEWATER TREATMENT WORKS

ITEM	DESCRIPTION	AMOUNT R c
SCHEDULE A	PRELIMINARY AND GENERAL	47,140,724.60
SCHEDULE B	SUNDRIES	3,511,862.00
SCHEDULE M1	LIFTING EQUIPMENT	5,332,605.54
SCHEDULE M2	VALVES AND SLUICE GATES EQUIPMENT	32,988,140.20
SCHEDULE M3	SPARES	14,861,127.62
	SECTION A OF THE WORKS: MODULE B - MECHANICAL EQUIPMENT	
SCHEDULE M4	MBR FINE SCREENING FACILITY	12,539,487.37
SCHEDULE M5	BIOREACTOR MIXING EQUIPMENT	3,008,992.80
SCHEDULE M6	FINE BUBBLE DIFFUSED AERATION (FBDA) EQUIPMENT	19,150,782.62
SCHEDULE M7	MIXED LIQUOR RECYCLE (MLR) PUMP EQUIPMENT	3,604,894.70
SCHEDULE M8	NEW ULTRA-FILTRATION (UF) MEMBRANE BIOREACTOR (MBR) PLANT EQUIPMENT	77,051,091.40
SCHEDULE M9	INSTRUMENT AIR EQUIPMENT	1,077,828.40
SCHEDULE M10	SERVICE WATER EQUIPMENT	1,574,259.32
SCHEDULE M11	HEATING VENTILATION AND AIR-CONDITIONING (HVAC) EQUIPMENT	5,799,866.00
SCHEDULE M12	MBR FINE SCREENING ODOUR CONTROL	3,144,506.20
SCHEDULE M13	SCUM REMOVAL EQUIPMENT	226,097.96
	SECTION B OF THE WORKS: CAS A & B PLANTS - MECHANICAL EQUIPMENT	
SCHEDULE M14	EXISTING CAS REACTOR EQUIPMENT	17,548,290.00
SCHEDULE M15	EXISTING RAS AND WAS PUMPSTATIONS EQUIPMENT	3,014,716.00
SCHEDULE M16	EXISTING SECONDARY SETTLING TANK EQUIPMENT	16,233,503.00
SCHEDULE M17	NEW SECONDARY SETTLING TANK EQUIPMENT	10,151,541.00
SCHEDULE M18	CHLORINE DISINFECTION EQUIPMENT	7,673,635.00
19a SCHEDULE ~~M18~~	CLARIFIERS SCUM PUMP STATION EQUIPMENT ~~CHLORINE DISINFECTION EQUIPMENT~~	940,930.00
SCHEDULE M20	CHEMICAL DOSING EQUIPMENT	4,759,495.00
	Carried forward / ...	291,334,376.73

ITEM	DESCRIPTION	AMOUNT R c
	Brought forward / ...	291,384,376.73
	SECTION C OF THE WORKS: MODULE A - MECHANICAL EQUIPMENT	
SCHEDULE M21	BIOREACTOR MIXING EQUIPMENT	1,598,153.00
SCHEDULE M22	FINE BUBBLE DIFFUSED AERATION (FBDA) EQUIPMENT	14,234,206.00
SCHEDULE M23	MIXED LIQUOR RECYCLE (MLR) PUMP EQUIPMENT	471,582.00
SCHEDULE M24	EXISTING ULTRA-FILTRATION (UF) MEMBRANE BIOREACTOR PLANT (MBR) EQUIPMENT	43,990,474.00
SCHEDULE M25	INSTRUMENT AIR EQUIPMENT	1,928,868.00
SCHEDULE M26	SERVICE WATER EQUIPMENT	1,086,634.00
SCHEDULE M27	SCUM REMOVAL EQUIPMENT	987,054.00
	SECTION A OF THE WORKS: MODULE B - ELECTRICAL AND ELECTRONIC EQUIPMENT	
SCHEDULE E1	MINIATURE SUBSTATIONS	3,944,540.00
SCHEDULE E2	MV RETICULATION	1,053,200.00
SCHEDULE E3	MV RETICULATION INSTALLATION	598,846.00
SCHEDULE E4	LV ELECTRICAL AND CONTROL CABLES	4,275,867.00
SCHEDULE E5	LV ELECTRICAL INSTALLATION	5,120,049.00
SCHEDULE E6	STANDBY POWER GENERATOR	10,010,942.00
SCHEDULE E7	LV SWITCHGEAR AND CONTROLGEAR ASSEMBLIES	17,855,132.00
SCHEDULE E8	PROGRAMMABLE LOGIC CONTROLLERS	3,213,977.00
SCHEDULE E9	SCADA	1,981,325.00
SCHEDULE E10	TELEMETRY	201,710.00
SCHEDULE E11	INSTRUMENTATION	11,974,945.00
SCHEDULE E12	AREA LIGHTING	1,218,900.00
	Carried forward / ...	417,080,780.73

MBR PLANT AND BOTTLENECK ALLEVIATION AT
ZANDVLIET WASTEWATER TREATMENT WORKS

ITEM	DESCRIPTION				AMOUNT R c
	Brought forward / ...				417,080,780.73
	SECTION B OF THE WORKS: CAS A & B PLANTS - ELECTRICAL AND ELECTRONIC EQUIPMENT				
SCHEDULE E13	REFURBISHMENT AND UPGRADES				8,154,053.00
	SECTION C OF THE WORKS: MODULE A - ELECTRICAL AND ELECTRONIC EQUIPMENT				
SCHEDULE E14	REFURBISHMENT AND UPGRADES				6,376,492.00
	Total Sum of all Priced Items				431,611,325.73
	CONTINGENCIES:				
1	Allow the sum of ten percent (10%) of the above total for contingenciesto be expended as directed by the Engineer and to be deducted in whole or in part if not required	Sum	-		43,161,132.57
	Delay, Suspension and Resumption of Work as ordered by the Engineer in terms of FIDIC and Part C3: Scope of Work				
2	Allowance for any additional cost and profit required in the event of the Right of Access to the Site not being available as per Sub-Clause 2.1(b) of the Conditions of Contract.	Day	90		NO COST FOR 90 DAYS
3	Allowance for Insurance in terms of Clause 18 of the Conditions of Contract in the event of the Right of Access to the Site not being available as per Sub-Clause 2.1(b) of the Conditions of Contract.	Day	90		NO COST FOR 90 DAYS
	Carried forward / ...				474,772,458.31

ITEM	DESCRIPTION				AMOUNT R c
	Brought forward / ...				474,772,458.31
4	Allowance for all costs and expenses in connection with Suspention and Resumption of Work (In terms of Sub-Clauses 8.8 and 8.12 of the Conditions of Contract) and associated re-mobilisation of the Contractor's team after placing of Goods in storage as ordered by the Engineer (i.e. leaving Site and returning at a later date due to causes not attributable to the Contractor)	Day	45		NO COST FOR 45 DAYS
5	Allowance for any additional cost and profit required in the event of a delay in the testing and commissioning at Site and the resultant delay in the commencement of the Defects Notification Period from causes not attributable to the Contractor in terms of Sub-Clause 10.3 (b) of the Conditions of Contract.	Day	30		NO COST FOR 30 DAYS
	NET TOTAL OF TENDER (EXCLUDING VAT)				474,772,458.31
	ADD 14% FOR VALUE ADDED TAX				66,468,144.16
GROSS TOTAL OF TENDER CARRIED TO PART C1.1 FORM OF OFFER AND ACCEPTANCE					541,240,602.47

SIGNED ON BEHALF OF TENDERER : ....

DATE : ...13/02/2017.....

DECLARATION (In respect of completeness of Tender)

City of Cape Town

I/ we, the undersigned, do hereby declare that these are the properly priced Schedules of Quantities forming Part C2.2 of this Contract Document which contains 466 pages numbered i to viii and 1 to 466 in consecutive order in Volume 2 and the number of pages in consecutive order in Volume 2A, Volume 2B and Volume 2C as stated on page i thereof, upon which my/our tender for **TENDER NO. 178Q/2016/17: DESIGN – BUILD OF MECHANICAL AND ELECTRICAL WORKS FOR THE CONSTRUCTION OF AN MBR PLANT AND BOTTLENECK ALLEVIATION AT ZANDVLIET WASTEWATER TREATMENT WORKS** has been based. If I/we have submitted a printed version of the Schedules 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 F.3.2 in Part T1.2 Tender Data.

SIGNED ON BEHALF OF TENDERER: ....

DATE: ..... 13/02/2017 .....

C2.3 Schedule of Rates for Electrical Variations

Not used.

CITY OF CAPE TOWN

WATER AND SANITATION

CONTRACT NO. 178Q/2016/17

DESIGN – BUILD OF MECHANICAL AND ELECTRICAL WORKS FOR THE CONSTRUCTION OF AN MBR PLANT AND BOTTLENECK ALLEVIATION AT ZANDVLIET WASTEWATER TREATMENT WORKS

Part C3: Scope of Work

Part C3: Scope of Work

Pages

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C3.5 Management ..... 393 – 412

C3.6 Annexes (see Volume 2A and Volume 2B) 413

ORDER OF PRECEDENCE

The Scope of Work constitutes the "Employer's Requirements" as defined in Sub-Clause 1.1.1.5 of the Particular Conditions in Part C1.2 Contract Data.

The Scope of Work (Volume 2) form an integral part of the contract and supplements the Standard and/or Particular Specifications (Volume 2A and Volume 2B). The Scope of Work contain a general description of the works, the site and the requirements to be met.

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:

a) Scope of Work
b) Detailed Specifications in Volumes 2A and 2B
c) Standardised Specifications in Volumes 2A and 2B
d) Drawings [Note: Process and Instrumentation Drawings (PIDs) have precedence over layout drawings]
e) Bill of Quantities

In all events, the discrepancy shall be brought to the attention of the Engineer before the execution of the work under the relevant item.

CITY OF CAPE TOWN

WATER AND SANITATION

CONTRACT NO. 178Q/2016/17

DESIGN – BUILD OF MECHANICAL AND ELECTRICAL WORKS FOR THE CONSTRUCTION OF AN MBR PLANT AND BOTTLENECK ALLEVIATION AT ZANDVLIET WASTEWATER TREATMENT WORKS

C3.1 Description of the Works

CONTENTS

1. EMPLOYER'S OBJECTIVES
2. OVERVIEW OF THE WORKS
3. EXTENT OF THE WORKS
4. SECTIONS OF THE WORKS
5. WORK TO BE CARRIED OUT BY OTHERS
6. DESCRIPTION OF THE SITE
7. SITE FACILITIES

1. EMPLOYER'S OBJECTIVES

The Zandvliet Wastewater Treatment Works (WWTW) is a strategic component of the City of Cape Town's wastewater management system and is currently under capacity to accommodate the current and envisaged future flow from the catchment area.

Zandvliet WWTW is the third largest treatment works in Cape Town. It treats wastewater for a population equivalent (PE) of more than 600 000 people living in the south-east of Cape Town in and around Delft Bluedowns, and Khayelitsha (Cape Flats), which falls within the Cape Town metropolitan area.

The treatment works currently receives some 90 million litres of wastewater every day. However, the treatment works process units are rated for a capacity of 72 million litres of wastewater every day. To make sure the treatment works continues to support the growing population in the catchment area, an upgrade is needed. The City of Cape Town is thus upgrading and extending the capacity of the existing treatment works from 72 Mℓ/d to 90 Mℓ/d by constructing a new activated sludge which will utilize membrane bioreactor (MBR) for solid-liquid separation in lieu of secondary clarifiers, whilst providing additional treatment capacity and alleviating critical constraints/bottlenecks of the existing treatment works. A further upgrade (not part of this scope) is currently being planned to increase the plant capacity beyond 90 Mℓ/d.
Once implemented, the upgraded Zandvliet WWTW will have an operating capacity of 90 million litres and will be able to accommodate a population equivalent of more than 750,000. This vital upgrade will ensure that the City of Cape Town can continue to provide essential wastewater treatment services for the growing population and business development on the south-east of Cape Town area. It will also ensure that the works is able to treat wastewater to the standards required to comply with the limits stipulated by the Department of Water Affairs in the Water Use License Agreement.

2. OVERVIEW OF THE WORKS

This Contract is for provision and refurbishment of the mechanical and electrical equipment, with ancillary civil works, for the upgrading of the Zandvliet Wastewater Treatment Works. It includes the following in respect of the Works: the design, manufacture, supply, delivery, installation, construction, testing, commissioning, training the Employer's staff in the operation and maintenance thereof, Trial Operation, and upholding during the Defects Notification Period.

The Works shall be designed to function safely and effectively in conjunction with the infrastructure provided by others for this project (see section titled Work to be Carried Out by Others), and where components of the Works are incorporated into structures provided by others, these components shall be designed to be accommodated in and to function safely and effectively within the associated structures.

3. EXTENT OF THE WORKS

3.1 General

Volumes 2A and 2B: The Works, provides an overview of the Works and associated detailed requirements. This section also provides references to other portions of C3: Scope of Works and Volume 3: Drawings where further requirements concerning the associated items of the Works are specified.

3.2 Process Description

A description of the treatment works process that the Works will be incorporated into and form part of, and related specifications for the Works, are given in Volume 2A. The Contractor shall provide for these requirements.

3.3 Control

The overall control requirements are specified in Volume 2A. The Contractor shall provide for these requirements.

4. SECTIONS OF THE WORKS

The Works is divided into three Sections to allow for sequencing with work that will be undertaken by others, and to facilitate uninterrupted operation of the existing Zandvliet WWTW during the execution of the Works.

The Sections of the Works broadly encompass the following:

a) Section A: For the equipping of the proposed new MBR (membrane bioreactor) plant, hereafter referred to as MBR B.
b) Section B: For the refurbishment of the existing conventional activated sludge plants, hereafter referred to as CAS A and CAS B.
c) Section C: For the refurbishment of the existing MBR plant, hereafter referred to as MBR A.

Drawing No 110585-CC-0006 shows the areas of the Site in which the Works for each of the respective Sections are principally located. The details of the apportioning of Works into Sections are provided in Item A1 in Volume 2A.

5. WORK TO BE CARRIED OUT BY OTHERS

The upgrading and extension of Zandvliet WWTW will be carried out with four contracts as shown on Drawing No. 110585-WWTW-DRG-CC-0003. A description of all upgrade and extension of other Contracts and estimated duration/ completion dates is as follows:

a) **Contract 84Q/2016/17 (Contract E) – CONSTRUCTION OF THE NEW INLET WORKS, PUMP STATIONS, PRIMARY SETTLING TANKS AND SLUDGE DEWATERING BUILDING AT ZANDVLIET WASTEWATER TREATMENT WORKS: CIVIL WORKS.** Work under this comprises construction of various water retaining structures including the new inlet works, two screw pump stations, four primary settling tanks, dewatering building, primary sludge pump station, MBR plant pump station and sundry tanks, construction of process and interconnecting pipelines, perimeter fencing, access road and stormwater drainage, electrical building services and liaison with other contractors and Employer. This Contract is currently on tender period and has an estimated construction duration of approximately 1285 days – It is anticipated that this tenders for this Contract will close around 09 December 2016.

b) **Contract 85Q/2016/17 (Contract F) – DESIGN – BUILD OF MECHANICAL AND ELECTRICAL WORKS FOR THE CONSTRUCTION OF PRIMARY TREATMENT AND SLUDGE HANDLING FACILITIES AT ZANDVLIET WASTEWATER TREATMENT WORKS.** This contract consists of work at new inlet works, two screw pump stations, four primary settling tanks, dewatering building, primary sludge pump station, and MBR plant pump station. Work will include, but not be limited to, the supply and installation, testing and commissioning of all associated equipment along with control and instrumentation (PLCs, SCADA, HMI etc.). This Contract is currently on tender period and has an estimated construction duration of approximately 1080 days – It is anticipated that this tenders for this Contract will close around 02 December 2016.

c) **Contract 179Q/2016/17 (Contract G - CONSTRUCTION OF AN MBR PLANT AND BOTTLENECK ALLEVIATION AT ZANDVLIET WASTEWATER TREATMENT WORKS: CIVIL WORKS.** Work under this comprises construction of various water retaining structures including the new MBR fine screening facilities, biological reactors, MBR filtration plant, clarifiers and RAS pumps stations, various mixed liquor pump stations, control and administration building, various pump, blower, switchgear buildings and sundry works, construction of process and interconnecting pipelines, access road and stormwater drainage, electrical building services and liaison with other contractors and Employer. This Contract has a construction duration of approximately 1100 days, and tenders for this Contract will run concurrently with Contract H (this Contract).

6. DESCRIPTION OF THE SITE

6.1 Location of the Works

The entrance to the Zandvliet Wastewater Treatment Works is off Baden Powell Drive as indicated on the Locality Plan (Drawing No. 110585-WWTW-DRG-CC-0001) as well as on Site Layout (Drawing No. 110585-WWTW-DRG-CC-0002).

The approximate co-ordinates to Site are:

Table 1: Site Information

Site	Co-ordinates	
Zandvliet WWTW	34°3'3.03"S	18°43'3.81"E

The Site is defined and shown on Drawing Nos. 110585-CC-0001 to 0004

6.2 Access to the Site

Access to the Site will be made available from Macassar Road (M9). The Contractor shall provide the necessary gate, road etc. No access will be permitted through the existing entrance off Baden Powell Drive. The Contractor will be held to have satisfied himself with regard to the existing access roads on site and shall make suitable provision for the accessibility to the site. Use of the existing roads on site is restricted and the Contractor shall note that he shall provide his own access roads for heavily trafficked routes.

Numerous services are known to exist on the site. Their approximate positions are shown on the drawings but, although they are based on the best information available, their accuracy cannot be guaranteed. It is likely that other services that are not shown on the drawings exist on the site.

The existing wastewater treatment works will be operational during the construction work of this Contract.

6.3 General

The following site conditions shall be taken into consideration in the design and selection of the plant and equipment:

Altitude above sea level	15 m mean (approximate)
Minimum Temperature	5°C
Average Temperature	25°C
Maximum Temperature	40°C
Average Relative Humidity	70%
Maximum Relative Humidity	95%
Corrosion Conditions	Very Severe
Lightning	Infrequent
Wind	Reaching very high speeds
1:50 Year Flood Levels	10.97 m
1:100 Year Flood Level	11.60 m

The climate in the area is windy, with high winter rainfall. Summers are generally hot with little rainfall, though some rainfall in summer months has occurred in the past.

6.4 Ground Conditions

Materials investigations were undertaken and reported on in July 2016. The following report is included in Part C4 of this document:

- Report on Subsoil Investigation for Extensions to Zandvliet Water Treatment Works (K&T Project Reference No: 14742GG, dated July 2016).

The Contractor shall familiarise himself with the contents of this report. For the purposes of the Contract it will be deemed that, prior to submitting his Tender, the Contractor acquainted himself fully with the information and data provided within the geotechnical report made available to the Tenderers during the tendering period and, subject to the provisions of the Conditions of Contract, the Contractor shall have no claim against the Employer in respect of geotechnical/subterranean conditions encountered during the course of the Contract.

6.5 Trenching Subsurface Conditions

The groundwater level on site varies seasonally and depending on rainfall. Water may be encountered in excavations, especially during wet periods when the water table could be near existing ground levels.

6.6 Disclaimer

The abovementioned geotechnical investigation reports are provided to the Contractor in good faith, however the Employer does not take responsibility for the correctness of the information contained therein, and it therefore remains the Contractor's responsibility to determine the true nature of the geotechnical/ subterranean material

The information given herein regarding the geotechnical/ subterranean material and conditions, and the abovementioned materials investigation report, are provided in good faith for the Contractor's convenience as an indication of the conditions likely to be encountered. The Employer does not take responsibility for, and there is no guarantee of, the information being correct or representative of the whole area of the Works. The provision of such information shall not be regarded as in any way limiting, or detracting from the Contractor's responsibilities in terms of the General Conditions of Contract or the Specifications. The Contractor will be held to have satisfied himself as to the subsurface conditions to be encountered on Site and to have allowed accordingly in his tendered rates

7. SITE FACILITIES

7.1 Contractor's Camp Establishment

The Contractor is responsible for providing a suitable site for his camp and to provide accommodation for his personnel and labourers.

The Contractor shall be responsible for identifying suitable positions (subject to the designated sites shown on the drawings and to the approval of the Engineer) to locate all facilities, including, as necessary, construction camps, offices, stores, workshops etc. required for the due and proper performance of the Contract. The proposed site camp positions shall be submitted to the Engineer for approval.

The Contractor shall supply and maintain adequate and suitable sheds for the storage of materials that might deteriorate if exposed to the weather.

The Contractor shall, provide, maintain and keep clean all facilities to be provided for the Engineer and all other facilities for all persons engaged in the works.

On completion of the Works, or when the facilities provided by the Contactor are no longer required, the Contractor shall remove them and clear away all surface indications of their presence.

7.2 Security

The Contractor may be exposed to criminal actions such as but not limited to robbery and hijacking, theft and vandalism, and shall make the necessary security arrangements for the duration of the Contract. Any such costs arising from this shall be covered under the rates tendered for the Preliminary and General items in the Bill of Quantities. The security offered shall be two Level C guards with dogs and pepper spray.

7.3 Power, Water and other Services

A 1-phase and 3-phase power supply is available at the WWTW for the use of small tools and lighting. The Contractor shall make arrangements for the use of this with the Employer's officials, and shall pay all installation and consumption charges for the power supply required. Any costs arising from this shall be covered under the rates tendered for the General Requirements (i.e. Preliminary and General) items in the Bill of Quantities.

A water supply will be made available to the Contractor free of charge. The Contractor shall, however, be responsible for arranging these services and ensuring that these services are not wasted and are used with discretion by his staff.

7.4 Rail Facilities

The nearest goods handling station is at Cape Town Railway Station.

7.5 Telephone Facilities

The Contractor shall be responsible for his own arrangements for telephones for his use.

7.6 Disposal Sites

The Contractor shall dispose of any cleared vegetation, rubble, unsuitable surplus material excavated, or any rubbish or unwanted material off Site to within 150 km radius measured from site. Any costs arising from this shall be covered under the rates tendered for the General Requirements (i.e. Preliminary and General) items in the Bill of Quantities.

7.7 Maintaining and Cleaning of the Site

The Contractor shall maintain the whole of the Site where his activities are taking place in a clean, tidy and orderly condition, to the satisfaction of the Engineer. The Contractor shall be liable for the cost of making good any damage to the Site or to the facilities constructed by the Civil Contractor, or to the Civil Contractor's camp and plant, or to any of the Employer's or Engineer's property.

7.8 Existing infrastructure

The Contractor shall be liable for the cost of making good any damage to the infrastructure or facilities on the Site, or to any of the Employer's property.

7.9 Disruption to the operation of the treatment works

The Contractor shall not disrupt the operation of the treatment works in any way without prior authorization by the Engineer. Further, the Contractor shall finalise the specific arrangements and timing of such disruptions with the Engineer and the Employer's staff responsible for the operation of the treatment works, two weeks in advance of the event.

The Contractor shall execute the Works in such a way as to allow the Employer's operation and maintenance staff to have safe and convenient access to all parts of the treatment works (including those filters that are required to be operational whilst the Contractor executes the Works in a staged fashion for sets of filters), excepting those parts where the Contractor has been granted full access and possession and which have thus been temporarily de-commissioned for the execution of the Works.

7.10 De-establishment of facilities on Site

Once the Taking-over Certificate has been issued, the Contractor shall remove all facilities established on Site and clear away all surface indications of their presence

C3.2 Engineering

CONTENTS

1. DESIGN OF THE WORKS
2. DESIGN STAGES AND RESPONSIBILITY
3. DRAWINGS PREPARED BY THE EMPLOYER
4. DESIGN WORKSHOP AND PRESENTATION
5. HAZOP STUDY
6. CONTRACTOR'S DOCUMENTS

1. DESIGN OF THE WORKS

The Contractor, in terms of the FIDIC General Conditions, is responsible for the design of the Works. If a specific duty for a piece of equipment is provided (e.g. a pump pressure and flow rate), the Contractor may use the specified duty for tender purposes but shall check and confirm all equipment specifications and duties are correct prior to ordering equipment. Clause 5 of the General Conditions of Contract shall apply in this regard.

2. DESIGN STAGES AND RESPONSIBILITY

The design stages and entities responsible for each are as follows:

a)	Concept, feasibility and treatment process	:	Employer
b)	Basic engineering and layout to tender stage	:	Employer
c)	Detailed design of the Works	:	Contractor
d)	Control philosophy/functional design	:	Contractor

The Contractor shall design the Works in accordance with the Employer's Requirements as specified in Part C3: Scope of Work and as shown on the drawings provided by the Employer in Book of Drawings (Volume 3) as issued with this Contract Document..

3. DRAWINGS PREPARED BY THE EMPLOYER

The drawings prepared by the Employer and provided in Volume 3: Book of Drawings, form part of the Employer's Requirements; the Contractor shall design and execute the Works in accordance with these.

The Contractor shall confirm that structures constructed by others and existing equipment installations are represented correctly on the drawings. Where drawings for the structures have been prepared by the Engineer, the Contractor shall base his drawings on the Engineer's drawings and shall check that his equipment fits into and can operate satisfactorily within the structures shown on the Engineer's drawings. Drawings, dimensions and details of structures and equipment are supplied to the Contractor in good faith, however, the Contractor shall base the design of his infrastructure and equipment on actual dimensions and details measured/recorded on Site by himself and approved by the Engineer. Any inconsistencies, including any conflict between the Engineer's drawings and the actual dimensions measured on site, shall immediately be drawn to the attention of the Engineer, in writing.

The Contractor shall update and expand the Employer's Process and Instrumentation Diagram (PID) to a Piping and Instrumentation Diagrams (P&ID) in accordance with the Employer's design.

All mechanical and electrical equipment shown on layout drawings is indicative of the Contractor Scope of Work, and shall therefore not be taken as absolute (i.e. does not indicate all equipment to be provided by the Contractor).

Before fixing any conduit and accessories, the Contractor shall confirm the exact positioning of equipment with the Engineer.

4. DESIGN WORKSHOP

The Contractor shall arrange, facilitate, host and participate in a series of design workshops at which representatives of the Employer and the Engineer will be present. The purpose of these workshops is to proactively foster cooperation and collaboration between the respective teams of the Contractor, Employer and Engineer; so that:

a) The Contractor's Design can be resolved and finalised efficiently, timeously, and in accordance with the requirements of Part C2: Contract Data and Part C3: Scope of Work.

b) To allow opportunity for the Engineer to clarify for the Contractor, the requirements of Part C2: Contract Data and Part C3: Scope of Work.

c) Possible misunderstanding on the part of the Contractor, of Part C2: Contract Data and Part C3: Scope of Work, can be identified early and associated delays averted.

d) Instances where the Contractor's Design does not comply with Part C2: Contract Data and Part C3: Scope of Work, can be identified early and delays and other consequential problems averted.

The Contractor shall allow for a minimum of ten one-day design workshops, which shall be held at a suitable conference venue within the Cape Town municipal area. The Contractor shall be responsible for all costs associated with the hire of the venue, audio-visual equipment required, and catering. The Contractor's Representative and design team members for all components of the Works shall be present for and cooperatively participate in each design workshop. As a minimum, the Contractor's design team present shall include those staff proposed by the Contractor in his Schedule of Key Personnel Assigned to the Contract, as per the Contractor's Proposal. The Contractor shall allow for a team of eight representatives combined from the Employer and the Engineer.

5. HAZOP STUDY

The undertaking of a hazard and operability (HAZOP) study is considered critical to the success of the Contract and achievement of the Employer's Objectives. It is intended that participants shall include representatives of the Engineer; the Contractor; and representatives of the Employer responsible for planning, maintenance, and operation.

The Contractor shall thus arrange for and employ a suitably experienced and independent consultant to be approved by the Engineer - to lead a HAZOP study in accordance with generally accepted industry practise. The consultant shall be commissioned to provide a report detailing the findings of the study. The study shall be undertaken at the Engineer's offices in Cape Town once the Contractor's Process or Piping and Instrumentation Diagram (P&ID) has been approved by the Engineer for this purpose. This diagram shall be updated by the Contractor after completion of the study, to reflect the decisions reached.

The Contractor's Representative and design team members for all components of the Works (as a minimum including those staff proposed by the Contractor in his Schedule of Key Personnel Assigned to the Contract forming part of the Contractor's Proposal) shall be present for the full duration of the study, which shall take place at the Engineer's office, and for which a minimum of five days shall be allowed.

6. CONTRACTOR'S DOCUMENTS

The requirements relating to the information and drawings to be submitted by the Contractor for approval by the Engineer prior to the purchase and manufacture of any plant and equipment must be read together with Clause 5 of the General Conditions and Sub-Clause 5.2 of the Particular Conditions.

All the documents listed below shall be submitted for approval by the Engineer.

6.1 General Requirements

The Contractor's Documents shall comply with the following general requirements:

a) Three copies (in hard copy format) of all documents shall be submitted –electronic (PDF format) shall also be submitted.

b) A register of all the Contractor's documents shall be provided with each submission.

c) Drawings shall be prepared in accordance with the latest issue of SANS 10111. An equivalent international code of engineering drawing practice will also be acceptable.

d) General Arrangement drawings shall be to A1.

e) Drawings shall be to scale, with both the scale and the drawing being large enough to clearly show all relevant components of the plant and equipment.

f) Dimensioned layout drawings of the installation showing the proposed layout and design of all plant and equipment (including lifting equipment) as well as any required building modifications. In addition to the usual plan and two side elevations, sufficient additional sections shall be included to clearly show the arrangement of all plant and equipment.

g) Item lists shall be provided on the drawing or on a separate parts list.

h) Item lists shall be provided on the drawing or on a separate parts list. Item descriptions shall include the material of construction, quantity and full identification information, including, as applicable, brand name, manufacturer's reference number, model number, size, rating, source, duty, quantity, etc.

6.2 List of Contractor's Documents to be provided

The Contractor's Documents which shall be submitted to the Engineer for review and approval in accordance with Clause 5.2 of the General Conditions of Contract, are listed in the following Table Listing Contractor's Documents to be Provided; this list does not limit the Contractor's obligations in terms of the Contract (The "Phase" column specifies the phase in terms of Work Breakdown Structure in Part C3.5: Management, during which the corresponding Contractor's Document shall be submitted):

Table 2:Required Contractor's Documents

Item No	Description of Contractor's Document	Phase	Penalties?
1	**General (to be submitted in respect of the entirety of the Works)**		
1.1	General Arrangement Drawings (A1 or larger) of the proposed designs, including at least one plan view, two elevations, equipment dimensions, layout dimensions, sectional views where necessary for clarity and an item list including make, model, rating, number and material. The drawings shall include layout details of pipework and pipe supports, dosing stations, pump baseplates, and metal work showing how the equipment is to be incorporated into the structures designed by the Engineer. The General Arrangement drawings shall show the Contractor's equipment super-imposed on drawings provided by the Employer.	2	Yes
1.2	Process flow diagrams (PFD), including items of equipment	2	Yes
1.3	Piping and Instrumentation Diagrams (PID) indicating all items of equipment,	2	Yes

Table 2:Required Contractor's Documents

Item No	Description of Contractor's Document	Phase[1]	Penalties?[2]
	instruments, pipe materials, reducers and diameters. All equipment and instruments shall be tagged in accordance with the City of Cape Town's numbering system, and shall be supported by referenced detailed item lists showing brand name, manufacturer's reference number, model number, size, rating, source, duty, quantity etc. All pipework (including for chemical dosing) shall be labelled with the pipe material and class. The Contractor shall base his PID on the Process and Instrumentation Diagrams provided by the Engineer, updating and expanding upon this according to his offer.		
1.4	Layout and construction drawings of all electrical distribution, starter, control, instrument and indicator panels with full details of proposed switchgear, relays, timers, instruments, indicators, trips, control switches, labelling (including wording), printing, and so forth.	2	Yes
1.5	Detailed Control Philosophy	2	Yes
1.6	Control System Functional Design Specification (and conversion of the Functional Design Specification (FDS) into a Functional Description of the complete control system after completion of the works for insertion into the O&M Manuals).	2	
1.7	Motor, equipment (including valves) and instrumentation list	2	
1.8	HAZOP study report	2	
2	**Sundry Components of the Works**		
2.1	Machine building ventilation design calculations, including pressure drop at each item and operating pressure of the fan.	2	Yes
2.2	Chlorine equipment design calculations	2	
2.3	Aeration design calculations	2	Yes
2.4	Pumps head calculation, including head-loss characteristic curves	2	
2.5	HVAC design calculations.	2	Yes
2.6	Technical Data Sheet for Coatings.	2	
2.7	Drawings indicating the loads exerted by all lifting equipment on structures.	2	Yes
2.8	Design drawings of lifting equipment which indicate the vertical and horizontal limits of the hook bowl.	2	Yes
2.9	Certified dimension drawings for all equipment other than small items such as metering pumps, instrumentation, etc.	2	Yes
2.10	Cross sectional drawings of all pumpstations complete with parts lists and materials of construction.	2	Yes
2.11	Cross sectional drawings of the membrane bioreactor (MBR) / filtration train complete with parts lists and materials of construction.	2	Yes
2.12	Data sheets for all items of equipment giving performance, sizing, physical and general technical data.	2	Yes
2.13	Pump performance curves including head, power and $NPSH_{REQUIRED}$.	2	
2.14	Switchgear room floor tolerance and finish requirements.	2	Yes
2.15	Transformer / mini-substation plinth layout drawings.	2	
2.16	Baseplate design.	2	
2.17	Proposed control panels' layouts.	2	Yes
2.18	Equipment list with the make and model of all proposed items.	2	
2.19	Hand valve list with the make and model of all proposed items	2	
2.20	Actuated valve and sluice gates list with the make and model of all proposed items	2	
2.21	Motor and Equipment List	2	
2.22	The SANS 347 hazard category and the conformity assessment module applicable to all air receivers and other pressure vessels.	2	
2.23	Marked up drawings of the building and civil structures which indicate the dimensions of the Contractor's requirements for plinths, pockets, trenches, ducts, penetrations, sleeves, conduits, etc. as well as any loads and forces involved.	2	Yes

Table 2:Required Contractor's Documents

Item No	Description of Contractor's Document	Phase	Penalties?
2.23.1	MBR fine screening equipment	2	Yes
2.23.2	Biological reactor equipment	2	Yes
2.23.3	MBR plant – Filtration trains equipment	2	Yes
2.23.4	MBR Air scour equipment	2	Yes
2.23.5	FBDA equipment	2	Yes
2.23.6	Instrument (compressed) air equipment	2	Yes
2.23.7	Pumping equipment	2	Yes
2.23.8	Service water equipment	2	Yes
2.23.9	UV Equipment	2	Yes
2.23.10	Sluice gates	2	Yes
2.23.11	Chemical dosing equipment	2	
2.23.12	Lifting equipment	2	Yes
2.23.13	Clarifiers equipment	2	
2.23.14	Control room equipment	2	Yes
2.23.15	Electrical equipment rooms	2	Yes
2.23.16	Cable Trenches in concrete walkways	2	Yes
2.23.17	Diesel generator sets	2	Yes
2.23.18	Diesel fuel tanks and fuel piping	2	Yes
2.23.19	Sleeves for building penetrations / road crossing to all cabling (including road lighting)		Yes
2.24	Design of proposed signage	2	
2.25	Drawings and data sheets showing the details of the FBDA system equipment, including airflow rates and head-loss characteristic curves for the diffusers	2	Yes
2.26	Drawings and data sheets showing the details of the MBR plant/ Filtration trains equipment, including airflow rates and head-loss characteristic curves for the air scour nozzles	2	Yes
2.27	Design calculations for the duty requirements for the equipment listed in Item 2.23 above	2	
3	**MV Installation**		
3.1	General layout drawings of the all MV equipment	2	
3.2	The internal construction drawings of the MV equipment	2	
3.3	Complete wiring and protection diagrams of the MV equipment	2	
3.4	Detailed datasheets of all components of MV equipment, supplier detail, etc.	2	
3.5	Type Test Certificates for MV Switchgear	2	
3.6	Type Test Certificates for Transformers	2	
3.7	Type Test Certificates for miniature substations	2	
3.8	Routine Test Reports of MV Switchgear	2	
3.9	Routine Test Reports of MV Switchgear	2	
3.10	Routine Test Reports of miniature substations	2	
3.11	Earthing survey report and design	2	
3.12	Detailed load calculation for each transformer	2	

Table 2:Required Contractor's Documents

Item No.	Description of Contractor's Document	Phase[1]	Penalties?[2]
4	**Diesel Powered Generator Sets and Installation**		
4.1	Diesel Powered Generator Sets data sheets and general arrangement drawings	2	Yes
4.2	Generator Controller data sheets	2	Yes
4.3	Detailed load calculations and/or simulation of power rating and load required	2	
4.4	Diesel Tank pipework / fuel lines, general arrangement drawings and civil building requirements	2	Yes
4.5	Louvre general arrangement drawings	2	Yes
4.6	Factory Routine Test Reports of generator sets	2	
5	**LV Switchgear and Control Gear Assemblies**		
5.1	LV Assemblies Design (Wiring Schematics, Cubicle component Layouts, Door Layouts, Bus bar arrangement) and General Arrangement Drawings	2	Yes
5.2	LV assemblies type test certificates (as applicable)		
5.3	Factory Acceptance Test Report	3	
5.4	LV Switchgear room layout requirements	2	
5.5	Local control panels location drawings	2	
5.6	Cable Route Layout and Cable Support systems layout Drawings	2	
5.7	Harmonic mitigation design	2	
6	**Programmable Controller(s) and Control System**		
6.1	Programmable controllers and Control System design documentation	2	
6.2	Control system architecture drawings	2	
6.3	PLC panel internal arrangements	2	
6.4	Telemetry design documentation and drawings	2	
6.5	Factory Acceptance Test (Hardware) and Software Simulation Test Reports	3	
6.6	Control Room and server room (Admin Building) layout	2	
6.7	UPS and PSU load calculations	2	
7	**Instrumentation**		
7.1	Instrumentation table or list including, as a minimum, the make, model, range and any set points of units to be installed	2	
7.2	Cable schedule for power, data, control and instrumentation cables. This shall include the cable type and construction, conductor material, insulation, protection, voltage rating, start and finish points, route length, duty, load, voltage drop, core area, no. of cores, no. of cores used and gland size. For cable voltages above 400 Volts, the schedule shall also include the purchase details, specification and date of manufacture.	2	
7.3	Instrument location and instrument junction box location drawings	2	
7.4	Instrument loop diagrams, hook-up diagrams and mounting bracket drawings and details	2	
7.5	Design and drawings as well as the document register.	2	
8	**Actuators**		
8.1	Actuator list (including failsafe positions)	2	
8.2	Actuated valves and sluice gates terminal junction box design drawings	2	

Table 2:Required Contractor's Documents

Item No	Description of Contractor's Document	Phase #1	Penalties? #2
8.3	Distribution junction box design drawings	2	
9	**Training (Clause 5.5 of General Conditions of Contract)**		
9.1	Training Schedule	4	
9.2	Pre-commissioning Testing Documentation	4	
9.3	Commissioning Plan	3	
10	**As-built Documents (Clause 5.6 of General Conditions of Contract)**		
10.1	As built versions of all drawings and documents submitted in terms of Items 1 to 8 above. The as-built documents shall be provided in both sepia hard copy and electronic format, with the latter being both in editable ("dxf" or "dwg" format for drawings, MS Word format for documents and MS Excel format for schedules) and PDF format.	4	
11	**Operation and Maintenance Manuals (Clause 5.7 of General Conditions of Contract)**		
10.1	Proposed Operating and Maintenance Manual Contents List.	2	
10.2	Two draft copies of the Operation and Maintenance Manual	3	
10.3	Six copies of the Operation and Maintenance Manual. The Manual shall comply with the Standard Specification for Mechanical Works in Volume 2A.	4	
11	**Tests on Completion (Clause 9.1 of General Conditions of Contract)**		
11.1	Comprehensive report containing detailed schedules and documentation to record all pre-commissioning tests undertaken and the results of these, demonstrating that the Works have passed the pre-commissioning tests	4	
11.2	Comprehensive report containing detailed schedules and documentation to record all commissioning tests undertaken and the results of these, demonstrating that the Works have passed the commissioning tests. The report shall include the Programmable Controllers and Control System commissioning procedure and schedule of alarm messages, which shall additionally be inserted in the Operation and Maintenance Manual.	5	
11.3	During the trial operation; (i) fortnightly reports detailing the equipment failures, plant performance and problems, training logs, and providing an evaluation of the performance of the Employer's operators, and (ii) a report on the completion of the trial operation	6	
12	**Other**		
12.1	Team Member's Document setting out the Contractor's Design Engineers in compliance with Clause 1.6: Work Breakdown Structure	1	
12.2	Quality Assurance Plan covering the design of the Works	1	
12.3	Quality Control Procedures (QCP's) for all items to be fabricated and coated, showing hold points for inspection by the Engineer and the Independent Inspectorate		
12.4	Team Member's Document setting out the Contractor's Installation/construction team and foremen, and the Contractor's Commissioning Engineers in compliance with Clause 1.6: Work Breakdown Structure	3	
12.5	Contractor's Health and Safety Plan	3	

NOTE:

#1: The "Phase" column specifies the phase in terms of Clause 1.6: Work Breakdown Structure in Part C3.5: Management, during which the corresponding Contractor's Document shall be submitted.

#2: Where indicated with a "Yes" in this column, penalties for late submission of the respective document, in terms of Sub-clause 8.7(b) of C1.2: Contract Data, are applicable.

6.3 As-built documents

The as-built documents shall be incorporated on the Control System to enable ease of reference for operators in the future.

The as-built drawings shall include as-built versions of all the Contractor's Documents required for before execution of the Works commences.

6.4 Contents of Control System Functional Design document

The Contractor shall submit a document detailing the Control System (i.e. programmable controllers and operator workstation) functional design, which shall be in the format shown in the following "Table Showing Required Contents List for the Control System Functional Design Specification", and shall provide the information stipulated in this list:

Table 3: Required Contents List for the Functional Design Specification

Item No	Description of Content
1	**General**
1.1	Contents List
1.2	Introduction
1.3	Drawing List (referring to P&IDs)
2	**Control Philosophy**
	Plant should be broken down into its various functional units (inlet works screening, bioreactor, dewatering etc.). For each functional area the following shall be provided:
2.3	Control Modes Description
	Motor List
2.4	Instrumentation List
2.4.1	Instrumentation Signals
2.4.2	Output signal during instrument error
2.5	Valve list and Failsafe positions of valves
2.6	Interlocks
2.6.1	Safety Interlocks
2.6.2	Process Interlocks
2.8	Startup/Shutdown Procedures (including for back-up power supply if applicable)
2.9	Alarms and philosophy
3	**Programmable Controllers**
3.1	Configuration
3.2	Hardware
3.3	Networks
3.4	IO list
3.5	Protocols
3.6	Functional blocks design and description
4	**Control System**
4.1	Configuration
4.2	Tags List with Tag count
4.3	Mimics (mocks ups before programming)
4.3.1	Plant Overview
4.3.2	Navigations Bar
4.3.4	Sub Plant overviews (if applicable)
4.3.5	Functional Unit Overview
4.3.6	System Page
4.3.7	Instrument Overview Screen
4.4	Drive/Instrumentation/valves Faceplates
4.5.	Process sequence pages

Table 3: Required Contents List for the Functional Design Specification

Item No	Description of content
4.6	Alarms Page
4.7	PID Control Loops and Set point page
4.8	Reports
4.9	Database Design
4.10	Trending/logging
4.11	Security Features
4.12.	Security Passwords
4.13	Access Hierarchy

C3.3 Procurement

CONTENTS

1. PREFERENTIAL PROCUREMENT
2. SUBCONTRACTING PROCEDURES
3. PROVISIONAL SUMS

1. PREFERENTIAL PROCUREMENT

The Works shall be executed in accordance with the conditions associated with the granting of preferences detailed in Returnable Schedule 17: Preferencing Schedule where preferences are granted in respect of B-BBEE contribution. In particular, where the Tenderer/Contractor has declared in Section 5 of Returnable Schedule 17 that "I/we **DO NOT** intend sub-contracting more than 25% of the value of the contract to sub-contractors that do not qualify for at least the points that I/we as prime contractor qualify for", then the Contractor may not subcontract more than 25% of the value of the contract (as defined in Returnable Schedule 17) to Subcontractors that do not have an equal or higher B-BBEE status level than the Contractor, unless the Subcontractors are exempted micro enterprises that have the capability and ability to execute the subcontract works.

A financial penalty, as described in Returnable Schedule 17, shall be applied in the event that the Contractor subcontracts more than 25% of the value of the contract to Subcontractors that do not qualify for at least the preference points that the Contractor qualified for (unless proven to be beyond the control of the Contractor, or the Subcontractors are exempted micro enterprises).

Notwithstanding the application of penalties, the Contractor's attention is drawn to other sanctions that may be applied by the Employer (listed in Returnable Schedule 17) with due consideration to the circumstances.

2. SUBCONTRACTING PROCEDURES

2.1 Monitoring the use of Subcontractors

Notwithstanding the restriction (in the circumstances described in Clause 1 above) on subcontracting more than 25% of the value of the contract to Subcontractors that do not qualify for at least the preference points that the Contractor qualified for, it is recognised that subcontracting is an integral part of construction, which the General Conditions (Sub-Clause 4.4) make provision for.

In order, however, to ensure that more than 25% of the value of the contract is not subcontracted to Subcontractors that do not qualify for at least the preference points that the Contractor qualified for, the Contractor shall submit to the Engineer, on a monthly basis, a B-BBEE Sub-contract Expenditure Report. The format of this report is attached to Part C3.5 Management in the Scope of Work.

The Contractor shall submit to the Engineer documentary evidence (either an original valid B-BBEE status level verification certificate or an Exempted Micro Enterprise certificate issued by a registered auditor, accounting officer (as contemplated in section 60(4) of the Close Corporation Act, 69 of 1984) or an accredited verification agency in terms of the Construction Codes of Good Practice for Broad-Based Black Economic Empowerment, in terms of the Preferential Procurement Regulations, 2011) of the B-BBEE status level of every Subcontractor employed by the Contractor. Until such time as documentary evidence as described above has been submitted to the Engineer, a Subcontractor shall be deemed to be a non-compliant contributor.

The Contractor shall furthermore, on the written request of the Engineer, provide documentary evidence showing the value of work subcontracted to any or all of the Subcontractors employed by the Contractor.

2.2 Procedure for the selection of Subcontractors/suppliers

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

Where the monetary allowance is less than or equal to R200 000 (including VAT), the Contractor shall invite three quotations from suitably qualified Subcontractors/suppliers for the required work or items. The selection of the three Subcontractors/suppliers shall be in consultation with, and to the approval of the Engineer. The evaluation of the quotations received must include a preference points system as described in F.3.11 of the Tender Data.

Where the monetary allowance is in excess of R200 000, an open competitive tender process shall be followed in respect of the selection of a Subcontractor/supplier for the required work or items. In such circumstances, tender documentation will be prepared by the Engineer in consultation with and to the approval of the Contractor, invitations to tender will be advertised in the media by the Engineer on behalf of the Contractor, and a Subcontractor/supplier will be selected from the responses received, by the Contractor and Engineer in consultation. The evaluation of the offers received must include a preference points system as described in F.3.11 of the Tender Data. The Contractor must satisfy him/herself that the selected Subcontractor/supplier can meet the requirements of the subcontract /supply agreement and may, on reasonable grounds, elect not to employ a particular Subcontractor/supplier.

In both instances above (less than or equal to R200 000 or in excess of R200 000), the contractual relationship between the Contractor and Subcontractor/supplier shall be as described in Sub-Clause 4.4 of the General Conditions.

3. PROVISIONAL SUMS

The Contractor is referred to Sub-Clause 13.5 in the General Conditions and in the Particular Conditions regarding the requirements for quotations.

C3.4 Construction

CONTENTS

1. APPLICABLE STANDARDISED SPECIFICATIONS
2. PARTICULAR SPECIFICATIONS
3. WAYLEAVES, PERMISSIONS AND PERMITS
4. LOCAL PRODUCTION AND CONTENT
5. EMPLOYMENT OF SECURITY PERSONNEL

1. APPLICABLE STANDARDISED SPECIFICATIONS

For the purpose of this Contract the following Standard Specifications shall apply:

ISO 8501 -1
ISO 8501 -2
ISO 8501 -3
SANS 10121
SANS 60529
SANS 10064
SANS 5772
SANS 5769
SANS 1217
SANS 2808
SANS 10120 -2 HC
SANS 10120 -3 HC
SANS 156 & VC8036
SANS 165
SANS 172
SANS 1200A (refer to Environmental Management Specification in Volume 2A)
SANS 173
SANS 950
SANS 1091
SANS 1299
SANS/IEC 60439-1 & 2
SANS 1473-1
SANS 1765
BS 4070
SANS 0111
BS 587
SANS 1195
SANS IEC 60947/4/1
SANS 1479
SANS 1507

It shall be the responsibility of the Contractor to obtain, at his own expense, the most recent copies of the relevant editions of the documents referred to above.

The Contractor shall keep copies of the above Standard Specifications, copies which are available from the South African Bureau of Standards.

2. PARTICULAR SPECIFICATIONS

The following Particular Specifications are in Volume 2A:

Mechanical Specifications

A Detailed Mechanical Specification (including General Works)
D Standard Specification for Mechanical Works (including General Works)
G Health and Safety Specification
H Environmental Management Specification
K Excerpts of the Operation and Maintenance Manuals (OMMs)

Other:
L Amendments to SANS 1200G: Concrete

The following Particular Specifications are in Volume 2B:

Electrical and Electronic Specifications

B Detailed Electrical Specification
C Detailed Electronic Specification
E Standard Specification for Electrical Works
F Standard Specification for Electronic Works (not used)
I Electrical and Electronic Design Schedules
J City of Cape Town Plant Numbering System

3. WAYLEAVES, PERMISSIONS AND PERMITS

3.1 General

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.

3.2 Entry to the Zandvliet Wastewater Treatment Works

A permit for entry to the Zandvliet Wastewater Treatment Works is not required; however, all persons entering the Treatment Works must report to and sign in at the entrance gate

4. LOCAL PRODUCTION AND CONTENT

The Contractor shall comply with all the Local Production and Content requirements as stated herein (refer to Schedule 14A).

5. EMPLOYMENT OF SECURITY PERSONNEL

All security staff employed by the contractor on the site 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.

C3.5 Management

CONTENTS

1. PROGRAMMING AND PLANNING
2. OCCUPATIONAL HEALTH AND SAFETY (OHS)
3. ENVIRONMENTAL MANAGEMENT
4. MATTERS REQUIRING SPECIAL ATTENTION
5. WORKS NOT TO INTERFERE
6. CO-OPERATION WITH THE EMPLOYER
7. METHODS AND PROCEDURES
8. QUALITY ASSURANCE SYSTEM
9. KEY PERSONNEL
10. MANAGEMENT MEETINGS
11. MANAGEMENT PERSONNEL
12. FORMS FOR CONTRACT ADMINISTRATION
13. ELECTRONIC PAYMENTS

1. PROGRAMMING AND PLANNING

1.1 General

The civil tender process runs concurrent with this Contract. Notwithstanding the requirements of Clause 1.6: Work Breakdown Structure and Clause 1.7: Right of access to site of Part C3.5: Management, the Contractor's programme shall be used as the basis for the programme of the whole project. The information obtained from this Contract shall be superimposed on the civil contractor's programme and the instruction by the Engineer for them to commence shall be given to suit this programme. It is therefore essential that the Contractor's programme highlight the dates when access to the various units shall be required for him to commence with his installation.

The layout of the civil structures as shown on the tender drawings is designed to generally accommodate equipment for the fine screenings, submerged hollow fibre type ultra-filtration membranes, switchgear buildings etc. Once this Contract is awarded, these and other structures may be modified to accommodate the specific requirements of the equipment offered. The Contractor shall allow a period of 42 days following the submission of drawings in his programme for liaison period between the Employer, Contractor and the civil contractor to enable finalizing the proposed amendments to civil structures. Any amendments required shall be provided in this period.

Payment for liaison meetings between the Employer, Contractor and civil contractor shall not be separate, but considered to be included in the tendered rates.

Planning and programming of the works is addressed in the Contract Data. The Contractor shall update his programme (and submit it to the Engineer for approval) before each of the site meetings held to discuss programming and coordination with other contractors, so as to reflect the outcome of those discussions. The Contractor's programme shall show the work required in terms of all phases of the specified Work Breakdown Schedule, and shall show installation and pre-commissioning work separately for each of the structures/components of structures/areas of Site listed in Table 4: Sequencing of Work with Civil Contract.

1.2 Programming Restrictions

The Contractor shall take into account and allow for being on Site for installation purposes whilst construction by others is on-going (refer to C3.1: Description of the Works).

1.3 Programme, cash flow and progress claim format

Programmes shall be submitted in Microsoft Project format in hardcopy and softcopy format. Progress claims (including cash flows) shall be in Microsoft Excel format in accordance with the standard template provided by the Engineer.

1.4 Progress Reporting

Further to the requirements of the Contract Data, the Contractor shall submit written reports every month (three days before each monthly site meeting) showing progress related to the agreed programme.

1.5 Review of progress

The Contractor shall review his progress each month and should progress lag behind the latest accepted programme, by more than 14 days, he shall submit a revised programme and method statement of how he proposes to make up the lost time. If, in the opinion of the Engineer, such revised programme will not make up the lost time, the Engineer shall have the right to request the Contractor to reorganize his work in a manner which will ensure an acceptable programme. Claims for additional payment to meet any costs incurred due to such reorganisation will not be accepted.

1.6 Work Breakdown Structure

1.6.1 General

The Contractor is required to provide the various deliverables in accordance with phases of the Work Breakdown Structure detailed below. The work described in the Work Breakdown Schedule does not limit the Contractor's responsibility in terms of the Contract, and is not intended as a comprehensive description of the Scope of the Contract, nor does it negate any requirements in terms of Part C1.2: Contract Data, rather it stipulates the sequencing of work required, and specifies further requirements in this regard.

1.6.2 Phase 1: Compilation and Submission of Preliminary Documentation

During this phase, the Contractor shall submit the documentation required in terms of the Contract, including:

a) The programme in terms of Sub-clause 8.3 of the General Conditions of Contract.

b) Evidence of insurances and copies of policies for insurances.

c) Performance Security.

d) Appointment of the Contractor's Representative in terms of Sub-clause 4.3 of the General Conditions of Contract.

e) Appointment of accident prevention officer/Safety Officer in terms of Sub-clause 6.7 of the General Conditions of Contract.

f) Team Member's Document setting out the Contractor's Design Engineers, and detailing the respective:

   i) Team member's name.
   ii) Team member's job description.
   iii) Team member's qualifications, certifications and experience.
   iv) Team members contact details.

g) Quality Assurance Plan covering the design of the Works.

1.6.3 Phase 2: Design

Once the documentation required for Phase 1 has been submitted and approved by the Engineer, the Contractor shall:

a) Conduct the specified design workshops

b) Conduct the specified HAZOP study and associated work.

c) Check the structures constructed (or to be constructed) under the Civil Contract for accuracy and report any deviations to the Engineer before proceeding with the other duties under this phase.

d) Prepare and submit to the Engineer all Contractors' Documents required for this Phase of the Work Breakdown Structure. The Contractor shall submit the various documents in a steady and progressive manner, and shall not wait until the expiry of the time available for submission of all the documents.

The Contractor shall not commence the execution of such part of the Works until the abovementioned Contractor's Documents pertaining to that part have been submitted and approved by the Engineer.

1.6.4 Phase 3: Procurement, Manufacture, Factory Testing and Delivery

During this phase, the Contractor shall commence the execution of the Works, and shall:

a) Procure all required materials.

b) Procure and/or manufacture all equipment and materials.

c) Undertake all factory acceptance tests and control system simulation tests (for mechanical and electrical equipment).

d) Prepare for and deliver all equipment and materials to Site. All equipment delivered to Site shall be safely stored by and shall be the responsibility of the Contractor.

e) Submit to the Engineer all Contractor's Documents required for this Phase of the Work Breakdown Structure, including draft copies of the Operation and Maintenance Manuals and the Contractor's Health and Safety Plan in compliance with the Occupational Health and Safety Act (Act No 85 of 1993) and Construction Regulations in terms of that Act and any requirements in terms of the Scope of Work.

f) Submit to the Engineer a Team Member's Document setting out the Contractor's Installation/construction team and foremen, and the Contractor's Commissioning Engineers, and detailing the respective:

i) Team member's name.
ii) Team member's job description.
iii) Team member's qualifications, certifications and experience.
iv) Team members contact details.

1.6.5 Phase 4: Installation and Pre-Commissioning Tests

During this phase, the Contractor shall undertake the following, as specified for the various Sections of the Works in Clause 1.7: Right of Access to Site of Part C3.5: Management:

a) Check the structures constructed under the Civil Contract for accuracy and report any deviations to the Engineer before proceeding with the other duties under this phase.

b) Undertake all construction work and install all equipment.

c) Undertake the pre-commissioning tests for all equipment in terms of Sub-clause 9.1(a) of the General Conditions of Contract, including all stand-alone equipment tests and inspections specified or ordered by the Engineer, or otherwise required to demonstrate compliance with the Scope of Work. Any further tests recommended by the Contractor shall also be submitted to the Engineer for approval, and shall be performed at this time.

d) Calibrate all equipment as applicable.

e) Correct any calibration or other errors/defects that result in a defective installation.

f) In addition the Contractor shall submit to the Engineer all Contractor's Documents required for this Phase of the Work Breakdown Structure, which shall include the As-built Documents, the Operation and Maintenance Manuals, and a comprehensive report containing detailed schedules and documentation to record all pre-commissioning tests undertaken and the results of these, demonstrating that the Works have passed the pre-commissioning tests.

g) The work to be executed under Phase 3 and Phase 4 may overlap; however, for each component of the Works, the work required for Phase 3 shall be completed before work under Phase 4 commences.

1.6.6 Phase 5: Commissioning Tests

This phase shall commence after completion of Phase 4, subject to the notification requirements in terms of Sub-clause 9.1 of the General Conditions of Contract; in this phase the Contractor shall undertake the commissioning tests in terms of Sub-clause 9.1(b) of the General Conditions of Contract, and shall put the whole of the Works into operation in accordance with the specified Right of Access to Site. As part of these tests the Contractor shall:

a) Operate the Works over the full range of specified duties according to a pre-planned schedule which shall be submitted to the Engineer for approval at least 21 days before the tests commence.

b) Provide the Engineer with schedules and documentation to record all tests undertaken and the results of these.

c) Undertake this work in collaboration with the Employer's staff.

d) Submit to the Engineer all Contractor's Documents required for this Phase of the Work Breakdown Structure, which shall include a comprehensive report containing detailed schedules and documentation to record all commissioning tests undertaken and the results of these, demonstrating that the Works have passed the commissioning tests.

1.6.7 Phase 6: Trial Operation and Training

Once the Engineer certifies that the Works have passed the commissioning tests and that the whole of the Works have successfully been put into operation, the Contractor shall undertake the trial operation of the Works and shall train the Employer's staff in the operation and maintenance of the Works. During this phase, the Contractor shall:

a) During the first half of the Trial Operation Period, operate the entire Works (for 24 hours a day) in accordance with the production requirements of the Employer (i.e. the Works is to be operated by the Contractor's Commissioning Engineers). During this time, the Contractor's personnel shall train the Employer's staff in all aspects of the operation and maintenance of the Works, making allowance for repetition to the various shift workers.

b) During the second half of the Trial Operation Period, oversee and supervise the operation of the Works by the Employer; the Contractor's Commissioning Engineers shall be on Site for at least 8 hours a day for this purpose. During this time the Contractor's personnel shall provide on-the-job training to the Employer's operation and maintenance staff, so as to ensure that they are well-trained for the operating and maintaining of the Works.

c) Monitor and maintain the Works, and correct any defects.

d) Provide formal, structured and comprehensive training for the Employer's staff on all aspects of the operation and maintenance of the Works, at dates and times that suit the Employer's shifts so that all appropriate staff are trained. The training shall include formal lectures, with the provision of lecture notes to the staff, and practical demonstration to the staff of all operation and routine maintenance actions.

e) Submit to the Engineer all Contractor's Documents required for this Phase of the Work Breakdown Structure, which shall include (i) fortnightly reports detailing the equipment failures, plant performance

and problems, training logs, and shall provide an evaluation of the performance of the Employer's operators, and (ii) report on the completion of the trial operation.

1.6.8 Phase 7: Defects Notification Period

During this phase, the Contractor shall be responsible for completion of outstanding work and remedying of defects in accordance with the General Conditions of Contract.

1.7 Right of access to site

The Contractor shall be given access to and possession of Site in accordance with the sequencing stipulated in Table 4: Sequencing of Work with civil contract (i.e. Tender No. 179Q/2016/17), which details the sequencing of construction specified for the Civil Contract (i.e. It is envisaged that the civil contractor will have completed the construction of civil structures shown on the drawings). The different Sections of the site are shown on Drawing No. 110585 – WWTW – DRG – CC– 0006.

Table 4: Sequencing of Work with Civil Contract

Section of the Site	Date when Section of Works will be Ready for Installation of Equipment
Section A of Site	445 days after Commencement Date of the Works
Section B of Site	780 days after Commencement Date of the Works
Section C of Site	825 days after Commencement Date of the Works

The Contractor shall note and allow for the following:

a) This details given in Table 4 are linked to the anticipated progress of the Civil Contract, and may be changed by order of the Engineer should progress with the Civil Contract be different. The details shall be updated and revised as necessary at the site meetings held to discuss programming and co-ordination with other contractors, where after the Contractor shall adjust his program accordingly.

b) The "Date when Section(s) of the site shall be Ready for Installation of Equipment" as shown on the above-mentioned Table 4, is the date when it is anticipated that the Civil Contract will have progressed sufficiently to allow the Contractor to commence installation activities in the corresponding structure/Section(s) of the site. The Contractor shall note that "Ready for Installation of Equipment" (as defined in the Civil Contract, and hence as applicable to this Contract) means:

   i) The structure has passed any required water tightness test,

   ii) The structure in question is complete except in respect of matters such as floor screeds, benching, tiling, painting, which have to be done after the equipment has been erected,

   iii) The disturbed ground within 7 m of the structure with access routes has been compacted and levelled to allow vehicles and cranes to run and operate on it and is near final level to allow cables to be laid to the equipment,

   iv) Concrete has been sufficiently cured to allow erection work to start,

   v) The structure and adjacent areas are clean and tidy, and

   vi) The structure/components of structure/area of the Site is ready to accommodate the mechanical and electrical equipment.

1.8 Co-Operation with the Employer

The Contractor shall ensure that:

a) His staff co-operate with the Employer's staff.

b) The Employer's rules and requirements for operation of the proposed new facilities required to achieve the Employer's Objectives for this project are adhered to once the whole of the Works is put into operation.

c) His staff are familiar with and comply with the Employer's emergency procedures for the proposed new facilities once the whole of the Works is put into operation.

d) His activities do not adversely affect the health and safety of the Employer's staff once the whole of the Works is put into operation.

1.9 Methods and procedures

1.9.1 General

No excessive dust or wind-blown debris will be allowed and thus the Contractor shall take sufficient and effective measures to limit these. Such measures shall include, but not limited to, watering down as frequently as necessary, covering up the sources and enclosing.

1.9.2 Method statements

When so requested by the Engineer or as required in terms of the Health and Safety or Environmental regulations or specifications, the Contractor shall submit within 14 days of date of such written request or otherwise at least 14 days prior to when the particular activity is planned to commence, whichever time is the soonest, a method statement detailing the Contractor's proposed procedure for construction or installation or testing of certain elements of the Works.

No work shall commence before the method statement has been submitted and approved. The approval shall not relieve the Contractor from his responsibilities in terms of the Contract.

1.9.3 Quality plans and control

The Contractor shall prepare a quality management plan to be followed during the course of the Contract.

The quality management plan shall:

a) Clearly indicate the methods, programmes, procedures and other methods that the Contractor intends using as process control to ensure compliance of materials and workmanship with the requirements of the Contract (process control testing),

b) Include the proof of status of calibration of all measuring devices that are to be used during the course of the Contract.

1.9.4 Quality assurance system

The Contractor shall institute a quality assurance system and provide experienced personnel as well as all the necessary transport, instruments and equipment, to ensure adequate supervision and positive control of the works at all times in order to comply with the requirements.

2. OCCUPATIONAL HEALTH AND SAFETY (OHS)

2.1 Compliance with Legislation and Regulations

It is a requirement of this Contract that the Contractor shall provide a safe and healthy working environment and to direct all his activities in such a manner that his employees and any other persons, who may be directly affected by his activities, are not exposed to hazards to their health and safety. The Contractor shall therefore comply with the Occupational Health and Safety Act (Act No. 85 of 1993) (OHS Act) and Amendment Act No 181 of 1993, and the Construction Regulations, 2003 issued in terms of the OHS Act on 18 July 2003 by the Department of Labour.

For the purpose of this Contract, the Contractor is required to confirm his status as mandatory and Employer in his own right for the execution of the Contract by entering into an agreement with the Employer in terms of the Occupational Health and Safety Act by executing the Agreement form C1.5 included in Part C1: Agreements and Contract Data.

In addition to the requirements of C1.5 and C3.5 in Volume 2 as well as C4.3: Project Health and Safety Specification – For City of Cape Town and Section G of Volume 2A, the Contractor is responsible for ensuring that:

a) all equipment supplied; and,

b) the complete installation comply with the Occupational Health and Safety Act, Act 85 of 1993, and the regulations promulgated thereunder.

Detailed Health and Safety Specification are included in Section G of Volume 2A.

2.2 Specific Risks and Hazards

The Contractor is expected to be aware of and to identify the risks and hazards associated with the execution of the Works and those inherent in the nature of the work to be undertaken. Further to this, the following specific risks and hazards have been identified, which the Contractor shall allow for, and expand upon in preparing and maintaining the required Health and Safety Plan:

a) Handling of heavy mechanical and electrical equipment.

b) Drowning in the existing and proposed new water retaining structures and chambers.

c) Accidental flooding of water retaining structures and chambers, and lower- and upper-lift pump station.

d) Snakes

e) Work in confined spaces.

f) Work at heights.

g) Falling of heavy items and equipment.

h) Handling and working with and in the vicinity of live electrical equipment and cables, some of which are high voltage.

i) Handling and working with and in the vicinity of operating mechanical equipment, including rotating equipment such as pumps, aerators etc.

j) Possible exposure to chemicals, including liquid, gas and dust, to be dosed by the equipment provided under this Contract, such as chlorine gas, citric acid, caustic soda, coagulants such as ferric, alum, polyelectrolyte etc.

k) The Contractor being on Site for measuring, installation, testing, commissioning and putting into service purposes whilst the construction for the Civil Works Contract is still underway.

The Contractor shall ensure that adequate ventilation, lighting, scaffolding, ladders, lifting devices and safety harnesses and the like are provided. All work shall be supervised and overseen by competent persons.

2.3 Health and safety requirements and procedures

In terms of the provisions of Section 37(2) of the occupational health and safety amendment act, 1993 (Act 85 of 1993), hereinafter referred to as The Act, the following arrangements and procedures shall apply between the Contractor and the Employer to ensure compliance by the contractor with the provisions of the Act.

a) The Contractor undertakes to acquaint the appropriate officials and employees of the Contractor with all relevant provisions of the Act and the Regulations promulgated in terms of the Act.

b) The Contractor undertakes that all relevant duties, obligations and prohibitions imposed in terms of the Act and Regulations on the Contractor will be fully complied with.

c) The Contractor accepts sole liability for such due compliance with the relevant duties, obligations and prohibitions imposed by the Act and Regulations and expressly absolves the Employer from himself being obliged to comply with any of the aforesaid duties, obligations and prohibitions, with the exception of such duties, obligations and prohibitions expressly assigned to the Employer in terms of the Act and its associated Regulations.

d) The Contractor agrees that any duly authorised officials of the Employer shall be entitled, although not obliged, to take such steps as may be necessary to monitor that the Contractor has conformed to his undertakings as described in paragraphs (i) and (ii) above, which steps may include, but will not be limited to, the right to inspect any appropriate site or premises occupied by the Contractor, or any appropriate records or safety plans held by the Contractor.

e) The Contractor shall be obliged to report forthwith to the Employer and Engineer any investigation, complaint or criminal charge which may arise as a consequence of the provisions of the Act and Regulations, pursuant to work performed in terms of this Contract, and shall, on written demand, provide full details in writing, to the Employer and Engineer, of such investigation, complaint or criminal charge.

f) The Contractor shall furthermore, in compliance with Constructional Regulations 2003 (Notice No R1010, dated 18 July 2003) to the Act acquaint himself with the requirements of the Employer's health and safety specification as laid down in regulation 4(1)(a) of the Construction Regulation 2003, and prepare a suitably and sufficiently documented health and safety plan as contemplated in regulation 5(1) of the Construction Regulation 2003 for approval by the Employer or his assigned agent. The Contractor's health and safety plan and risk assessment shall be submitted for approval, to the Employer or his agent, within 14 days of the Commencement Date and shall be implemented and maintained from the commencement of the Works.

g) The Contractor shall at all times be responsible for full compliance with the approved plan as well as with the Construction Regulations and no extension of time will be considered for delays due to non-compliance with the abovementioned plan or regulations.

h) The Employer, or his assigned agent, reserves the right to conduct periodic audits, as contemplated in the Construction Regulations 2003, to monitor that the Contractor is compliant in respect of his obligations. Failure by the Contractor to comply with the requirements of these Regulations shall entitle the Engineer, at the request of the Employer or his agent, to suspend all or any part of the Works, with no recourse whatsoever by the Contractor for any damages incurred as a result of such suspension, until such time that the Employer or his agents are satisfied that the issues in which the Contractor has been in default have been rectified.

i) The proposed type of work, materials to be used and potential hazards likely to be encountered on this Contract are detailed in the C3.3 : Construction, the Bill of Quantities, the Drawings, and in the Employers' health and safety specification (regulation 4(1) of the Construction Regulations 2003).

2.4 Contractor's Health and Safety Plan

The successful Contractor shall, on receipt of notification that he has been awarded the contract, submit without delay a Health and Safety Plan specifically tailored for the execution of the work under the Contract. The Health and Safety Plan shall at least cover the following:

a) A proper risk assessment of the Works, risk items, work methods and procedures in terms of Regulations 7 to 28;

a) Pro-active identification of potential hazards and unsafe working conditions;

b) Provision of a safe working environment and equipment;

c) Statements of methods to ensure the health and safety of Sub-Contractors, employees and visitors to the site, including safety training in hazards and risk areas (Regulation 5);

d) Monitoring health and safety on the site of works on a regular basis, and keeping of records and registers as provided for in the Construction Regulations;

e) Details of the key personnel to be appoint for the work on Site in terms of Regulation 6 and other applicable regulations; and

f) Details of methods to ensure that the Health and Safety Plan will be carried out effectively in accordance with the Construction Regulations 2003.

The Contractor's Health and Safety Plan will be subject to approval by the Employer, or amendment if necessary, before commencement of construction work. The Contractor will not be allowed to commence work, or his work will be suspended if he has already commenced work, before he has obtained the Employer's written approval of his Health and Safety Plan.

Time lost due to delayed commencement or suspension of the work as a result of the Contractor's failure to obtain approval for his safety plan, shall not be used as a reason to claim for extension of time or standing time and related costs.

2.5 Protection of the public and Employer's staff

The Contractor shall at all times ensure that his operations do not endanger any member of the public, or the Employer's staff.

Open excavations and other hazardous conditions on site shall be barricaded and precautions shall be taken to protect the public from the same in terms of the OHS Act.

As the Works are on an operating water treatment works site, the Contractor shall take special precautions to prevent access to any danger areas on the Works, e.g. by temporary barricades, notices and/or fencing.

The Contractor shall direct, control, facilitate and safeguard all pedestrian traffic during construction of the Works, provide all notices, and arrange for watching and lighting in accordance with the requirements of the relevant authorities.

2.6 Health and Safety Specialist

The Contractor shall employ a Health and Safety Specialist / Accident Prevention Officer, with suitable and proven qualifications, on full-time basis, for the duration of the Contract. This Specialist shall assist with the preparation of the health and safety plan, shall provide on-going training for all site staff (at least 1 hour per week whilst work on site is in progress, in the form of weekly tool-box talks), and shall assist with the upkeep of the health and safety plan and associated regular inspections etc.

The requirement for a weekly presence on Site, necessitates that the Health and Safety Specialist be based locally (in the Cape Town metropolitan area), at least for the period while the Contractor is working on Site (i.e. during delivery, installation, testing and commissioning).

2.7 Monthly health and safety reports

The accident prevention officer/health and safety specialist shall submit a report to the Engineer at the monthly site meetings, detailing the state of health and safety on the site over the last month, new risk assessments added, potential new risks, new precautions taken, and summarising the results of various inspections required in terms of the health and safety plan, etc. If this report is not submitted at each monthly site meeting, the Engineer shall impose a fine of R 20 000.00 (exclusive of VAT) on the Contractor, in each instance.

2.8 Health of Contractors Staff

The following parts of SANS 1921 Construction and Management requirements for works contracts and associated specification data are applicable:

a) SANS 1921-6 HIV/AIDS Awareness

The associated amendments are as follows:

b) Sub-clause 4.2.1: The Contractor shall submit the details of qualified service providers to the Engineer for approval. The service provider shall be recognised by the South African Department of Health as a Specialist.

c) Sub-clause 4.2.1: The HIV/AIDS awareness programme is to be repeated at four (4) month intervals throughout the duration of the Contract, but limited to a maximum of 10 times, including the initial one at the commencement of the Contract.

2.9 Cost of Compliance with the OHS Act and Construction Regulations

The rates and prices tendered by the Contractor shall be deemed to include all costs for conforming to the requirements of the Act, the Construction Regulations and the Employer's Health and Safety Specification as applicable to this contract. Should the Contractor fail to comply with the provisions of the Construction Regulations, he will be liable for penalties as provided in the Construction Regulations and in the Employer's Health and Safety Specification.

3. ENVIRONMENTAL MANAGEMENT

Notwithstanding the requirements of Section H: Environmental Management Specification (included in Volume 2A), the Contractor shall fully comply with the requirements specified herein.

In addition, the Contractor shall comply with the requirements of the Construction Phase Environmental Management Programme (CEMP) included in Part C4.2: Site Information.

In the event of any discrepancy between a part or parts of the Standard or Particular Specifications and this Specifications, this Specifications shall take precedence.

3.1 Scope

The general principles contained within the Particular Specification shall apply to all construction activities. All construction activities shall observe any relevant environmental legislation and in so doing shall be undertaken in such a manner as to minimise impacts on the natural and social environment. The size of the construction areas shall be minimized and all areas disturbed during construction shall be reinstated.

3.2 Definitions

For the purposes of this Specification, the following definitions shall apply:

Working area: The land and any other place on, under, over, in or through which the Works are to be executed or carried out, and any other land or place made available by the Employer in connection with the Works. The Working Area shall include the site office, construction camp, stockpile and laydown areas, batching areas, the main construction area, all access routes and any additional areas to which the Engineer permits access.

3.3 General Requirements

3.3.1 Materials handling, use and storage

The Engineer shall be advised of the areas that the Contractor intends to use for the stockpiling of both natural and manufactured materials. No stockpiling shall occur outside of the working area and without the Engineer's prior approval of the proposed stockpiling areas. Imported material shall be free of litter and contaminants. The Contractor shall ensure that material is not stockpiled within 30 m of any water course.

3.4 Plant

3.4.1 Ablution facilities

A sufficient number of chemical toilets shall be provided by the Contractor in the construction camp area and at appropriate locations approved by the Engineer. The ratio of ablution facilities to site staff must not be less than 1:20 and facilities shall be located within 100 m from any point of work, but no closer than 50 m to any water body or river. All temporary/ portable toilets shall be secured to the ground to prevent them from toppling due to wind or any other cause.

3.4.2 Solid waste management

An integrated waste management approach, based on waste minimisation which should incorporate reduction, recycling, re-use and disposal where appropriate, shall be used.

Hazardous wastes shall only be sent to landfill sites registered for hazardous wastes. The contractor shall supply the engineer with a certificate of disposal.

3.4.3 Contaminated water

The Contractor shall prevent the discharge of contaminated water into the maturation ponds or into any watercourse adjacent to the Works or any nearby drainage channels. Water that has been contaminated with suspended solids and silt may only be released into a natural watercourse once all suspended solids have been removed from the water prior to discharge, by settling out the solids in settling ponds. Appropriately sited portable pools may be used to fulfil this role.

3.4.4 Workshop, equipment maintenance and storage

Waste water from construction activities or the washing of vehicles shall not be permitted to enter the aquatic environment, either directly or via the stormwater system.

The Contractor shall ensure that no equipment, maintenance or storage be conducted within 30 m from the aquatic environment.

Methods and procedures

3.5 Method Statements

The following additional method statements shall be provided by the Contractor within 14 days of receipt of the letter of acceptance and prior to the activity covered by the Method Statement being undertaken:

Measures to be implemented in order to ensure that the existing facility remains functional and capable of adequately treating the current inflow of sewage while the facility is being upgraded.

Emergency procedures for fire, accidental leaks, and spillages of hazardous materials including:

- Who shall be notified in the event of an emergency, including contact numbers for the relevant local authority, where and how any spilled sewage will be returned to the wastewater works system, the size of spillage which the emergency procedures could contain, the location of any and all temporary emergency sumps, including old sludge ponds, clarifiers, low lying areas etc, and location of all emergency equipment and an indication of how regularly the emergency equipment will be checked to ensure that it is working properly.
- Liquid waste (fuel and lubricants) control and removal of liquid waste from the Site, including the number, type and location of drip trays and/or sheets and liquid waste containers, the manner and frequency with which the liquid waste will be removed from site and the disposal site;
- Logistics for the environmental awareness course for all the Contractors employees.

3.5.1 Protection of natural features

No surface or groundwater may be polluted due to any activity on the site.

The relevant requirements of the National Water Act, 1998 must be complied with at all times. Any effluent that is discharged into the aquatic environment during the construction period must not be of poorer quality than is currently discharged. This must be monitored by the Municipality on an ongoing basis during the construction phase.

The Contractor shall not make use of herbicides or other chemical methods to clear the proposed Site especially near any river, stream or wetland, including the aquatic environment.

3.5.2 Pumping

The Contractor shall ensure that no water pumped during any dewatering process and empting of reactors (if required) is released into any watercourse without the consent of the Engineer.

The dewatering process which occurs on the construction site shall be conducted with the use of a sump. Water with high sediment loads should be pumped into a sump, which will allow sediment particles to settle. Upon which, the water shall be drained into the aquatic environment, whereas the particles shall be collected and disposed of at a registered landfill site.

3.5.3 Community relations

Information boards erected on or around the site shall comply with the applicable Local Authority By-Law for the control of outdoor advertising or in the absence of local legislative controls must comply with the South African Manual for Outdoor Advertising Control (SAMOAC).

The number and location of the information boards shall be determined by the Engineer.

3.6 Compliance with requirements and penalties

3.6.1 Penalties

Penalties will be issued for the transgressions listed below. Penalties may be issued per incident at the discretion of the Engineer. Such penalties will be issued in addition to any remedial costs incurred as a result of non-compliance with the environmental specifications. The Engineer will inform the Contractor of the contravention and the amount of the penalty, and will deduct the amount from monies due under the Contract.

Penalties for the activities detailed below, will be imposed by the Engineer on the Contractor.

a)	Any employees, vehicles, plant, or thing related to the Contractor's operations operating within the designated boundaries of a "no-go" area.	R 15 000
b)	Any vehicle driving in excess of designated speed limits.	R 1 000
c)	Employees walking, any vehicles being driven, and items of plant or materials being parked or stored outside the demarcated boundaries of the Site	R 4 000
d)	Persistent and un-repaired oil leaks from machinery.	R 5 000
e)	Persistent failure to monitor and empty drip trays timeously.	R 3 000
f)	The use of inappropriate methods for refuelling.	R 5 000
g)	Litter on site associated with construction activities.	R 2 500
h)	Deliberate lighting of illegal fires on site.	R 5 000
i)	Any employee eating meals on site, outside of the defined eating area.	R 1 000
j)	Employees not making use of the site ablution facilities.	R 3 000
k)	Failure to implement specified noise controls	R 5 000
l)	Failure to empty waste bins on a regular basis.	R 1 000
m)	Inadequate dust control.	R 5 000
n)	A spillage, pollution, fire or any damage to any watercourse resulting from negligence on the part of the Contractor.	R 10 000
o)	Any act, that in the reasonable opinion of the Engineer, constitutes a deliberate contravention of the requirements of these requirements specified herein.	R 5 000

For each subsequent similar offence the penalty shall be doubled in value to a maximum value of R 60 000.

4. MATTERS REQUIRING SPECIAL ATTENTION

4.1 Sanitary Conditions

The Contractor shall provide his own ablution facilities for his staff.

Unhygienic habits and any behaviour that may cause contamination of any part of the Works or the surrounding areas are strictly prohibited.

The Contractor shall ensure that sanitary conditions prevail throughout the site and that all his workmen are aware of, and comply with this rule.

4.2 Maintaining and Cleaning of the Site

The Contractor shall maintain the whole of the site in a clean and orderly condition, to the satisfaction of the Engineer. On completion of the work the Contractor shall tidy up the site to the satisfaction of the Engineer; all temporary buildings shall be dismantled and removed; all surplus material, debris etc shall be carted away and the whole site shall be left in a neat and orderly condition. Generally, site cleaning shall be considered an on-going practice.

The Contractor shall execute the Works in such a way as to prevent any fouling of the water in the water treatment works with dust or any foreign matter. The Contractor's and his staff shall not engage in unhygienic activities and the Contractor shall ensure that sanitary conditions prevail throughout the Site.

4.3 Adjacent Properties, Existing Structures and Services

The Contractor shall so carry out operations as not to cause damage to the existing fences and structures and shall not trespass or encroach on to any adjacent property.
Care shall be taken by the Contractor to avoid dust.

The Contractor shall take steps to protect the existing services on and in the vicinity of the Site against damage which may arise as a result of operations on Site. The Contractor shall bear the cost of the repair of damage as a result of the Contractor's operations on Site.

4.4 Dealing with Water

a) The Contractor shall deal with water on the Site so that the Works are kept sufficiently dry for their proper execution. The Contractor shall:
b) Prevent flooding of the Works and by the Works.
c) Keep all completed Works properly drained.
d) Not inhibit surface drainage.

4.5 Safeguarding of Excavations

Excavations shall be safeguarded in accordance with the relevant safety specifications.

4.6 Lighting

Should the Contractor wish to work when the natural light is inadequate for the type of work to be undertaken he shall, at his own expense, provide and maintain in good condition, adequate high powered flood lighting for all portions of the work over which he is operating.

5. WORKS NOT TO INTERFERE

The installation work shall take place at the existing wastewater treatment works. The treatment works must remain in operation at all times except where otherwise specified or for connection purposes. The Contractor shall ensure that, wherever possible, the Employer's personnel have unhindered access to, and use of, all parts of the existing works at all times, as necessary.

The Contractor shall notify the Engineer in writing of when he intends to interrupt the operation of the treatment works in order to effect connections with the new treatment works. Such notice shall be given in writing at least 14 days in advance. Approval of such work shall be given only when the timing of the work is acceptable to the Engineer.

The Contractor shall ensure that his workmen do not interfere with the operation of the treatment works and he shall instruct them to refrain from entering areas where they are not required to carry out any work related to the Contract.

The Contractor shall not be allowed to shut down the treatment works completely at any stage. Work requiring interruptions of the operation of the treatment works may have to be done outside normal working hours (e.g. between midnight and early morning). Such work shall be undertaken in a manner and to the approval of the Engineer. No claims for additional payment will be considered in this regard.

6. CO-OPERATION WITH THE EMPLOYER

The Contractor shall ensure that:

a) His staff co-operate with the Employer's staff.

b) The Employer's rules and requirements for operation of the proposed new facilities required to achieve the Employer's Objectives for this project are adhered to once the whole of the Works is put into operation.

c) His staff are familiar with and comply with the Employer's emergency procedures for the proposed new facilities once the whole of the Works is put into operation.

d) His activities do not adversely affect the health and safety of the Employer's staff once the whole of the Works is put into operation.

7. METHODS AND PROCEDURES

7.1 General

No excessive dust or wind-blown debris will be allowed and thus the Contractor shall take sufficient and effective measures to limit these. Such measures shall include, but not limited to, watering down as frequently as necessary, covering up the sources and enclosing.

7.2 Method Statements

When so requested by the Engineer or as required in terms of the Health and Safety or Environmental regulations or specifications, the Contractor shall submit within 14 days of date of such written request or otherwise at least 14 days prior to when the particular activity is planned to commence, whichever time is the soonest, a method statement detailing the Contractor's proposed procedure for construction or installation or testing of certain elements of the Works.

No work shall commence before the method statement has been submitted and approved. The approval shall not relieve the Contractor from his responsibilities in terms of the Contract.

7.3 Quality plans and control

The Contractor shall prepare a quality management plan to be followed during the course of the Contract. The quality management plan shall:

a) Clearly indicate the methods, programmes, procedures and other methods that the Contractor intends using as process control to ensure compliance of materials and workmanship with the requirements of the Contract (process control testing),

b) Include the proof of status of calibration of all measuring devices that are to be used during the course of the Contract.

8. QUALITY ASSURANCE SYSTEM

The Contractor shall institute a quality assurance system and provide experienced personnel as well as all the necessary transport, instruments and equipment, to ensure adequate supervision and positive control of the works at all times in order to comply with the requirements.

9. KEY PERSONNEL

The Contractor shall submit a schedule of key personnel in terms of Clause 1.6: Work Breakdown Structure, with contact particulars.

The Contractor is also referred to the OHS Specification in Volume 2A regarding Health and Safety appointments.

10. MANAGEMENT MEETINGS

10.1 Site and Technical Meetings

The Contractor shall attend the following meetings during the Contract:

a) An inaugural site meeting a maximum of 28 days after the Commencement Date, or as called by the Engineer.

b) Monthly site meetings from the order to commence the Works until the issue of the taking Over Certificate.

c) Conduct the specified design workshops

d) A HAZOP study.

e) Additional meetings to discuss programming and co-ordination with other contractors (principally the Civil Contractor) as called by the Engineer.

f) At least nine (9) meetings during the Defects Notification Period (i.e. at least 3 for each Section of the Works).

g) Other meetings specified or required by the Engineer to discuss and agree on technical details and control requirements on a weekly basis to be called by the Engineer.

The Contractor shall arrange for the Contractor's Representative (in terms of Clause 1.6: Work Breakdown Structure) to attend all of the above meetings

10.2 Health and Safety Meetings

The Contractor is referred to the OHS Specification in Volume 2A.

11. MANAGEMENT PERSONNEL

The Contractor is referred to the OHS Specification in Volume 2A.

12. ELECTRONIC PAYMENTS

The Contractor shall provide his banking details to enable electronic payments to be made. Only the banking details on the City of Cape Town's Vendor Database will be used for payments (see Clause F.2.1.1.1 in Part T1.2 Tender Data for registration requirements).

13. FORMS FOR CONTRACT ADMINISTRATION

The Contractor shall complete, sign and submit with each monthly statement for payment, the following updated returns (the formats of which are attached hereto):

a) Monthly Project Labour Report (Form 1)

b) B-BBEE Sub-contract Expenditure Report (Form 2)

c) Joint Venture Expenditure Report (Form 3)

The Monthly Project Labour Report must include details of all labour (including that of sub-contractors) that are South African citizens earning less than R300 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 Engineer with copies of the employment contracts entered into with such labour, together with copies of identification documents 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.

Monthly Project Labour Reports shall be completed and submitted in accordance with the instructions therein.

The B-BBEE Sub-contract Expenditure Report is required for monitoring the prime contactor's compliance with condition 2 of Section 2 of Schedule 17 Preferencing Schedule where preferences are granted in respect of B-BBEE contribution, in Part T.2.2 Returnable Schedules, where the Tenderer/Contractor has declared in Section 5 of Returnable Schedule 17 that "I/we **DO NOT** intend sub-contracting more than 25% of the value of the contract to sub-contractor's that do not qualify for at least the points that I/we as prime contractor qualify for".

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 Expenditure Reports shall be verified by the Engineer/Engineer's Representative.

In respect of Forms 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 Returnable Schedule 17 Preferencing Schedule in Part T2.2 Returnable Schedules. In the case of joint ventures (Form 3), the contractor shall prove his compliance with item 6) in Section 2 of the Preferencing Schedule by providing a consolidated scorecard at his own cost on instruction from the Engineer.

FORM 1

CITY OF CAPE TOWN
MONTHLY PROJECT LABOUR REPORT

NOTE: The identical form (Annex 1) is available from the EPWP office (see Instruction 4 below)

Instructions for completing and submitting forms

General

1 The Monthly Project Labour Reports must be completed in full, using typed, capital letter 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, tel 021 400 9406, email EPWPLR@capetown.gov.za.

Project Details

5 If a field is not applicable insert the letters: NA

6 Either a Contract (in the case of contracted out services or works) or a Works Project (in the case of direct employment by the City) name and number must be inserted. The name of the contract or works project may be abridged if necessary. In the case of term tenders the contract name and number must reflect the term tender as advertised.

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.

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 "On the job" training shall be included in the number of days worked. 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 Workers earning more than the maximum daily rate (currently R270 excluding any benefits) shall not be reflected on this form at all.

Submission of Forms

14 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.

15 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.

16 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)		CONTRACT OR WORKS PROJECT NUMBER: (6)	462Q/2013/14
DIRECTORATE:	UTILITY SERVICES	DEPARTMENT:	WATER AND SANITATION
CONTRACTOR OR VENDOR NAME:		CONTRACTOR OR VENDOR E-MAIL ADDRESS:	type email address here
CONTRACTOR OR VENDOR CONTACT PERSON:	FIRST NAME AND SURNAME	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 (insert last 2 digits)	2	0	1	3
							X									

ACTUAL START DATE (yyyy/mm/dd)								ANTICIPATED / ACTUAL END DATE (yyyy/mm/dd) (7)								
2	0	1	2	0	7	1	6	2	0	1	3	0	7	1	6	

TOTAL PROJECT EXPENDITURE / VALUE OF WORK DONE TO-DATE (INCLUDING ALL COSTS, BUT EXCLUDING VAT)																
R				1	0	0	0	0	0	0	-	0	0			

FORM 1 (continued)

CITY OF CAPE TOWN
MONTHLY PROJECT LABOUR REPORT

NOTE: The identical form (Annex 1) is available from the EPWP office (see instruction 4 above)

BENEFICIARY DETAILS AND WORK INFORMATION

YEAR AND MONTH (e.g. AUG):	2	0	1	3	AUG
CONTRACT OR WORKS PROJECT NUMBER:	462Q/2013/14				

SHEET 1 OF 1

B in columns below stands for Beneficiary

No.	First name (8)	Surname (8)	ID number (8)	New B (Y/N) (9)	Gender (M/F)	Dis - abled (Y/N)	Job seeker data - base (Y/N) (10)	B contract start date (DDMMYY)	B contract end date (DDMMYY) (11)	No. days worked this month (excl. training) (12)	Rate of pay per day (R – c) (13)
1	FIRST NAME	SURNAME	1 2 3 4 5 6 1 2 3 4 1 2 3	Y	M	Y	Y	1 2 3 4 5 6	1 2 3 4 5 6	12	1 2 3 – 4 5
2											–
3											–
4											–
5											–
6											–
7											–
8											–
9											–
10											–
11											–
12											–

Numbers in header row e.g (8) refer to the relevant instruction for completing and submitting forms

Declared by Contractor or Vendor to be true and correct: (name)..... (signature)..... **Date:** .....

Received by Employer's Agent / Representative: (name)..... (signature)..... **Date:** .....

FORM 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 Schedule 17: Preferencing 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 Engineer/ Resident Engineer: _____ **Date:** _____

FORM 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 Schedule 17: Preferencing 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 Engineer/ Resident Engineer: _____ **Date:** _____

C3.6 Annexes

See Volume 2A and Volume 2B.

Volume 2A: Mechanical Specifications
Volume 2B: Electrical and Electronic Specifications

C3.6 Annexes

See Volume 2A and Volume 2B.

Volume 2A: Mechanical Specifications
Volume 2B: Electrical and Electronic Specifications

Part C4: Site information

Pages

C4 Site information 415

C4 Site Information

		No. Pages
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C4.2:	Construction Phase Environmental Management Programme (CEMP)	28
C4.3:	Project Health and Safety Specification – For City of Cape Town	48

CITY OF CAPE TOWN

WATER AND SANITATION

CONTRACT NO. 178Q/2016/17

DESIGN – BUILD OF MECHANICAL AND ELECTRICAL WORKS FOR THE CONSTRUCTION OF PRIMARY TREATMENT AND SLUDGE HANDLING FACILITIES AT ZANDVLIET WASTEWATER TREATMENT WORKS

C4.1: Geotechnical Investigation

CITY OF CAPE TOWN

WATER AND SANITATION

CONTRACT NO. 178Q/2016/17

DESIGN – BUILD OF MECHANICAL AND ELECTRICAL WORKS FOR THE CONSTRUCTION OF PRIMARY TREATMENT AND SLUDGE HANDLING FACILITIES AT ZANDVLIET WASTEWATER TREATMENT WORKS

C4.2: Construction Phase Environmental Management Programme (CEMP)

CITY OF CAPE TOWN

WATER AND SANITATION

CONTRACT NO. 178Q/2016/17

DESIGN – BUILD OF MECHANICAL AND ELECTRICAL WORKS FOR THE CONSTRUCTION OF PRIMARY TREATMENT AND SLUDGE HANDLING FACILITIES AT ZANDVLIET WASTEWATER TREATMENT WORKS

C4.3: Project Health and Safety Specification – For City of Cape Town

Project Health and Safety Specification

In terms of Construction Regulations 2014

Client

CITY OF CAPE TOWN

Description of Project Works

TENDER 179Q/2016/17 - CONSTRUCTION OF AN MBR PLANT AND BOTTLENECK ALLEVIATION AT ZANDVLIET WASTEWATER TREATMENT WORKS: M&E WORKS

Project Location

ZANDVLIET WWTW
OFF BADEN POWELL DRIVE

Date

NOVEMBER 2016

Project Health and Safety Specification developed by:

PROJECT HEALTH AND SAFETY SPECIFICATION

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- Task Completion Form

Annexure B

- Contractor's Responsible Persons

Baseline Risk Assessments

Health and Safety Specification Acknowledgement Receipt

1.0SPECIFIC PROJECT INFORMATION

1. 1 INTRODUCTION AND DEFINITIONS

PLEASE NOTE THAT THE REQUIREMENTS OF THE NEW CONSTRUCTION REGULATIONS 2014 HAVE BEEN IN EFFECT FROM 7TH AUGUST 2014. THE NEW REGULATIONS PLACE ADDITIONAL LEGAL DUTIES UPON PRINCIPAL CONTRACTORS AND CONTRACTORS. ALTHOUGH THIS HEALTH AND SAFETY SPECIFICATION INCLUDES MUCH OF THE CONTENT OF THESE NEW REQUIREMENTS, THE CONTRACTOR WILL BE DEEMED TO BE FAMILIAR WITH THE REQUIREMENTS OF THESE REGULATIONS, AND TO HAVE FACTORED IN ALL THE DUTIES PLACED UPON CONTRACTORS AND PRINCIPAL CONTRACTORS IN THE TENDER. A COPY OF THE REGULATIONS CAN BE VIEWED ON THE DEPARTMENT OF LABOUR'S WEBSITE.

This Health and Safety Specification contains clauses that are generally applicable to construction activities, as well as imposing pro-active controls associated with activities that impact on Health and Safety as it relates to plant and machinery. Compliance to the requirements of the Occupational Health and Safety Act 1993 is in addition to the requirements of this Health and Safety Specification and is part of the Contractor's responsibility. The Client will monitor that the Contractors comply with the requirements of such legislation.

ALL REFERENCES TO CLIENT IN THIS HEALTH AND SAFETY SPECIFICATION ALSO REFER TO CLIENT AGENT, WHERE SO APPOINTED.

Definitions (as per the Construction Regulations 2014) applicable to this Health and Safety Specification:

"agent" means a competent person who acts as a representative for a client;

"angle of repose" means the steepest angle of a surface at which a mass of loose or fragmented material will remain stationary in a pile on the surface, rather than sliding or crumbling away;

"bulk mixing plant" means machinery, appliances or other similar devices that are assembled in such a manner so as to be able to mix materials in bulk for the purposes of using the mixed product for construction work;

"client" means any person for whom construction work is being performed;

"competent person" means a person who has, in respect of the work or task to be performed, the required knowledge, training and experience and, where applicable, qualifications, specific to that work or task: Provided that where appropriate qualifications and training are registered in terms of the provisions of the National Qualification Framework Act, 2000 (Act No.67 of 2000), those qualifications and that training must be regarded as the required qualifications and training; and is familiar with the Act and with the applicable regulations made under the Act;

"construction manager" means a competent person responsible for the management of the physical construction processes and the coordination, administration and management of resources on a construction site;

"construction site" means a work place where construction work is being performed;

"construction supervisor" means a competent person responsible for supervising construction activities on a construction site;

"construction vehicle" means a vehicle used as a means of conveyance for transporting persons or material, or persons and material, on and off the construction site for the purposes of performing construction work;
"construction work" means any work in connection with-

- the construction, erection, alteration, renovation, repair, demolition or dismantling of or addition to a building or any similar structure; or
- the construction, erection, maintenance, demolition or dismantling of any bridge, dam, canal, road, railway, runway, sewer or water reticulation system; or the moving of earth, clearing of land, the making of excavation, piling, or any similar civil engineering structure or type of work ;

"construction work permit" means a document issued in terms of regulation 3;

"contractor" means an employer who performs construction work;

"demolition work" means a method to dismantle, wreck, break, pull down or knock down of a structure or part thereof by way of manual labour, machinery, or the use of explosives;

"design" in relation to any structure, includes drawings, calculations, design details and specifications ;

"designer" means a competent person who-
- prepares a design;
- checks and approves a design;
- arranges for a person at work under his or her control to prepare a design, including an employee of that person where he or she is the employer; or
- designs temporary work, including its components;
- an architect or engineer contributing to, or having overall responsibility for a design;
- a building services engineer designing details for fixed plant;
- a surveyor specifying articles or drawing up specifications;
- a contractor carrying out design work as part of a design and building project; or
- an interior designer, shop-fitter or landscape architect;

"excavation work" means the making of any man-made cavity, trench, pit or depression formed by cutting, digging or scooping;

"explosive actuated fastening device" means a tool that is activated by an explosive charge and that is used for driving bolts, nails and similar objects for the purpose of providing fixing;

"fall arrest equipment" means equipment used to arrest a person in a fall, including personal equipment, a body harness, lanyards, deceleration devices, lifelines or similar equipment;

"fall prevention equipment" means equipment used to prevent persons from falling from a fall risk position, including personal equipment, a body harness, lanyards, lifelines or physical equipment such as guard-rails, screens, barricades, anchorages or similar equipment;

"fall protection plan" means a documented plan, which includes and provides for -
- all risks relating to working from a fall risk position, considering the nature of work undertaken;
- the procedures and methods to be applied in order to eliminate the risk of falling; and
- a rescue plan and procedures;

"fall risk" means any potential exposure to falling either from, off or into;

"health and safety file " means a file, or other record containing the information in writing required by these Regulations;

"health and safety plan" means a site, activity or project specific documented plan in accordance with the client's health and safety specification;

"health and safety specification" means a site, activity or project specific document prepared by the client pertaining to all health and safety requirements related to construction work;
"material hoist" means a hoist used to lower or raise material and equipment, excluding passengers;

"medical certificate of fitness" means a certificate contemplated in regulation 7(8);

"mobile plant" means any machinery, appliance or other similar device that is able to move independently,

and is used for the purpose of performing construction work on a construction site;

"National Building Regulations" means the National Building Regulations made under the National Building Regulations and Building Standards Act, 1977 (Act No. 103 of 1977), and promulgated by Government Notice No. R. 2378 of 30 July 1990, as amended by Government Notices No's R. 432 of 8 March 1991, R. 919 of 30 July 1999 and R. 547 of 30 May 2008;

"person day" means one normal working shift of carrying out construction work by a person on a construction site;

"principal contractor" means an employer appointed by the client to perform construction work;

"Professional Engineer or Professional Certificated Engineer" means a person holding registration as either a Professional Engineer or Professional Certificated Engineer in terms of the Engineering Profession Act, 2000 (Act No. 46 of 2000);

"Professional Technologist" means a person holding registration as a Professional Engineering Technologist in terms of the Engineering Profession Act, 2000;

"provincial director" means the provincial director as defined in regulation 1 of the General Administrative Regulations, 2003;

"scaffold" means a temporary elevated platform and supporting structure used for providing access to and supporting workmen or materials or both;

"shoring" means a system used to support the sides of an excavation and which is intended to prevent the cave-in or the collapse of the sides of an excavation;

"structure" means-

- any building, steel or reinforced concrete structure (not being a building), railway line or siding, bridge, waterworks, reservoir, pipe or pipeline, cable, sewer, sewage works, fixed vessels, road, drainage works, earthworks, dam, wall, mast, tower, tower crane, bulk mixing plant, pylon, surface and underground tanks, earth retaining structure or any structure designed to preserve or alter any natural feature, and any other similar structure;
- any falsework, scaffold or other structure designed or used to provide support or means of access during construction work; or
- any fixed plant in respect of construction work which includes installation, commissioning, decommissioning or dismantling and where any construction work involves a risk of a person falling;

"suspended platform" means a working platform suspended from supports by means of one or more separate ropes from each support ;

"temporary works" means any falsework, formwork, support work, scaffold, shoring or other temporary structure designed to provide support or means of access during construction work;

"the Act" means the Occupational Health and Safety Act , 1993 (Act No. 85 of 1993);

"tunneling" means the construction of any tunnel beneath the natural surface of the earth for a purpose other than the searching for or winning of a mineral.

Reference should be made to the following documentation in conjunction with this Safety Specification (including existing surveys, drawings and reports):

Tender documents Drawings

IMPORTANT NOTE:
This Health and Safety Specification has been prepared to comply with the requirements of the Construction Regulations 2014.

1.2 BACKGROUND TO THE HEALTH AND SAFETY SPECIFICATION

Historically, the Construction Industry has had a poor health and safety record. Due to the complex and potentially dangerous operations being undertaken, there is a high risk of incidents, accidents and injuries. In many instances poor adherence to the Act and Regulations has resulted in severe consequences for Health and Safety performance. The Client is determined that the highest Health and Safety standards will prevail throughout the Contract and that there will be full commitment from all parties involved.

To achieve this goal the Client has prepared this Health and Safety Specification. The Health and Safety Specification sets out guidelines and minimum levels of awareness and guidance for Health and Safety requirements for the project. Contractual responsibility for adhering to these requirements rests with the Contractors. All employees are encouraged to be pro-active in compliance.

The Client is committed to ensuring the highest Health and Safety standards for all work undertaken within the Contract.

Contractors as employers are fully responsible and accountable for compliance with all Health and Safety requirements.

IMPORTANT NOTE:

Compliance with the Occupational Health and Safety Act and Regulations shall not be limited to this Health and Safety Specification and definitions contained in this document.

Contractors shall be conversant with the requirements and effects of Health and Safety legislation upon their activities, in particular the Construction Regulations, 2014, and the Occupational Health and Safety Act, 1993, and to have made adequate resource in their tender submission to comply with all legislative requirements.

The Contractor's personnel will be responsible for the auditing of the implementation of the Health and Safety Specification and maintaining the document control and record systems associated with the Health and Safety Specification. The Client will conduct Health and Safety audits of the works too.

1.3 PURPOSE OF THE HEALTH AND SAFETY SPECIFICATION

The purpose of this site specific Health and Safety Specification is to comply with legal requirements and to provide health and safety information about specific project risks known by the Client, Designer and Client Agent to be applicable to this project. This document also provides minimum health and safety requirements, standards and expectations that the principal contractor and contractors must adhere to.

The Contractor must take into account all information in this specification and ensure that their tenders include adequate resource and competence to deal with the matters detailed herein so that all relevant contents are dealt with in a way which is in compliance with legislation and the ethical concerns for the safeguarding of employees, contractors and other persons affected by the construction activities.

The Health and Safety Specification will be implemented during construction of the works and any construction activity that the Client has control over.

This will also assist in ensuring that all the costs related to the compliance with Occupational Health Act 85 of 1993 and the Construction Regulations 2014, as well as this Health and Safety Specification, are taken into consideration at Tender stage.

No advice, approval of any document required by the Health and Safety Specification such as hazard

identification and risk assessment action plans or any other form shall be construed as an acceptance by the Client of any obligation that absolves the Contractor from achieving the required level of performance and compliance with legal requirements.

Further, there is no acceptance of liability by the Client which may result from the Contractor failing to comply with the Health and Safety Specification unless the Client has issued an instruction to any requirement, i.e. the Contractor remains responsible for achieving the required performance levels.

1.4 IMPLEMENTATION OF THE HEALTH AND SAFETY SPECIFICATION

This Health and Safety Specification forms an integral part of the Contract, and Contractors shall make it an integral part of their Contracts with Sub Contractors and Suppliers. Contractors employed by the Client are to ensure that the provisions of the Health and Safety Specification are applied both on the site and in respect of all off site activities relating to the project, in particular in transport activities and project dedicated off site fabrication works.

The Contractor shall enforce the provisions of the Health and Safety Specification amongst all sub contractors and suppliers for the project.

The Contractor shall sign the acknowledgment on the last page of this safety specification that he/she has familiarized him/herself with the content of the Health and Safety Specification and shall comply with all obligations in respect thereof.

The successful Contractor will be required to compile a Health and Safety Plan based on the requirements of the Occupational Health Act 85 of 1993 and these Specifications, which will need to be approved by Client prior to commencement with construction work.

1.4.1 Client Duties

In terms of the Construction Regulations 2014 the Client (or their Agent, where appointed) has legal duties. Where an Agent (refer to "definitions" section of this document) is appointed in terms of this project, these Health and Safety duties assigned will also apply.

All references to "Client" will apply to their appointed "Client Agent", where so appointed, in this Health and Safety Specification.

The Client must:

- Prepare a baseline risk assessment for the construction work
- Prepare a suitable, sufficiently documented and coherent site specific Health and Safety specification for the intended construction work, based on the baseline risk assessment
- Include the health and safety specification in the tender documents
- Ensure that potential principal contractors submitting tenders have made adequate provision for the cost of health and safety measures
- Ensure that the principal contractor to be appointed has the necessary competencies and resources to carry out the construction work safely
- Take reasonable steps to ensure co-operation between all contractors appointed by the client to enable each of those contractors to comply with the regulations
- Ensure, before work commences, that every principal contractor is registered and in good standing with the compensation fund, or with a licensed compensation insurer as contemplated in the Compensation for Occupational Injuries and Diseases Act, 1993 (Act no 130 of 1993)
- Appoint each principal contractor in writing for the project, or part thereof
- Discuss and negotiate with the principal contractor the contents of the principal contractor's safety plan and thereafter finally approve that plan for implementation
- Ensure that a copy of the principal contractor's health and safety plan is implemented and maintained
- Ensure that periodic health and safety audits and document verification are conducted at intervals mutually agreed upon between the principal contractor and any contractor, but at

least once every 30 days

- Ensure that a copy of the health and safety audit report is provided to the principal contractor within 7 days after the audit
- Stop any contractor from executing a construction activity which poses a threat to the health and safety of persons which is not in accordance with the principal contractor's health and safety plan for site
- Where changes are brought about to the design or construction work, make sufficient health and safety information and appropriate resources available to the principal contractor to execute the work safely
- Ensure that the health and safety file is kept and maintained by the principal contractor.
- Where the client requires additional work to be performed as a result of a design change or error in construction due to the actions of the client, the client must ensure that sufficient safety information and appropriate additional resources are available to execute the required work safely.
- Where more than one principal contractor is appointed, the client must take reasonable steps to ensure co-operation between all principal contractors and contractors to ensure compliance with the Regulations
- Where the Client has appointed a Client Agent for the project, their details for this project are contained in the Project Directory section of this health and safety specification.

1.4.2 Designer Duties

It must be noted that the Designer also has Health and Safety duties assigned in terms of the Construction Regulations. Where the contractor fulfils a design function in terms of this project (refer to "definitions" section of this document), these duties will also apply. Please refer to Regulation 6 of the Construction Regulations 2014.

Please note that the designer of temporary works must ensure that:

- all temporary works are adequately designed so that it will be capable of supporting all anticipated vertical and lateral loads that may be applied;
- the designs of temporary works are done with close reference to the structural design drawings issued by the contractor, and in the event of any uncertainty consult the contractor;
- all drawings and calculations pertaining to the design of temporary works are kept at the office of the temporary works designer and are made available on request by an inspector; and
- the loads caused by the temporary works and any imposed loads are clearly indicated in the design.

1.5 PROJECT DIRECTORY

Project Client	City of Cape Town	Tel
Contact Person		e-mail:
Construction Safety Agent		
Contact Person		e-mail:
Architect		Tel
Contact Person		e-mail
Civil Engineer		Tel:
Contact Person		e-mail:
Project Manager		Tel:
Contact Person		e-mail:
Structural Engineer		Tel:
Contact Person		e-mail:
Plant Operator		Tel:
Contact Person		e-mail:

OTHER PARTIES DIRECTORY

Department of Labour for submission of Annexure 2: Notification of Construction Work WESTERN CAPE –	Tel: Email : Cell:
Department of Labour Bellville	Tel: Fax:
Telecommunications, Water and Electricity Contractor to get wayleaves from service providers for information on nature and location of services	

Gas n/a	

1.6 PROJECT DETAILS
Description of Works Design and build Mechanical and Electrical works for Construction of MBR plant and bottleneck alleviation. This contract consists of work at new MBR fine screening facility, biological reactor equipment, MBR plant equipment, four clarifiers, chemical dosing and disinfection equipment, pumping equipment etc. Work will include, but not be limited to, the supply and installation, testing and commissioning of all associated equipment along with control and instrumentation (PLCs, SCADA, HMI etc.). This section to be read in conjunction with Part C3: Scope of Work. This description of the works is not necessarily complete and shall not limit the work to be carried out by the Contractor under this Contract.
Start Date To be confirmed after award.
Anticipated Construction Duration Refer to C.1.2 of Contract Data.
Completion Date Refer to C.1.2 of Contract Data.

1.7 EXISTING ENVIRONMENT
Hazards particular to this project by virtue of location: Existing WWTW with office complex which will remain open during the construction works – Municipal staff and visitors will be present. Potential crime hotspot Underground and overhead live services present Exposure to raw sewage due to presence of WWTW processing structures Hazardous substances stored on the premises including chlorine, sodium hypochlorite, ferric sulphate and citric acid Asbestos containing underground services, roof sheeting and rainwater goods

Overhead, Above Ground and Underground Services crossing the site: Overhead: Electrical Underground: Water, electricity, sewer, storm water, Telkom Ground level: Mast lighting, sub station Service Drawings available: Partial information only Wayleaves required: Yes Permits required: Yes Isolations required: Yes, for sewage, water and electricity
Existing structures and surrounding land use (with a significant impact on Health & Safety): Usual WWTW facilities with associated structures and one storey admin building block. Site fenced off with existing access control. Northern boundary is sand quarry and dunes, southern boundary is the N2 and Khaylelitsha township, eastern boundary is the ocean and western boundary is Macasser Road.
Existing ground conditions and ground survey report: Yes, a geo tech report is available from the Project Manager, Ahigh water table can be expected as well as sandy soils.
Existing Traffic Systems Condition: 2 way tarred roads in good condition Restrictions to access: None known Speed restrictions: Signposted as 80 kph zone in area of WWTW
1.8 AVAILABLE DRAWINGS
Refer to tender documentation.
1.9 PROJECT HEALTH AND SAFETY REQUIREMENTS

Significant health and safety hazards identified by Designer and Client Agent:

Confined spaces – Confined space work must be heavily monitored by competent appointed person, to include, but not restricted to, ensuring that the confined space is sufficiently ventilated prior to entry. Oxygen levels to be tested in confined space to ensure that it is safe for entry. Personal protective equipment to be worn (such as proper masks) if air supply insufficient or not of sufficient quality. Emergency procedures to be in place. Isolation of sewage flow will be required before confined space permit can be issued. Permit system to be in place by contractor.

Working with asbestos – removal of asbestos containing products - All work with asbestos to be done strictly in accordance with the Asbestos Regulations and by a registered contractor only (registered in the last 12 months with Department of Labour). AIA must supply plan of work for project. Removal and disposal of asbestos must be strictly monitored and the registered Contractor appointed must abide by Asbestos Regulations GNR 155 of 10 February 2002.

Excavations up to 2m – method statement to be in place and daily excavation inspection register must be completed by the excavation supervisor. All workers must receive induction prior to commencement of works. Excavations must be adequately supported, braced and maintained by a competent person so that they are capable of supporting all anticipated vertical and lateral loads that may be applied to them. Support mechanisms to include shoring to prevent any excavation edges from collapsing. Appropriate safety measures must be put in place by the contractor to prevent unauthorised entry to excavations, including fencing, barriers and warning signage.

Use of mobile and tower crane: All operators must provide copies of their competency and medical certificates and driver's license. Loads must be slung by person with appropriate training and competence. Wind factor must be considered when lifting loads. Daily plant inspection registers to be completed and records kept in the safety file. Rotating amber lights and reverse alarms to be active when operating mobile cranes on site. Plant must be effectively separated from members of public and unauthorised personnel. Use trained flag persons as applicable. Exclusion zone to be in operation as applicable. Watch spaces and ground bearing capacity of ground when positioning and using crane.

Exposure of personnel to raw sewage – appropriate and adequate PPE must be provided and worn. Access to suitable ablutions with hand washing facilities must be provided. Hepatitis / tetanus inoculations are required for all contractors' staff working on site. Contractor to educate work force on dangers associated with contamination by raw sewage and preventative measures.

Leachate contamination into soil around WWTW structures – treat excavated soil as being potentially contaminated. Bacterial and viral contaminants commonly found in WWTW may be present.

Handling of hazardous chemicals – there are various hazardous chemicals found in buildings at the WWTW – these may only be handled in strict accordance with the appropriate MSDS sheets and after all required protective measures are in place, including provision of personal protective equipment and consideration of the appropriate emergency procedures.

Presence of live underground and overhead services - Trenching for installation of new services will be done very close to existing underground cables. Existing service drawings are only partially complete. The contractor will be responsible for carefully locating underground services in the areas of works and making them safe. Construction works involving working near or under overhead services may only be done once the services have been made safe from accidental contact by plant or materials.

Interface with municipal workers at the WWTW – the WWTW will remain open during the construction works and the contractor will be required to ensure that there are sufficient safeguards in place to prevent unauthorised access into construction areas by WWTW staff. This will include the provision of sufficient barriers, exclusion zones and warning signage by the contractor.

Other construction hazards expected are as follows:
Asbestos
Bricklaying
Compacting and Filling
Compactor Operations

ACTIVITIES REQUIRING APPROVED METHOD STATEMENTS (FOR HEALTH AND SAFETY)
All contract programme items will require submission of method statements to the safety agent for review prior to commencement
ACTIVITIES REQUIRING PERMITS (FOR HEALTH AND SAFETY PURPOSES)
Permit to Dig / Enter Excavations: Yes, contactor to provide Permit to Work with Electricity: Yes, contactor to provide Confined Space Permit: Yes, contactor to provide Hot Works Permit: Yes, contactor to provide Permit to Work under Power Lines: TBA Blasting: n/a Temporary Works: Yes
CONTRACTOR SAFETY OFFICER PROVISION Records of safety audits undertaken by the Contractor's Safety Officer must be kept on site in the safety file and non-conformances reported by the Safety Officer to the Contractor's management team. All non conformances identified by the Safety Officer must be investigated and corrective action taken by the Contractor to prevent re-occurrence. Please note that from 7th August 2015 the safety officer must have formally applied to be professionally registered with the SACPCMP. If their registration is not yet complete, the safety officer must be in possession of a "Registration Verification Letter" which will be issued by the SACPCMP. Principal Contractor will be required to place a full time safety officer on the site.

MEDICAL CERTIFICATE OF FITNESS

The contractor must ensure that their employees on site have a valid medical certificate of fitness, specific to the construction work being performed, issued by an occupational health practitioner in the form of an Annexure 3 template.

MANAGEMENT AND SUPERVISION OF CONSTRUCTION WORK

A principal contractor must, in writing, appoint one full-time competent person as the construction manager with the duty of managing all the construction work on a single site, including the duty of ensuring occupational health and safety compliance, and in the absence of the construction manager an alternate must be appointed by the principal contractor.

TRAFFIC MANAGEMENT AND TRAFFIC SAFETY OFFICER PROVISION

Minimal traffic management required therefore no Traffic Safety Officer (TSO) or Traffic Management Plan required.

ENVIRONMENTAL CONDITIONS

Contractor must take into account adverse weather conditions on site activities and implement control measures to mitigate risk. This includes risk of exposure to excessive heat, cold, rain and wind. The open nature of the site works will not preclude any of the above.

Weather considerations must be allowed for on site, especially in terms of heavy rains stopping work, lightning, high winds and heat stress exposures.

For lightning the following guide exists:

- Where high level construction or maintenance work is being performed, thunder storms present a wind and rain risk to the workers in elevated positions but lightning is also a significant risk. To establish how far the lightning is from a work area, this distance can be determined by multiplying the time difference in seconds between the actual lightning flash seen and the hearing of the thunder rumble by 344m per second (ie. the speed of sound travel) to calculate the distance to the lightning flash in metres.
- Distance to lightning in metres = seconds time difference between the flash and its rumble x 344 m/sec
- This means that a 3 second delay represents a lightning flash just over 1 km distant. Explosives factories use a 10 second delay (a 3.4km distance) for production building evacuation because of lightning risk.

ARRANGEMENTS FOR ACCESS, PARKING, DELIVERIES, ETC

Access to site by Construction Vehicles: Off security access off Baden Powell Road initially, then thereafter off Macasser Road.

Access to site by Construction Workers and Visitors: As above

ARRANGEMENTS FOR SITE CAMP AND YARD

Site camp location and set up

- Restrictions / requirements:
- Storage areas:
- Security:

} Contractor to advise in consultation with Engineer / Professional Team

ARRANGEMENTS FOR ABLUTIONS

Ablutions and Welfare Arrangements
Contractor to supply ablutions and facilities in line with the Construction Regulations 2014, refer to section 2.31 of this health and safety specification regarding the below. Please note that toilets should be provided with built in facilities for hand washing:

- Toilets: }
- Washing facilities: }
- Drinking Water: } Contractor to provide as per Regulations
- Shelter: }
- Showers: }

PROTECTION OF SITE AGAINST UNAUTHORISED ACCESS BY PUBLIC

Excavation Fencing: Note that excavations accessible to public, or adjacent to public roads / thoroughfares, must have (1) barrier / fence of at least 1m in height, and (2) warning illuminants at night or when visibility is poor, or have other suitable precautionary measures if both of these are not practicable.

Orange plastic mesh fencing required as a minimum for excavations up to 2m depth. Deeper excavations must be protected by means of crowd control barriers (or similar). Means of prevention of falls into excavations by vehicles will be required to be in place by the contractor.

General Fencing of Site: Note that construction sites in built up areas adjacent to public way must be fenced off and have controlled access points.

WWTW has existing fencing and access control to keep unauthorised persons out of the Zandvliet WWTW area. Orange plastic mesh fencing required as a minimum to prevent WWTW personnel from entering construction works areas.

Warning Notices: Construction warning signage must be prominently displayed to avoid unauthorised access to site and to warn of dangers associated with construction works.

Look Outs: TBA

PERSONAL PROTECTIVE EQUIPMENT (PPE)

The Client requires the Contractor to ensure that employees (and others under his/her control) wear the following minimum PPE:

Overalls: Yes

Safety Harnesses: Yes

Hard Hats: Yes

Reflective Vests: Yes

Goggles / gloves / ear defenders / respiratory protection: Yes

Safety Footwear: Yes

Specialist Equipment (eg: for confined Spaces): Confined space equipment

HAZARDOUS SUBSTANCES

The following materials and substances have, or may have, to be used in the works and are identified as potentially posing special health and / or safety hazards during the project. Appropriate measures will need to be specified for their control:

Cement, Diesel, Petrol, chlorine, sodium hypochlorite, ferric sulphate and citric acid

1.10 INTERFACE AND RESTRICTIONS BY CLIENT

Contractor must note that the following Client activities will continue during construction:
WWTW will remain operational during the construction works

The following Client safety rules and/or requirements are to be observed:
All workers are to receive induction prior to commencement of work on site.
Other safety rules and requirements to be advised at induction.
Please also refer to tender document.

Restrictions on times, access or other restrictions by Client
Refer to C.1.2 of Contract Data.
Other restrictions may be advised at induction.

1.11 SAFETY FILE RETURN TO CLIENT

The Safety File for the Project is to be handed over by the Principal Contractor to the Client upon Project Completion in a hard copy format.

2.0 FURTHER REQUIREMENTS

2.1 Duties of Principal Contractor / Contractor in terms of Construction Regulations 2014

A Principal Contractor must:

- provide and demonstrate to the client a suitable, sufficiently documented and coherent site specific health and safety plan, based on the client's documented health and safety specifications, which plan must be applied from the date of commencement of and for the duration of the construction work and which must be reviewed and updated by the principal contractor as work progresses;
- open and keep on site a health and safety file, which must include all documentation required in terms of the Act and these Regulations, which must be made available on request to an inspector, the client, the client's agent or a contractor; and
- on appointing any other contractor, in order to ensure compliance with the provisions of the Act –
  - provide contractors who are tendering to perform construction work for the principal contractor, with the relevant sections of the health and safety specifications pertaining to the construction work which has to be performed;
  - ensure that potential contractors submitting tenders have made sufficient provision for health and safety measures during the construction process;
  - ensure that no contractor is appointed to perform construction work unless the principal contractor is reasonably satisfied that the contractor that he or she intends to appoint, has the necessary competencies and resources to perform the construction work safely;
  - ensure prior to work commencing on the site that every contractor is registered and in good standing with the compensation fund or with a licensed compensation insurer as contemplated in the Compensation for Occupational Injuries and Diseases Act, 1993;
  - appoint each contractor in writing for the part of the project on the construction site
  - take reasonable steps to ensure that each contractor's health and safety plan is implemented and maintained on the construction site;
  - ensure that the periodic site audits and document verification are conducted at intervals mutually agreed upon between the principal contractor and any contractor, but at least once every 30 days;
  - stop any contractor from executing construction work which is not in accordance with the client's health and safety specifications and the principal contractor's health and safety plan for the site or which poses a threat to the health and safety of persons;
  - where changes are brought about to the design and construction, make available sufficient health and safety information and appropriate resources to the contractor to execute the work safely;
  - discuss and negotiate with the contractor the contents of their health and safety plan and finally approve that plan for implementation;
  - ensure that a copy of both the principal contractor and contractor's health and safety plan is available on request to an employee, an inspector, a contractor, the client or the client's agent;
  - hand over a consolidated health and safety file to the client upon completion of the construction work, to include a record of all drawings, designs, materials used and other similar information concerning the completed structure;
  - in addition to the documentation required in the health and safety file include and make available a

comprehensive and updated list of all the contractors on site accountable to the principal contractor, the agreements between the parties and the type of work being done;

- ensure that all his or her employees have a valid medical certificate of fitness specific to the construction work to be performed and issued by an occupational health practitioner in the form of Annexure 3.

A contractor must prior to performing any construction work-

- provide and demonstrate to the principal contractor a suitable and sufficiently documented health and safety plan, based on the relevant sections of the client's health and safety specification and provided by the principal contractor, which plan must be applied from the date of commencement of and for the duration of the construction work and which must be reviewed and updated by the contractor as work progresses;

- open and keep on site a health and safety file, which must include all documentation required in terms of the Act and these Regulations, and which must be made available on request to an inspector, the client, the client's agent or the principal contractor;

- before appointing another contractor to perform construction work be reasonably satisfied that the contractor that he or she intends to appoint has the necessary competencies and resources to perform the construction work safely;

- co-operate with the principal contractor as far as is necessary to enable each of them to comply with the provisions of the Act;

- as far as is reasonably practicable, promptly provide the principal contractor with any information which might affect the health and safety of any person at work carrying out construction work on the site, any person who might be affected by the work of such a person at work, or which might justify a review of the health and safety plan.

Where a contractor appoints another contractor to perform construction work, the duties that apply to the principal contractor will apply to the contractor as if he or she were the principal contractor.

A principal contractor must take reasonable steps to ensure co-operation between all contractors appointed by the principal contractor to enable each of those contractors to comply with these Regulations.

No contractor may allow or permit any employee or person to enter any site, unless that employee or person has undergone health and safety induction training pertaining to the hazards prevalent on the site at the time of entry.

A contractor must ensure that all visitors to a construction site undergo health and safety induction pertaining to the hazards prevalent on the site and must ensure that such visitors have the necessary personal protective equipment.

A contractor must at all times keep on his or her construction site records of the health and safety induction training and such records must be made available on request to an inspector, the client, the client's agent or the principal contractor.

A contractor must ensure that all his or her employees have a valid medical certificate of fitness specific to the construction work to be performed and issued by an occupational health practitioner in the form of Annexure 3 (a template of which can be found in the Construction Regulations, 2014).

2.2 *Management and Supervision of Construction Work*

A principal contractor must, in writing, appoint one full-time competent person as the construction manager with the duty of managing all the construction work on a single site, including the duty of ensuring occupational health and safety compliance, and in the absence of the construction manager an alternate must be appointed by the principal contractor.

A principal contractor must upon having considered the size of the project, in writing appoint one or more assistant construction managers for different sections thereof: Provided that the designation of any such person does not relieve the construction manager of any personal accountability for failing in his or her management duties in terms of this regulation.

Where the construction manager has not appointed assistant construction managers, or, in the opinion of an inspector, a sufficient number of such assistant construction managers have not been appointed, that inspector must direct the construction manager in writing to appoint the number of assistant construction managers indicated by the inspector, and those assistant construction managers must be regarded as having been appointed.

No construction manager appointed in terms of the Regulations may manage any construction work on or in any construction site other than the site in respect of which he or she has been appointed.

A contractor must, after consultation with the client and having considered the size of the project, the degree of danger likely to be encountered or the accumulation of hazards or risks on the site, appoint a full-time or part-time construction health and safety officer in writing to assist in the control of all health and safety related aspects on the site: Provided that, where the question arises as to whether a construction health and safety officer is necessary, the decision of an inspector is decisive.

No contractor may appoint a construction health and safety officer to assist in the control of health and safety related aspects on the site unless he or she is reasonably satisfied that the construction health and safety officer that he or she intends to appoint is registered with a statutory body approved by the Chief Inspector and has necessary competencies and resources to assist the contractor

A construction manager must in writing appoint construction supervisors responsible for construction activities and ensuring occupational health and safety compliance on the construction site.

A contractor must, upon having considered the size of the project, in writing appoint one or more competent employees for different sections thereof to assist the construction supervisor, and every such employee has, to the extent clearly defined by the contractor in the letter of appointment, the same duties as the construction supervisor: Provided that the designation of such employee does not relieve the construction supervisor of any personal accountability for failing in his or her supervisory duties.

Where the contractor has not appointed such an employee, or, in the opinion of an inspector, a sufficient number of such employees have not been appointed, that inspector must instruct the employer to appoint the number of employees indicated by the inspector.

No construction supervisor appointed may supervise any construction work on or in any construction site other than the site in respect of which he or she has been appointed: Provided that if a sufficient number of competent employees have been appropriately designated on all the relevant construction sites, the appointed construction supervisor may supervise more than one site.

2.3 *Notification of Intention to Commence Construction Work*

The Contractor shall notify the Provincial Director of the Department of Labour of the intention to commence construction work at least 7 days prior to the works commencing if the intended construction work will:

- Include excavation work
- Include work at height where there is a risk of falling
- Include the demolition of a structure, or
- Include the use of explosives to perform construction work.

If the construction work involves construction of a single storey dwelling for a client, and such client will be residing in such dwelling upon completion, the contractor must also notify the Provincial Director of the Department of Labour at least 7 days before the works commence.

This must be done on a form similar to an Annexure 2 (template of which can be found in the Construction Regulations, 2014). A copy of the notification letter to the Provincial Director shall be forwarded to the Client for record purposes.

2.4 Construction Work Permit

It must be noted that from August 2015 certain projects will require a construction work permit to be applied for at least 30 days prior to the work being carried out:

- Works contract value is equal to or exceeding R130 million or Construction Industry Grading Board (CIDB) grading level 9

It is the client's responsibility to apply for this permit from the Provincial Director and construction work may not commence until the permit has been issued by the Provincial Director.

A copy of this permit will be required to be kept in the principal contractors safety file, and the site specific number issued by the Provincial Director must be displayed at the site entrance.

2.5Assignment of Contractor's Responsible Persons to Manage Health and Safety on Site

The Contractor shall submit management and supervisory appointments as well as any relevant appointments in writing (as stipulated by the Construction Regulations 2014 and the Occupational Safety and Health Act 1993), prior to commencement of work (refer to Annexure B at the end of this Health and Safety Specification).

2.6Competency for Contractor's Responsible Persons

The Contractor's responsible persons shall be competent in health and safety and be familiar with the Occupational Health and Safety Act 1993, and applicable regulations. Valid proof of pertinent health and safety courses attended by such persons will be required to be presented to the Client.

2.7Compensation of Occupational Injuries and Diseases Act 130 of 1993 (COIDA)

The successful Contractor shall submit to the Client a valid letter of good standing with the Compensation Insurer prior to appointment.

2.8 Occupational Health and Safety Policy

The Contractor shall submit their Health and Safety Policy, prior to construction commencement, signed by the Chief Executive Officer. The Policy must outline objectives and how they will be achieved and implemented within the company operations.

2.9 Health and Safety Organogram

The Contractor shall submit an organogram, prior to construction commencement, outlining the Health and Safety Site Team that will be assigned to the project, if successful with the tender. In cases where appointments have not been made, the organogram shall reflect the position. The organogram shall be updated, when there is a change in the site team.

2.10 Risk Assessments

Baseline Risk Assessment

The Client shall cause a baseline risk assessment to be conducted by a competent person before the design process and tender process commence, and the assessed risks shall form part of the health and safety specifications.

The Contractor must, before commencement of any construction work, and during construction work, have risk assessments performed by a competent person appointed in writing, which risk assessments form part of the health and safety plan to be applied on the site and must include:

- The identification of the risks and hazards to which persons may be exposed to;
- An analysis and evaluation of the risks and hazards identified; based on a documented method
- A documented plan and applicable safe work procedures to mitigate, reduce or control the risks and hazards that have been identified;
- A monitoring plan; and
- A review plan

The Contractor must ensure that, as far as is reasonably practicable, ergonomic related hazards are analysed, evaluated and addressed in a risk assessment.

The Contractor must ensure that all employees under his control are informed, instructed and trained by a competent person regarding any hazard and the related work procedures and/or control measures before any work commences and thereafter at the times determined in the risk assessment monitoring and review plan of the relevant site.

The Principal Contractor must ensure that all contractors are informed regarding any hazard that is stipulated in the risk assessment before any work commences and thereafter at the times determined in the risk assessment monitoring and review plan of the relevant site.

The Contractor must consult with the health and safety committee or with a representative trade union or representative group of employees if no health and safety committee exists, on the monitoring and review of the risk assessments for the site.

The Contractor must ensure that copies of risk assessment for this site are available on site for inspection purposes by interested parties (inspector, the client, client's agent, any contractor, any employee, a representative trade union, a health and safety representative or safety committee member.

A Contractor must review the relevant risk assessment where changes are effected to the design and/or construction that result in a change to the risk profile, or when an incident has occurred.

Preventative measures must first address the elimination of the hazard or risk. Should PPE be required to reduce risk, the equipment or clothing to be used must be SABS approved.

In general the Contractor must ensure that the Risk Assessment involves identifying the hazards present in a work activity on site. This is followed by an evaluation of the extent of the risk involved taking into account those precautions already being taken.

The following general principle should be followed when conducting a risk assessment:

- All relevant risks and/or hazards should be systematically addressed;
- The risk assessment should address what actually happens in the workplace during the work activity;
- All employees and those who may be affected must be considered, including maintenance staff, security guards, visitors and subcontractors;
- The risk assessment should highlight those groups and individuals who may be required to work alone or who have disabilities;

- The risk assessment process should take into account the existing safety measures and controls.
- The level of detail on a risk assessment should be appropriate to the level of risk.

2.11 Health and Safety Representative(s)

The Contractor shall ensure that Health and Safety Representative(s) is/are elected and trained to carry out his / her functions. The appointment must be in writing. The Health and Safety Representative shall carry out regular inspections, keep records and report to the supervisor to take appropriate action. He / she shall attend Health and Safety Committee Meetings. The Health and Safety Representative shall be part of the team that will investigate incidents, accidents and non-conformances.

2.12 Health and Safety Committee

Where two or more health and safety representatives have been appointed on site, the Contractor shall ensure that monthly health and safety meetings are held with such representatives and minutes are kept on record. Meetings must be organized and chaired by the Contractor's Health and Safety Committee Chairperson. Minutes of these meetings must be available for the employees of the contractor to refer to.

2.13 Medical Certificate of Fitness

The contractor must ensure that their employees on site have a valid medical certificate of fitness, specific to the construction work being performed, issued by an occupational health practitioner in the form of an Annexure 3 template (refer to the Construction Regulations 2014 on the Department of Labour website for a sample of this form).

2.14 Health and Safety Training

The Contractor shall quarterly conduct a training needs analysis to ascertain what health and safety training is required. A plan of action should be devised and forwarded to the Client for records. Once the identified people have attended the training, the Contractor must provide the Client with copies of certificates obtained.

2.14.1 Induction

No Contractor may allow or permit any employee or person to enter site unless they have undergone health and safety induction training pertaining to the hazards prevalent on site at the time of entry. This includes visitors to site. The Contractor must ensure that visitors to site have the necessary protective equipment (PPE). A copy of attendance registers of all employees who attend inductions shall be kept.

2.14.2 Awareness

The Contractor shall conduct periodic toolbox talks on site, preferably weekly or before any hazardous work takes place. The talks shall cover the relevant activity and an attendance register must be signed by all attendees. This record of who attended and the content of the topic will be kept on the site health a safety file as evidence of training.

2.15 Competency

After the Contractor has identified the training to be conducted as part of the competency requirement, and based on Risk Assessment, he shall send the relevant persons on appropriate courses and keep certificates of training for reference. Familiarity with the Health and Safety Act and Regulations is an integral part of the definition of competence.

2.16 General Record Keeping

The Contractor shall keep and maintain Health and Safety records to demonstrate compliance with the Health and Safety Specification and the Occupational Health and Safety Act. The contractor shall ensure that all records of incidents, spot fines, training etc. are kept on site. All documents shall be available for inspection by the Client, or the Department of Labour's Inspectors.

2.17 *General Inspection, Monitoring and Reporting*

The Contractor shall carry out inspections as required by this Health and Safety Specification, as well as by health and safety legislation.

2.18 *Emergency Procedures*

The Contractor shall submit a detailed Emergency Procedure for approval by the Client prior to commencement on site. The procedure shall detail the response plan including the following:

- List of key personnel;
- Details of emergency services;
- Actions or steps to be taken in the event of the emergency; and
- Information on hazardous materials / situations, including each material's hazardous potential impact or risk on the environment or human and measures to be taken in the event of an accident.

Emergency procedure(s) shall include, but shall not be limited to, fire, spills, accidents to employees, use of hazardous substances, dangers as a result of riot / service deliver protests / intimidation, etc. The Contractor shall advise the Client in writing of any on-site emergencies, together with a record of action taken, within 24 hours of the emergency occurring. A contact list of all service providers (Fire Department, Ambulance, Police, Medical and Hospital, etc) must be maintained and available to site personnel.

2.19 *First Aid Box and First Aid Equipment*

The Contractor shall provide first aid box/es and appoint, in writing, First Aider(s) for this project in line with the results of the Contractor's risk assessment for the project, this health and safety specification as well as the provisions of the General Safety Regulations. The appointed First Aider(s) are to be sent for accredited first aid training before starting on site. Valid certificates are to be kept on site.

First Aid box/es must be adequately stocked at all time, accessible and be controlled by a qualified First Aider. If required by the Client, the Contractor shall have a stretcher on site to be used in case of a serious incident.

2.20 *Accident / Incident Reporting and Investigation*

The Contractor shall, in addition to the prescribed requirements of the Occupational Health and Safety Act and General Safety Regulations, investigate, record and report all Section 24 reportable incidents to the Client within 24 hours of the incident occurring. Incident investigations shall be conducted by the Contractor's appointed Accident Investigator – this Investigator must be a competent person or persons who have sufficient knowledge to carry out an investigation.

In the event of a fatality or a permanent disabling injury the Contractor must submit proof of reporting of incident to Department of Labour as well as proof of preventative measures to the Client. The Client reserves the right to conduct investigations into any incidents that they deem fit and the Contractor is required to provide full co-operation in this regard.

2.21 *Hazards and Potential Situations*

The Contractor shall immediately notify other Contractors of any hazardous or potentially hazardous situations, which may arise during performance of the activities.

2.22 *Occupational Health and Safety Signage*

The Contractor shall ascertain and provide adequate on site health and safety signage. This signage shall include, but shall not be limited to, Hard Hat / Helmet Area; Safety Shoes to be worn on site; Dust Masks to be worn in areas where there might be exposure to excessive dust; Ear Plugs / Muffs to be worn where there might be noise exposure over 85 db; Gloves; Safety Goggles; Safety Harness, Workers in Excavation, traffic management, etc. The Contractor shall be responsible to maintain the quality and replacement of signage.

2.23 *Management Of Contractors by Principal Contractor*

The Principal Contractor shall ensure that all contractors under his control are complying with the respective Health and Safety Plans, as well as Health and Safety Legislation.

2.24 *Stacking of Materials*

In addition to the provisions for the stacking of articles in the General Safety Regulations, 2003, the contractor must ensure that –

- a competent person is appointed in writing with the duty of supervising all stacking and storage on a construction site;
- adequate storage areas are provided;
- there are demarcated storage areas; and
- storage areas are kept neat and under control.

2.25 *Housekeeping and General Safeguarding on Construction Sites*

A contractor must, in addition to compliance with the Environmental Regulations for Workplaces, 1987, promulgated by Government Notice No. R. 2281 of 16 October 1987, ensure that suitable housekeeping is continuously implemented on each construction site, including-

- the proper storage of materials and equipment;
- the removal of scrap, waste and debris at appropriate intervals;
- ensuring that materials required for use, are not placed on the site so as to obstruct means of access to and egress from workplaces and passageways;
- ensuring that materials which are no longer required for use, do not accumulate on and are removed from the site at appropriate intervals;
- ensuring that waste and debris are not disposed of from a high place with a chute, unless the chute complies with the requirements set out in the regulations;
- ensuring that construction sites in built-up areas adjacent to a public way are suitably and sufficiently fenced off and provided with controlled access points to prevent the entry of unauthorized persons; and
- ensuring that a catch platform or net is erected above an entrance or passageway or above a place where persons work or pass under, or fencing off the danger area if work is being performed above such entrance, passageway, or place so as to ensure that all persons are kept safe in the case of danger or possibility of persons being struck by falling objects.

2.26 *Construction Vehicles and Mobile Plant*

A contractor must ensure that all construction vehicles and mobile plant-

- are of an acceptable design and construction;
- are maintained in a good working order;
- are used in accordance with their design and the intention for which they were designed, having due regard to safety and health;
- are operated by a person who-
  - has received appropriate training, is certified competent and in possession of proof of competency and is authorised in writing to operate those construction vehicles and mobile plant;
  - has a medical certificate of fitness to operate those construction vehicles and mobile plant, issued by an occupational health practitioner in the form of Annexure 3.
- have safe and suitable means of access and egress;
- are properly organized and controlled in any work situation by providing adequate signalling or other control arrangements to guard against the dangers relating to the movement of vehicles and plant, in order to ensure their continued safe operation;
- are prevented from falling into excavations, water or any other area lower than the working surface by installing adequate edge protection, which may include guard-rails and crash barriers;
- are fitted with structures designed to protect the operator from falling material or from being crushed should the vehicle or mobile plant overturn;
- are equipped with an acoustic warning device which can be activated by the operator;

- are equipped with an automatic acoustic reversing alarm; and
- are inspected by the authorised operator or driver on a daily basis using a relevant checklist prior to use and that the findings of such inspection are recorded in a register kept in the construction vehicle or mobile plant.

A contractor must ensure that-

- no person rides or is required or permitted to ride on a construction vehicle or mobile plant otherwise than in a safe place provided thereon for that purpose;
- every construction site is organized in such a way that, as far as is reasonably practicable, pedestrians and vehicles can move safely and without risks to health;
- the traffic routes are suitable for the persons, construction vehicles or mobile plant using them, are sufficient in number, in suitable positions and of sufficient size;
- every traffic route is, where necessary, indicated by suitable signs;
- all construction vehicles and mobile plant left unattended at night, adjacent to a public road in normal use or adjacent to construction areas where work is in progress, have appropriate lights or reflectors, or barricades equipped with appropriate lights or reflectors, in order to identify the location of the vehicles or plant;
- all construction vehicles or mobile plant when not in use, have buckets, booms or similar appendages, fully lowered or blocked, controls in a neutral position, motors stopped, wheels chocked, brakes set and ignition secured;
- whenever visibility conditions warrant additional lighting, all mobile plant are equipped with at least two headlights and two taillights when in operation;
- tools, material and equipment are secured and separated by means of a physical barrier in order to prevent movement when transported in the same compartment with employees;
- vehicles used to transport employees have seats firmly secured and adequate for the number of employees to be carried; and
- all construction vehicles or mobile plant travelling, working or operating on public roads comply with the requirements of the National Road Traffic Act, 1996.

2.27 Electrical Installations and Machinery on Construction Sites

A contractor must, in addition to compliance with the Electrical Installation Regulations and the Electrical Machinery Regulations, ensure that –

- before construction commences and during the progress thereof, adequate steps are taken to ascertain the presence of and guard against danger to workers from any electrical cable or apparatus which is under, over or on the site;
- all parts of electrical installations and machinery are of adequate strength to withstand the working conditions on construction sites;
- the control of all temporary electrical installations on the construction site is designated to a competent person who has been appointed in writing for that purpose;
- all temporary electrical installations used by the contractor are inspected at least once a week by a competent person and the inspection findings are recorded in a register kept on the construction site; and
- all electrical machinery is inspected by the authorized operator or user on a daily basis using a relevant checklist prior to use and the inspection findings are recorded in a register kept on the construction site.

2.28 Use and Temporary Storage of Flammable Liquids on Construction Sites

A contactor must, in addition to compliance with the provisions for the use and storage of flammable liquids in the General Safety Regulations, 2003, ensure that –

- where flammable liquids are being used, applied or stored at the workplace concerned, it is done in a manner that does not cause a fire or explosion hazard, and that the workplace is effectively ventilated;
- no person smokes in any place in which flammable liquid is used or stored, and the contractor must affix a suitable and conspicuous notice at all entrances to any such areas prohibiting such smoking;

- an adequate amount of efficient fire-fighting equipment is installed in suitable locations around the flammable liquids store with the recognized symbolic signs;
- only the quantity of flammable liquid needed for work on one day is taken out of the store for use;
- all containers holding flammable liquids are kept tightly closed when not in actual use and, after their contents have been used up, are removed from the construction site and safely disposed of;
- where flammable liquids are decanted, the metal containers are bonded and earthed; and
- no flammable material, including cotton waste, paper, cleaning rags or similar material is stored together with flammable liquids

2.29 Water environments

A contractor must ensure that where construction work is done over or in close proximity to water, provision is made for –

- preventing persons from falling into water; and
- the rescuing of persons in danger of drowning.

A contractor must ensure that where a person is exposed to the risk of drowning by falling into the water, the person is provided with and wears a lifejacket.

2.30 Fire precautions on Construction Sites

A contractor must, in addition to compliance with the Environmental Regulations for Workplaces, 1987, ensure that –

- all appropriate measures are taken to avoid the risk of fire;
- sufficient and suitable storage is provided for flammable liquids, solids and gases;
- smoking is prohibited and notices in this regard are prominently displayed in all places containing readily combustible or flammable materials;
- in confined spaces and other places in which flammable gases, vapours or dust can cause danger-
  - only suitably protected electrical installations and equipment, including portable lights, are used;
  - there are no flames or similar means of ignition;
  - there are conspicuous notices prohibiting smoking;
  - oily rags, waste and other substances liable to ignite are without delay removed to a safe place; and
  - adequate ventilation is provided;
- combustible materials do not accumulate on the construction site;
- welding, flame cutting and other hot work are done only after appropriate precautions have been taken to reduce the risk of fire;
- suitable and sufficient fire-extinguishing equipment is placed at strategic locations or as may be recommended by the Fire Chief or local authority concerned, and that such equipment is maintained in a good working order;
- the fire equipment contemplated above is inspected by a competent person, who has been appointed in writing for that purpose, in the manner indicated by the manufacturer thereof;
- a sufficient number of workers are trained in the use of fire- extinguishing equipment;
- where appropriate, suitable visual signs are provided to clearly indicate the escape routes in the case of a fire;
- the means of escape is kept clear at all times;
- there is an effective evacuation plan providing for all -
  - persons to be evacuated speedily without panic;
  - persons to be accounted for; and
  - plant and processes to be shut down; and
- a siren is installed and sounded in the event of a fire.

2.31 Construction Employees' Facilities

A contractor must, in terms of the Construction Regulations 2014, provide:

- Shower facilities after consultation with the employees or employees representatives, or at least one shower facility for every 15 persons;
- at least one sanitary facility for each sex and for every 30 workers;

- changing facilities for each sex;
- and sheltered eating area.

A contractor must provide reasonable and suitable living accommodation for the workers at construction sites who are far removed from their homes and where adequate transportation between the site and their homes, or other suitable living accommodation, is not available.

2.32 Fall protection

The Contractor must:

- designate a competent person to be responsible for the preparation of a fall protection plan
- ensure that the fall protection plan contemplated above is implemented, amended where and when necessary and maintained as required; and
- take steps to ensure continued adherence to the fall protection plan.

A fall protection plan contemplated above must include-

- a risk assessment of all work carried out from a fall risk position and the procedures and methods used to address all the risks identified per location;
- the processes for the evaluation of the employees' medical fitness necessary to work at a fall risk position and the records thereof;
- a programme for the training of employees working from a fall risk position and the records thereof;
- the procedure addressing the inspection, testing and maintenance of all fall protection equipment; and
- a rescue plan detailing the necessary procedure, personnel and suitable equipment required to affect a rescue of a person in the event of a fall incident to ensure that the rescue procedure is implemented immediately following the incident.

A contractor must ensure that a construction manager appointed under regulation 8(1) is in possession of the most recently updated version of the fall protection plan.

A contractor must ensure that all unprotected openings in floors, edges, slabs, hatchways and stairways are adequately guarded, fenced or barricaded or that similar means are used to safeguard any person from falling through such openings;

Also that no person is required to work in a fall risk position, unless such work is performed safely as contemplated in above and fall prevention and fall arrest equipment are approved as suitable and of sufficient strength for the purpose for which they are being used, having regard to the work being carried out and the load, including any person, they are intended to bear; and securely attached to a structure or plant, and the structure of plant and the means of attachment thereto are suitable and of sufficient strength and stability for the purpose of safely supporting the equipment and person who could fall, and fall arrest equipment is used only where it is not reasonably practicable to use fall prevention equipment.

2.33 Temporary works

A contractor must appoint a temporary works designer in writing to design, inspect and approve the erected temporary works on site before use.

A contractor must ensure that all temporary works operations are carried out under the supervision of a competent person who has been appointed in writing for that purpose.

A contractor must ensure that-

- all temporary works structures are adequately erected, supported, braced and maintained by a competent person so that they are capable of supporting all anticipated vertical and lateral loads that may be applied to them, and that no loads are imposed onto the structure that the structure is not designed to withstand;
- all temporary works structures are done with close reference to the structural design drawings, and where any uncertainty exists the structural designer should be consulted;
- detailed activity specific drawings pertaining to the design of temporary works structures are kept on the site and are available on request to an inspector, other contractors, the client, the client's agent or any employee;

- all persons required to erect, move or dismantle temporary works structures are provided with adequate training and instruction to perform those operations safely;
- all equipment used in temporary works structure are carefully examined and checked for suitability by a competent person, before being used;
- all temporary works structures are inspected by a competent person immediately before, during and after the placement of concrete, after inclement weather or any other imposed load and at least on a daily basis until the temporary works structure has been removed and the results have been recorded in a register and made available on site;
- no person may cast concrete, until authorization in writing has been given by the competent person contemplated above;
- if, after erection, any temporary works structure is found to be damaged or weakened to such a degree that its integrity is affected, it is safely removed or reinforced immediately;
- adequate precautionary measures are taken in order to-
  - secure any deck panels against displacement; and
  - prevent any person from slipping on temporary works due to the application of release agents;
- as far as is reasonably practicable, the health of any person is not affected through the use of solvents or oils or any other similar substances;
- upon casting concrete, the temporary works structure is left in place until the concrete has acquired sufficient strength to safely support its own weight and any imposed load, and is not removed until authorization in writing has been given by the competent person
- the foundation conditions are suitable to withstand the loads caused by the temporary works structure and any imposed load in accordance with the temporary works design.
- provision is made for safe access by means of secured ladders or staircases for all work to be carried out above the foundation bearing level;
- a temporary works drawing or any other relevant document includes construction sequences and methods statements;
- the temporary works designer has been issued with the latest revision of any relevant structural design drawing;
- a temporary works design and drawing is used only for its intended purpose and for a specific portion of a construction site; and
- the temporary works drawings are approved by the temporary works designer before the erection of any temporary works.

No contractor may use a temporary works design and drawing for any work other than its intended purpose.

2.34 Excavation

A contractor must-

- ensure that all excavation work is carried out under the supervision of a competent person who has been appointed in writing for that purpose; and
- evaluate, as far as is reasonably practicable, the stability of the ground before excavation work begins.

A contractor who performs excavation work-

- must take reasonable and sufficient steps in order to prevent, as far as is reasonably practicable, any person from being buried or trapped by a fall or dislodgement of material in an excavation;
- may not require or permit any person to work in an excavation which has not been adequately shored or braced: Provided that shoring and bracing may not be necessary where-
  - the sides of the excavation are sloped to at least the maximum angle of repose measured relative to the horizontal plane; or
  - such an excavation is in stable material: Provided that-
    - permission has been given in writing by the appointed competent person contemplated above upon evaluation by him or her of the site conditions; and
    - where any uncertainty pertaining to the stability of the soil still exists, the decision from a professional engineer or a professional technologist competent in excavations is decisive and such a decision must be noted in writing and signed by both the competent person and the professional engineer or technologist, as the case may be;

- must take steps to ensure that the shoring or bracing contemplated above is designed and constructed in a manner that renders it strong enough to support the sides of the excavation in question;
- must ensure that no load, material, plant or equipment is placed or moved near the edge of any excavation where it may cause its collapse and consequently endangers 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;
- must 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 to ensure the stability of such building, structure or road and the safety of persons;
- must cause convenient and safe means of access to be provided to every excavation in which persons are required to work, and such access may not be further than six meters from the point where any worker within the excavation is working;
- must 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, and must before the commencement of excavation work that may affect any such service, take the steps that are necessary to render the circumstances safe for all persons involved;
- must ensure that every excavation, including all bracing and shoring, is inspected-
    - daily, prior to the commencement of each shift;
    - after every blasting operation;
    - after an unexpected fall of ground;
    - after damage to supports; and
    - after rain,

  by the competent person, in order to ensure the safety of the excavation and of persons, and those results must be recorded in a register kept on site and made available on request to an inspector, the client, the client's agent, any other contractor or any employee;
- must cause every excavation which is accessible to the public or which is adjacent to public roads or thoroughfares, or whereby the safety of persons may be endangered, to be –
    - adequately protected by a barrier or fence of at least one metre in height and as close to the excavation as is practicable; and
    - provided with warning illuminants or any other clearly visible boundary indicators at night or when visibility is poor, or have resort to any other suitable and sufficient precautionary measure where this is not practicable;
- must ensure that all precautionary measures stipulated for confined spaces as determined in the General Safety Regulations, 2003, are complied with by any person entering any excavation;
- must, where the excavation work involves the use of explosives, appoint a competent person in the use of explosives for excavation, and must ensure that a method statement is developed by that person in accordance with the applicable explosives legislation; and
- must cause warning signs to be positioned next to an excavation within which or where persons are working or carrying out inspections or tests.

2.35 Demolition Work

A contractor must appoint a competent person in writing to supervise and control all demolition work on site.

A contractor must ensure that before any demolition work is carried out, and in order to ascertain the method of demolition to be used, a detailed structural engineering survey of the structure to be demolished is carried out by a competent person and that a method statement on the procedure to be followed in demolishing the structure is developed by that person.

During a demolition, the competent person contemplated in above must check the structural integrity of the structure at intervals determined in the method statement contemplated in above, in order to avoid any premature collapses.

A contractor who performs demolition work must with regard to a structure being demolished, take steps to ensure that-

- no floor, roof or other part of the structure is overloaded with debris or material in a manner

which would render it unsafe;

- all reasonably practicable precautions are taken to avoid the danger of the structure collapsing when any part of the framing of a framed or partly framed building is removed, or when reinforced concrete is cut; and
- precautions are taken in the form of adequate shoring or other means that may be necessary to prevent the accidental collapse of any part of the structure or adjoining structure;
- ensure that no person works under overhanging material or a structure which has not been adequately supported, shored or braced;
- ensure that any support, shoring or bracing contemplated above, is designed and constructed so that it is strong enough to support the overhanging material;
- where the stability of an adjoining building, structure or road is likely to be affected by demolition work on a structure, take steps to ensure the stability of such structure or road and the safety of persons;
- 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, and must before the commencement of demolition work that may affect any such service, take the steps that are necessary to render circumstances safe for all persons involved;
- cause every stairwell used and every floor where work is being performed in a building being demolished, to be adequately illuminated by either natural or artificial means;
- cause convenient and safe means of access to be provided to every part of the demolition site in which persons are required to work; and
- erect a catch platform or net above an entrance or passageway or above a place where persons work or pass under, or fence off the danger areas if work is being performed above such entrance, passageway, or place so as to ensure that all persons are kept safe where there is a danger or possibility of persons being struck by falling objects.

A contractor must ensure that no material is dropped to any point, which falls outside the exterior walls of the structure, unless the area is effectively protected.

No person may dispose of waste and debris from a high place by a chute unless the chute-

- is adequately constructed and rigidly fastened;
- if inclined at an angle of more than 45 degrees to the horizontal, is enclosed on its four sides;
- if of the open type, is inclined at an angle of less than 45 degrees to the horizontal;
- where necessary, is fitted with a gate at the bottom end to control the flow of material; and discharges into a container or an enclosed area surrounded by barriers.

A contractor must ensure that every chute used to dispose of rubble is designed in such a manner that rubble does not free-fall and that the chute is strong enough to withstand the force of the debris travelling along the chute.

A contractor must ensure that no equipment is used on floors or working surfaces, unless such floors or surfaces are of sufficient strength to support the imposed loads.

Where a risk assessment indicates the presence of asbestos, a contractor must ensure that all asbestos related work is conducted in accordance with the Asbestos Regulations 2001.

Where a risk assessment indicates the presence of lead, a contractor must ensure that all lead related work is conducted in accordance with the Lead Regulations, 2001.

Where the demolition work involves the use of explosives, a method statement must be developed in accordance with the applicable explosives legislation, by an appointed person who is competent in the use of explosives for demolition work and all persons involved in the demolition works must adhere to demolition procedures issued by the appointed person.

A contractor must ensure that all waste and debris are as soon as reasonably practicable removed and disposed of from the site in accordance with the applicable legislation.

2.36 *Tunneling*

Not thought to be applicable to this project.

2.37 *Scaffolding*

A contractor must appoint a competent person in writing who must ensure that all scaffolding work operations are carried out under his or her supervision and that all scaffold erectors, team leaders and inspectors are competent to carry out their work.

A contractor using access scaffolding must ensure that such scaffolding, when in use, complies with the safety standards incorporated for this purpose into these Regulations under section 44 of the Act.

2.38 *Bulk mixing plant*

Not thought to be applicable to this project.

2.39 *Rope Access Work*

Not thought to be applicable to this project.

2.40 *Hazardous Chemical Substances (HCS)*

In addition to the requirements in the HCS Regulations, the principal contractor must provide proof in the Health and Safety Plan that:

- Material Safety Data Sheets (MSDS's) of the relevant materials / hazardous chemical substances are available prior to use by the contractor. All MSDS's shall be available for inspection by the agent at all times.
- Risk assessments are done at least once every 6 months.
- Exposure monitoring is done according to OESSM and by an Approved Inspection Authority (AIA) and that the medical surveillance programme is based on the outcomes of the exposure monitoring.
- How the relevant HCS's are being/going to be controlled by referring to:
  - Limiting the amount of HCS
  - Limiting the number of employees
  - Limiting the period of exposure
  - Substituting the HCS
  - Using engineering controls
  - Using appropriate written work procedures
- The correct PPE is being used.
- HCS are stored and transported according to SABS 072 and 0228.
- Training with regards to these regulations was given.

The Health and Safety plan should make reference to the disposal of hazardous waste on classified sites and the location thereof (where applicable).

The First Aider must be made aware of the MSDS and trained in how to treat HCS incidents appropriately.

2.41 *Noise Induced Hearing Loss*

Where noise is identified as a hazard the requirements of the NIHL regulations must be complied with and the following must be included / referred to in the Health and Safety Plan:

- Proof of training with regards to these regulations.
- Risk assessment done within 1 month of commencement of work.
- That monitoring carried out by an AIA and done according to SABS 083.
- Medical surveillance programme established and maintained for the necessary employees.

- Control of noise by referring to:
- Engineering methods considered
- Admin control (number of employees exposed) considered
- Personal protective equipment considered/decided on
- Describe how records are going to be kept for 40 years.

2.42 Explosives and Blasting

Not thought to be applicable to this project.

2.43 Personal Protective Equipment (PPE)

The Contractor shall carry out PPE or clothing needs analysis in accordance with his risk assessment, to determine the necessary PPE or clothing to be used during construction. The Contractor shall make provision and keep adequate quantities of SABS approved PPE or clothing on site at all times.

The Contractor must ensure that personnel are trained in the correct use of PPE to be used.

The Contractor must ensure that lost, stolen, worn out or damaged PPE is replaced as required and receipt signed for by employees on site.

2.44 Asbestos

The Contractor shall ensure that all asbestos work is done only by registered "Asbestos Contractor" as prescribed by the Asbestos Regulations, 2001. The Contractor shall submit an Asbestos Certificate from Department of Labour which refer to the prescribed requirements. The Contractor shall notify The Client if there are any asbestos materials to be used on site.

Besides the requirements listed above, should asbestos be identified as a hazard at the workplace, the following must be included in the health and safety plan or as soon as its available:

- Notification to the Provincial Director in writing, prior to commencement of asbestos work.
- Proof of a structured medical surveillance programme, drawn up by an occupational medicine practitioner.
- Proof that an initial health evaluation was carried out by an occupational health practitioner within 14 days after commencement of work.
- Copies of the results of all assessments, exposure monitoring and the written inventory of the location of the asbestos at the workplace.
- Only proof that medical surveillance has been conducted and not the actual records itself since these areas of a confidential nature.
- How records are going to be kept safe for the stipulated period of 40 years.
- Proof that asbestos demolition (if applicable) is going to be done by a registered asbestos contractor and provide proof that a plan of work for such demolition is submitted to an Approved Asbestos Inspection Authority 30 days prior to commencement of the demolition.
- Provide proof that the plan of work was approved by the asbestos AIA and submitted to the provincial director 14 days prior to commencement of demolition work together with the approved standardized procedures for demolition work.

2.45 Pressure Vessels (Including Gas Bottles)

The Contractor shall comply with Pressure Vessel Regulations, including:

- Providing competency and awareness training to the operators;
- Providing PPE or clothing;
- Providing and maintain appropriate signage in areas where pressure vessels are used, as applicable;
- Inspect equipment regularly and keep records of inspections;
- Providing appropriate fire fighting equipment (Fire Extinguishers).

2.46 *Fire Extinguishers and Fire Fighting Equipment*

The Contractor shall provide adequate, regularly serviced fire extinguishers located at strategic points on site. The Contractor shall keep spare serviced portable fire extinguishers. The Contractor shall have adequate persons trained or competent to use the Fire Fighting Equipment.

Safety signage shall be posted up in all areas where fire extinguishers are located.

2.47 *Lifting Machinery and Tackle*

The Contractor shall ensure that lifting machinery and tackle is inspected before use and on a monthly basis. The Contractor shall have lifting machinery and tackle inspector who will inspect the equipment at intervals required by the Driven Machinery Regulations, taking into account that:

- All lifting machinery and tackle have a safe working load clearly indicated;
- Regular inspection and servicing is carried out;
- Records are kept of inspections and of service certificates;
- Thorough examinations are carried out by competent personnel at the frequencies required by legislation
- There is proper supervision in terms of guiding the loads which includes a trained banks man to direct and check lifting tackle if it is safe for use.

2.48 *Ladders and Ladder work*

The Contractor shall ensure that all ladders are numbered and inspected regularly keeping record of inspections. It should be noted that Aluminium ladders are preferred to wooden ladders.

2.49 *General Machinery*

The Contractor shall comply with the Driven Machinery Regulations, which include inspecting machinery regularly, appointing a competent person to inspect and ensure maintenance, issuing PPE or clothing and training those that use machinery and enforce compliance.

2.50 *Portable Electrical Tools*

The Contractor shall ensure that use and storage of all explosive actuating fastening devices and portable electrical tools are in compliance with relevant legislation. The Contractor shall consider that:

- A competent person undertakes routine inspections;
- Only authorised persons use the tools;
- There are safe working procedures applied;
- Awareness training is carried out and compliance is enforced at all times; and
- PPE and clothing is provided and maintained.

2.51 *High Voltage Electrical Equipment*

The Contractor shall ensure that, where the work is under, on or near high-voltage electrical equipment the Electrical Installation Regulations, together with safety instructions (Regulations of the Owner of the Equipment) are complied with. Such equipment includes:

- Eskom and the Local Authority equipment
- The Contractor's own power supply; and
- Electrical equipment being installed but not yet taken over from a Contractor by The Client.

2.52 *Public Health and Safety*

The Contractor shall ensure that each person working on or visiting a site, and the surrounding community, shall be made aware of the dangers likely to arise from on site activities and the precautions to be observed to avoid or minimize those dangers. Appropriate health and safety signage shall be posted at all times.

2.53 Night Work

The Contractor shall not undertake any night work without prior arrangement and a written permit from the Client. The Contractor shall ensure that adequate lighting is provided for all night work and failure to do so shall result in work being stopped.

2.54 Environmental Conditions and Flora and Fauna

The Contractor must be mindful of adverse weather conditions upon the health and safety of the workforce. This includes inclement weather, strong wind, heat stress, extreme cold, etc. The Contractor's risk assessment process must take into account the risks associated with such weather conditions. The same is true when working in an environment where there is a risk to employees' health and safety from presence of poisonous flora, or wildlife (including bees, snakes, etc). The Contractor's risk assessment process must take these risks into account.

2.55 Occupational Health

Exposure of workers to occupational health hazards and risks are very common in any work environment, especially in construction. Occupational health hazards and risks exposure is a major problem and all Contractors are to ensure that proper health and hygiene measures are put in place to prevent exposure to these hazards and risks.

The occupational hazards and risks may enter the body in three ways:

- Inhalation through breathing e.g. cement dust;
- Ingestion through swallowing maybe through food intake;
- Absorption through the skin (pores) e.g. painting or use of thinners.

The contractor is required to ensure that all his personnel are medically fit prior to being allowed onto the work site.

All Contractors should ensure that Occupational Hygiene surveys are conducted as per the Occupational Health and Safety Act to ensure employees are not exposed to hazards. Risk Assessments should identify areas where surveys are to be conducted.

2.56 Suspended Platforms

Not thought to be applicable to this project.

2.57 Material Hoists

Not thought to be applicable to this project.

2.58 Explosive Actuated Fastening Device

No contractor may use or permit any person to use an explosive actuated fastening device, unless-

- the user is provided with and uses suitable protective equipment;
- the user is trained in the operation, maintenance and use of such a device
- the explosive actuated fastening device is provided with a protective guard around the muzzle end, which effectively confines any flying fragments or particles; and
- the firing mechanism is so designed that the explosive actuated fastening device, will not function unless-
  - it is held against the surface with a force of at least twice its weight; and
  - the angle of inclination of the barrel to the work surface is not more than 15 degrees from a right angle.

A contractor must ensure that-

- only cartridges suited for the relevant explosive actuated fastening device, and the work to be performed, are used;

- an explosive actuated fastening device is cleaned and examined daily before use and as often as may be necessary for its safe operation by a competent person who has been appointed for that purpose;
- the safety devices of an explosive actuated fastening device are in good working order prior to use;
- when not in use, an explosive actuated fastening device and its cartridges are locked up in a safe place, which is inaccessible to unauthorized persons;
- an explosive actuated fastening device is not stored in a loaded condition;
- a warning notice is displayed in a conspicuous manner in the immediate vicinity wherever an explosive actuated fastening device is used; and
- the issuing and collection of cartridges and nails or studs of an explosive actuated fastening device are-
  - controlled and done in writing by a person having been appointed in writing for that purpose; and
  - recorded in a register by a competent person and that the recipient has accordingly signed for the receipt thereof as well as the returning of any spent and unspent cartridges.

Both the Client and the Contractor have a duty in terms of health and safety legislation to do all that is reasonably practicable to prevent members of the public and others being affected by the construction processes to be aware and put preventative measure in place. The public or visitors shall go through a brief health and safety induction detailing hazards and risks they may be exposed to and what measures are in place to control these hazards and risks.

OTHER HEALTH AND SAFETY SPECIFICATION REQUIREMENTS

The contractor must be aware of the following additional requirements:

What	When	Output
Awareness training (Toolbox Talks)	At least fortnightly and before hazardous work is carried out	Attendance Register
Health and Safety Committee Meetings	Monthly	Minutes signed by the employer (Contractor) covering: a) Health and Safety Representative Checklist
Health and Safety Reports	Monthly	Report covering: a) Incidents/Accidents and Investigations b) Non conformance c) Health and Safety Training d) HIRA Updates e) Internal and External Audits
General Inspections	As per Health and Safety Specification and OHSA	Report on Health and Safety Specification and OHSA compliance: a) Scaffolding b) Lifting Machinery c) Excavation
General Inspections	Monthly	Covering: a) Fire fighting Equipment b) Portable Electrical Equipment c) Ladders
Record keeping	Ongoing	Covering: a) General complaints b) Fines c) General incidents d) MSDS e) Surveillance Medicals f) Inspection Register g) Dept of Labour Notices
Permits	Before commencement with certain activities	As stipulated by the Health and Safety Specification and the OHSA / Construction Regulations

Key:

OHSA – Occupational Health and Safety Act, 1993

ANNEXURE A

The Contractor shall submit the info below in an Annexure 2 prior to construction commencement.

Item No.	Health and Safety Specification Requirement	OHSA Requirement	Submission date
1.	Notification of Intention to Commence Construction	Construction Regulations 2014	At least 7 days before commencement on site
2.	Construction Work Permit	Construction Regulations 2014 (but only comes into effect from August 2015, and only with certain size and duration projects)	At least 30 days prior to project commencement
3.	Assignment of Responsible Person to Manage Building Work via Health and Safety Organogram	Construction Regulations 2014	Before commencement on site
4.	Competency for Health and Safety Positions	Client / Client Agent requirement	Before commencement on site
5.	Compensation of Occupational Injuries and Diseases Act (COIDA) 130 of 1993	COIDA Requirement	Before commencement on site
6.	Occupational Health and Safety Policy	Client / Client Agent requirement	Before commencement on site
7.	Risk Assessment, Safety Plan and Fall Protection Plan, Demolition Method Statement	Client / Client Agent requirement	Before construction work commences

ANNEXURE B - The contractor shall make the following appointments, as required:

Chief Executive Officer (OSHACT 16(1)
Contract Director/Manager (OSHACT 16(2)
Construction Manager (CR 8(1)
Construction Supervisor (CR 8(7)
Assistant Construction Supervisor (CR 8(8)
Construction Safety Officer (CR 8(5)
Traffic Safety Officer
Safety Representative (where > 20 employees on site)
Temporary work Designer (CR 12(1)
Temporary work Supervisor (CR12(2)
Construction risk assessor (CR 9(1))
Excavation Supervisor (CR13(1)(a)
Demolition Supervisor (CR14(1)
Scaffold Supervisor (CR16(1)
Suspended Platform Supervisor (CR17(1)
Material Hoist Inspector (CR19(8)(a)
Material Hoist Operator (CR19(6)
Bulk Mixing Plant Supervisor (CR20(1)
Bulk Mixing Plant Operator (CR20(2)
Controller of Explosive Actuated Fastening Devices Nails, Cartridges or Studs Issue and Collection (CR21(2)(g)(1)
Construction Vehicle and Mobile Plant Operator (CR23(1)(d)(i)
Controller of Temporary Electrical Installations (CR24(c)
Stacking Supervisor (CR28(a)
Fire Extinguishing Equipment Inspector (CR29(h)
Fall Protection Plan Developer (CR 10(1)(a)
Incident Investigator (OSHACT 9(2)
Competent Person – Confined Spaces (GAR 5(1)

BASELINE RISK ASSESSMENT FOR PROJECT

Irrespective of the risk presented on site, it will be ensured that sufficient supervision is in place on site, that personnel are trained in accordance with legislation, including the requirement for site specific inductions on site to inform personnel on site of the risks and hazards applicable to the site. Site supervision is responsible for ensuring that the control measures required below are implemented on site.

	HAZARD	RISK	RISK RATING (High / Medium / Low)	MINIMUM CONTROL MEASURES
1.	Asbestos Cement Removal	Release of asbestos fibres	• H	• Ensure safe access and egress is provided • Erect physical barriers to prevent entry by unauthorised persons, as applicable • Exclusion zone may be required • Only Department of Labour registered asbestos contractors may work with asbestos, and strictly in accordance with the requirements of the Asbestos Regulations.
2.	Bricklaying	Caustic contamination with mortar Contact with sharp bladed tools	• M	• Use only trained personnel • Safe means of access to be provided • Safe/Suitable working platform required where working at height • PPE for mortar to include gloves where practicable and goggles/ masks where there is a risk of contamination
3.	Compacting and Filling	Contact with tipping materials Contact with moving plant Vehicles/personnel falling into excavations Contact with underground services	• M	• Trained banksman to control vehicles movement • Only trained personnel use plant • Personal Protective Equipment to be worn • Personnel to stand clear as materials are being tipped • Use stop blocks and signs to warn vehicles of excavations, where applicable • Stand clear of plant whilst materials are being compacted • Establish position of underground services and protect services from damage
4.	Compactor Operations	Crushing of feet	• M	• Only trained and competent personnel to use the machine • Ensure operative wears steel toe cap shoes or boots at all times
5.	Confined Spaces – up to 7m	Suffocation Fumes	• H	• Ensure that confined space is sufficiently ventilated • Wear personal protective equipment such as proper masks if air supply insufficient or not of sufficient quality • Test oxygen levels in confined space to ensure that is safe for entry • Ensure that emergency procedures in place
6.	Cutting Off Disc	Noise Cuts from machine Fire (particularly at refuelling) Flying debris Blade shattering Contamination by fume created or exhaust fume	• M	• Use competent personnel. • Hot works control- fire extinguisher, fire watchman. (Permit may be required) • PPE to include gloves, eye protection, hearing protection • Solid working position. • Clear working area • Correct grade of blade must be used. • Good ventilation to be provided (forced if necessary). • Changing of wheels to be by competent persons only • Cut off discs must not be used for grinding (grinding disc thicker) • Bystanders to wear hearing protection, as applicable

	HAZARD	RISK	RISK RATING (High / Medium / Low)	MINIMUM CONTROL MEASURES
7.	Demolition	Falling materials Premature collapse of structure	• M	• Ensure there is a current method statement in place • Ensure all emergency procedures are in place and all details are displayed • Ensure that structural demolition has been approved by the designer and site management • Personnel must be competent • Ensure at all times there is a safe means of access and egress • All personnel must wear suitable and sufficient Personal Protective Equipment, including head, eye and skin protection
8.	Electrical Commissioning	Electric shock	• H	• Personnel to comply with permits to work issued by client • Personal protective equipment to be worn by employees to prevent electric shock • First aid treatment to be readily available • Only competent and trained persons may decommission or commission electrical equipment
9.	Electric Tools and Electrical Installations	Electric shock Fire	• L	• Electric tools and installations to be in good condition • Inspect electric tools before use • Do not use electric tools in wet/damp conditions • Use personal protective equipment such as insulated gloves • Electrical installations register to be maintained, inspected by competent person
10.	Excavations (Working in and around) – max 2m	Toxic fumes Collapse of trench walls/trapping Falling into excavation Collapse of adjacent structures	• H	• Deep excavations / monitor air for toxic fumes • Prevent collapse by battering back sides to a safe angle or install temporary support • Protect vehicles from falling into excavations – provide barriers, signage, etc as necessary • Beware of undermining of other structures (eg: buildings, scaffolds) • Record excavation inspections by competent person on daily basis • Provide suitable means of access/egress in case of emergency. • Excavations formed by explosives must be accompanied by method statement approved by Client
11.	Explosive Actuated Fastening Devices	Noise Being struck by cartridge or fixing	• M	• Operators to be trained, competent and wear appropriate protective equipment, eg: goggles, gloves, ear defenders, head protection. • Cartridge gun to be in good condition, inspected for damage and faults regularly and results entered into register • Used and unused cartridges and cartridge gun should be kept in secure place when not in use, maintain register for return and issue.

	HAZARD	RISK	RISK RATING (High / Medium / Low)	MINIMUM CONTROL MEASURES
12.	Fire	Injuries to workers, pedestrians, residents, road users, damage to property through fire	• M	• No littering on site which could become fire hazard, maintain site in clean condition. • No fires to be lit on site. Have a working fire extinguisher at hand at all times. • No smoking or naked flame near flammable substances or in unauthorised areas • Ensure proper storage/use of Petrol/diesel/flammable substances – post warning notices
13.	Flammable Liquids and Gases (Use of)	Fire Explosion	• M	• No littering on site which could become fire hazard, maintain site in clean condition. • Have a working fire extinguisher at hand at all times. • No smoking or naked flame near flammable substances or in unauthorised areas • Ensure proper storage/use of Petrol/diesel/flammable substances – post warning notices • Equipment must be in good condition, maintained • Personnel using substances must be trained in safe use and risks
14.	Hand tools	Injuries caused by use of hand tool Impact with the tool Falls due to access problems Contamination with substance being worked	• L	• Ensure: • Tool is correct for job • Tool is in good order and suitably sharp • Personnel must be competent/instructed in tool usage and tool safely • Lighting is sufficient • Access is safe, working platform is secure, leading edge is guarded • Operative is wearing all necessary PPE
15.	Hazardous Substances	Injuries to workers through use of hazardous substances, eg: injuries to eyes, skin, etc	• M	• Use substances in accordance with data sheet, particularly reference protective clothing required (example: gloves, goggles, etc) • Know what First Aid measures are • Have welfare facilities available for washing of hands, etc
16.	Hot Works	Burns to eyes or other parts of the body	• M	• Personal Protective Equipment to include eye, skin and hearing protection • Respirator maybe be required where cutting galvanized steel or anywhere else toxic fumes and gases arise. Dust can also be a problem and forced ventilation may be required.

	HAZARD	RISK	RISK RATING (High / Medium / Low)	MINIMUM CONTROL MEASURES
17.	Lifting Operations	Falling material Crushing by materials Hand injuries to the slinger Toppling crane	• M	• Check test certificate • Check examination certificate • Check inspection have been carried out • Check certificates for lifting equipment (chains, slings, shackles, etc) • Ensure lifting gear is rated to carry load (SWL) • Ensure materials being lifted are properly packaged and slung. • Be aware that there should be a minimum clearance of 600mm between any slewing parts of a crane and any fixed installation to prevent being trapped. • Access to the work area during lifting operations is to be restricted to those involved with and trained in the work in hand. Do not allow members of the public to gain access to the area. • Only trained banksmen to be used. • The crane driver and the banksman are to ensure that the signals given are clearly understood.
18.	Manual Handling of General Items	Muscular skeletal injuries if the load is too heavy or awkward Operative falling/ tripping Contamination from the substance being carried Fall of material being carried	• L	• Personnel should be aware of safe manual handling techniques • Personnel to wear Personal Protective Equipment when carrying items, eg: safety footwear and gloves. • Ensure good housekeeping against tripping/fall hazards. • Operative to get assistance if load too heavy- team lift if necessary. • Utilise mechanical lifting and carrying aids where possible. • Personnel to ensure access equipment, ladders will take weight of operative and load being carried. • Personnel to ensure item being carried is properly bonded or is not be liable to break apart whilst being manually handled.
19.	Members of Public – Protection of	Injury to member of public and road users from site works	• M	• Barriers and signage to be in place • Workers must warn away any members of public from the works • Footpaths and bridges which are open to public must be closed off if in area of works or otherwise made safe so that no injury occurs to members of public • Traffic turning into site – traffic management and signage as required. • Signage to be on road at site entrance warning motorists that construction traffic turning into/out of site access. Keep roads free of mud where possible • Refer to plant risk assessment for details on plant safety precautions • NOTE: SIGNAGE TO BE POSTED ON SITE TO WARN OF CONSTRUCTION TRAFFIC MOVEMENTS. SAFE MEANS OF ACCESS FOR BOTH CONSTRUCTION TRAFFIC TO SITE AND PRIVATE HOMEOWNERS MUST BE AGREED.

	HAZARD	RISK	RISK RATING (High / Medium / Low)	MINIMUM CONTROL MEASURES
20.	Tower Crane and Mobile Crane Erection and Dismantling and Use	Collapse of structure Overturning of structure Falling materials	• M	• Ensure emergency procedures are in place and all operative are aware of the details • Only use trained and competent operators for the erection and dismantling and use pf cranes • Ensure crane driver is trained and holds certification as proof. Must have valid medical certificate of fitness. • Ensure there is safe means of access available at all times • Ensure the mobile crane driver has 360° vision if not ensure a fully trained banksman is used • Banksman to wear reflector vest to identify himself to the crane driver • Ensure all personnel wear suitable and sufficient personal protective equipment • Consider creating exclusion areas
21.	Night Work	Security Lighting	• M	• The Contractor shall not undertake any night work without prior arrangement and a written permit from the Client. • The Contractor shall ensure that adequate lighting is provided for all night work and failure to do so shall result in work being stopped.
22.	Noise and Dust	Breathing in dust can cause long term health problems, noise can damage hearing	• L	• Wear respiratory and hearing protection • Dampen down and minimise dust where possible.
23.	Overhead Services (Working near)	Contact with live services causing injury to personnel Damage caused to services	• M	• Maintain safe clearance levels • Establish presence of any services via proper walk through survey of site and/or means of service drawings • Wear personal protective clothing • Ensure height of plant/vehicles does not compromise or exceed clearance levels for overhead services • Obtain information on clearance levels from service provider
24.	Painting	Contact with paint	• L	• Refer to safety data sheet for usage instructions, hazards and precautions required. • When working at height, refer to risk assessment addressing this hazard below.
25.	Plant or Vehicles and Equipment Operation	Workers injured by passing traffic Road users and pedestrians at risk from plant operation Noise	• M	• Implement traffic protection measures • Trained and competent operators must be used • Check plant and vehicles on daily basis before use and record inspections. Maintain vehicles in safe condition. • Medical certificates of fitness required for construction plant. • Crossing of road by construction vehicles or machines must be limited to the practical minimum • Plant and vehicles must be fitted with amber rotating beacons and reverse alarms. • Wear appropriate protective clothing/equipment, eg: goggles, gloves, ear defenders, etc as appropriate.

	HAZARD	RISK	RISK RATING (High / Medium / Low)	MINIMUM CONTROL MEASURES
26.	Scaffold Erection/ Dismantling	Personnel falling from a height Items of scaffold falling onto personnel Scaffold collapsing onto those below	• M	• Ensure • scaffold is designed to take the imposed loads • scaffolding is constructed properly • scaffold is not overloaded • scaffolders are fully trained • scaffolding is regularly checked by competent person and record of inspection retained. Written inspections to be recorded on weekly basis • scaffolders must adhere to the safe systems of work. • all fall arrest equipment to be checked and certified in good working order • that ALL understand the safe system of work
27.	Shuttering Walls, Beams, Columns	Falling from height Falling materials from height Cuts and abrasions from splinters and nails	• M	• Ensure all personnel wear the appropriate Personal Protective Equipment • Ensure at all times there is a safe working platform • Use only trained and competent personnel • If electrical tools are being used ensure they have been tested and safe to use • Ensure timber is de-nailed after use • Ensure safety standards are followed at all times • Ensure there is a safe means of access and egress at all times
28.	Site Strip	Overturning Vehicles	• L	• Follow standard safety procedures • Only use trained and competent personnel • Ensure there is a suitable and safe means of access and egress • Ensure banksman used when required • Ensure all personnel wear suitable reflector vests as required
29.	Snakes, Dogs, Bees	Snake bite Dog Bite Bee sting	• L	• Employees to check area before working to establish whether there are bees, dogs or snakes present and report any concerns to supervisor immediately • Find out location of nearest medical assistance and get emergency telephone numbers. • Make enquiries about employees who may be allergic to bee stings and keep such personnel away from areas of potential bee infestation • Any dog bite, no matter how minor, must be referred for medical attention immediately for advise – rabies must be a consideration • First aider should be trained in procedures to be taken in the event of dog/snake/bee attack.

	HAZARD	RISK	RISK RATING (High / Medium / Low)	MINIMUM CONTROL MEASURES
30.	Steel Erection	Falls from height Falling components Contact injuries from falling lifting equipment	• M	• Adhere to all general precautions for working at height (See risk assessment below) • Barrier off / exclude area below work • All lifting appliances to be examined and inspected • Inspection register in place and up to date • All personnel to be trained and competent and wear clipped on safety harnessed when working at height • Ensure that lifting equipment (slings, chains, shackles) test certificates are current and on site. • Competent persons only to connect loads and direct plant
31.	Steel Fixing	Back injuries caused by manual handling Eye injuries from tie wire Trips / falls Falling form height	• M	• PPE must include safety boots and goggles • Manual handling training may be required • Care to be taken when working near over head lines • Use only trained personnel • Provide safe means of access • Maintain and regularly inspect all lifting appliances and equipment • Cap starter bars to prevent injuries where feasible • Construct scaffold walk ways to cross reinforcing mesh, as required
32.	Street Lighting	Contact with vehicles Electrical Shock Collapse of columns	• M	• Ensure competent personnel are used • Area to be kept clear – keep unauthorised persons away • Plant and lifting equipment to be maintained as per risk assessments above • Electrical connections to be done by qualified personnel only
33.	Temporary Works – scaffold, falsework, formwork	Collapse of form work or other temporary works	• M	• Wear personal protective equipment such as gloves and goggles • Temporary works must be built by trained person and also be inspected by competent person and results entered into register on site • Must be designed by a competent temporary works designer
34.	Tower (Mobile Aluminium Tower) Scaffold	Over Turning Falls	• L	• Tower to be on firm level ground with wheels or feet properly supported. • Height not to exceed 3 times the base dimension. i.e. 2x3m Base Tower not exceed 6m. • Erection by competent person • Inspection before first use • Weekly record of inspection required • Guard rails and Toe boards as per normal scaffolds • Beware when moving of overhead obstructions, such as power lines • Never move in strong winds

	HAZARD	RISK	RISK RATING (High / Medium / Low)	MINIMUM CONTROL MEASURES
35.	Underground Services	Striking of buried services	• M	• Make all necessary enquiries to establish what services are in the area. Consult drawings and advice from service provider (eg: Municipality or ESKOM) when planning work. • Assume all service to be live (Unless confirmation is received to confirm that services are isolated or otherwise made safe). Do not work near live services without authorisation from site management. • Comply with the requirements of the safe system of work for underground services. • Where available, locate services with a locator • Hand dig around services
36.	Working at Height	Personnel falling form height Falling debris Those beneath being injured	• M	• All access equipment is properly constructed (inspections record must be maintained) • Only trained personnel construct, dismantle or control the access equipment • All access equipment must have full toe boards and guardrails - comply with SANS 10085 on erection, use and dismantling of scaffolding • No access equipment may be loaded above the level of the guardrail • No access equipment to be loaded above its safe working load • Where work involves leaning out on an open leading edge, then all personnel are to be fitted with full body harness. The harness must be connected at all times • All fall arrest equipment to be correctly maintained • Ensure if ladders are being used for access, they are either footed or tied. Also the ladder must be set at the correct level of 1 in 4 or approximately 75°
37.	Working with Effluent	Contact with effluent causing sickness or disease	• M	• ensure good hygiene facilities • personnel to be competent in work activity • personnel to wear appropriate personal protective equipment such as goggles, overall, gloves and goggles
38.	Work over or next to Water (sewage)	Drowning	• M	• Evaluate depth of water, height above water that work takes place, whether workers can swim or not and then determine safety precautions required: these may include such measures such as barriers, signage, life belts, safety harnesses, etc • When working on leading edge - erect life saving devices and barriers to protect workers and vehicles. Only trained and competent persons to be used.

ISSUE REGISTER

Date of Original Safety Specification Compilation	Compiled By	Issue Date	Revision Date
24 November 2016	Mark Winter	25 November 2016	Original

Acknowledgement:

I, _____ representing

_____ (Contractor), have satisfied myself with the content of this Health and Safety Specification and shall ensure that our employees and contractors on site comply with the requirements of this document, our safety documentation and health and safety legislation.

_____ _____

Signature of Contractor Date

Comments:

_____

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_____

_____

TENDER SERIAL NO.:
CITY OF CAPE TOWN
INITIALS OF OFFICIALS
WATER AND SANITATION
CONTRACT NO. 178Q/2016/17

13 MAR 2017

C2.2 Schedules of Quantities

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ITEM	DESCRIPTION	UNIT	QTY	RATE R c	AMOUNT R c
	SCHEDULE A				
	PRELIMINARY AND GENERAL				
	Fixed-charge items				
	General requirements and conditions				
1	Performance Security in terms of Clause 4.2 of FIDIC (Conditions of Contract)	Sum	-	8 975 528,00	R 8 975 528,00
2	Insurance	Sum	-	550 000,00	R 550 000,00
3	General environmental management obligations and all costs related to compliance with the Environmental Management Specification (Specification H) in Part C3: Scope of Work	Sum	-	98 516,00	R 98 516,00
4	Obligations and costs in compliance with the requirements for Site Facilities in terms of Part C3: Scope of Work	Sum	-	1 016 255,00	R 1 016 255,00
5	Contractor's Superintendence and Management including compliance with Part C3: Scope of Work	Sum	-	7 019 678,00	R 7 019 678,00
	Health and safety:				
6	General obligations and all costs in compliance with the Occupational Health and Safety Act, Construction Regulations, 2003, and the Health and Safety Specification (Specification G) in Part C3: Scope of Work	Sum	-	208 971,00	R 208 971,00
7	Risk assessment	Sum	-	43 588,00	R 43 588,00
8	Preparation of Health and Safety Plan	Sum	-	60 677,00	R 60 677,00
9	Health and Safety Specialist / Accident Prevention Officer	Sum	-	71 185,00	R 71 185,00
10	Medical assessment of employees	Sum	-	52 075,00	R 52 075,00
11	HIV/AIDS awareness: compliance with the requirements of SANS 1921-6	Sum	-	31 375,00	R 31 375,00
12	All other fixed-charge obligations	Sum	-	31 375,00	R 31 375,00
Carried forward / ...					R 18 159 223,00

ITEM	DESCRIPTION	UNIT	QTY	RATE R c	AMOUNT R c
Brought forward / ...					R 18 159 223,00
	Design (including compliance with Clause 5 of FIDIC and Part C3: Scope of Work)				
13	Design and provision of Contractor's Documents required for Phase 2 of the Work Breakdown Structure in terms of Part C3: Scope of Work	Sum	-	5 275 320,00	R 5 275 320,00
14	HAZOP study	Sum	-	270 403,60	R 270 403,60
15	Training	Sum	-	116 240,00	R 116 240,00
16	As-Built Documents	Sum	-	150 915,00	R 150 915,00
17	Operation and Maintenance Manuals	Sum	-	224 220,00	R 224 220
18	All other Contractor's Documents	Sum	-	33 695,00	R 33 695,00
	Tests on Completion in terms of Clause 9 of FIDIC and Part C3: Scope of Work (excluding pre-commissioning)				
19	Commissioning tests including putting the whole of the Works into operation (Section A of the Works)	Sum	-	3 149 250,00	R 3 149 250,00
20	Commissioning tests including putting the whole of the Works into operation (Section B of the Works)	Sum	-	1 024 765,00	R 1 024 765,00
21	Commissioning tests including putting the whole of the Works into operation (Section C of the Works)	Sum	-	205 735,00	R 205 735,00
	Trial operation period for first half related to the following:				
22	Section A of the Works	Sum	-	458 000,00	R 458 000,00
23	Section B of the Works	Sum	-	175 672,00	R 175 672,00
24	Section C of the Works	Sum	-	500 202,00	R 500 202,00
	Trial operation period for second half related to the following:				
25	Section A of the Works	Sum	-	250 200,00	R 250 200,00
26	Section B of the Works	Sum	-	166 172,00	R 166 172,00
27	Section C of the Works	Sum	-	168 962,00	R 168 962,00
Carried forward / ...					R 30 328 974,60

ITEM	DESCRIPTION	UNIT	QTY	RATE R c	AMOUNT R c
Brought forward / ...					R 30 328 974,60
	Tests after Completion in terms of Clause 12 of FIDIC and Part C3: Scope of Work				
28	Tests after Completion for the whole of the MBR B plant (Section A of the Works)	Sum	-	166 200,00	R 166 200,00
29	Tests after Completion for the whole of the MBR A plant (Section C of the Works)	Sum	-	658 490,00	R 658 490,00
	Time-related items			-	-
	General requirements and conditions			-	-
30	Performance Security in terms of Clause 4.2 of FIDIC (Conditions of Contract)	Sum	-	4 577 778,00	R 4 577 778,00
31	Insurance for Section A of the Works	Sum	-	285 227,00	R 285 227,00
32	Insurance for Section B of the Works	Sum	-	130 053,00	R 130 053,00
33	Insurance for Section C of the Works	Sum	-	134 721,00	R 134 721,00
34	General environmental management obligations and all costs related to compliance with the Environmental Management Specification (Specification H) in Part C3: Scope of Work	Sum	-	98 516,00	R 98 516,00
35	Obligations and costs in compliance with the requirements for Site Facilities for the Engineer in terms of Part C3: Scope of Work	Sum	-	1 140 421,00	R 1 140 421,00
36	Contractor's Superintendence and Management including compliance with Part C3: Scope of Work	Sum	-	5 283 178,00	R 5 283 178,00
	Health and Safety:			-	-
37	General obligations and all costs in compliance with the Occupational Health and Safety Act, Construction Regulations, 2003, and the Health and Safety Specification (Specification G) in Part C3: Scope of Work	Sum	-	75 276,00	R 75 276,00
38	Risk assessment	Sum	-	57 270,00	R 57 270,00
39	Preparation of health and safety plan	Sum	-	41 055,00	R 41 055,00
40	Accident prevention officer/ Health and Safety Specialist	Sum	-	1 400 240,00	R 1 400 240,00
41	Medical assessment of employees	Sum	-	46 000,00	R 46 000,00
Carried forward / ...					R 44 423 399,60

ITEM	DESCRIPTION	UNIT	QTY	RATE R c	AMOUNT R c
Brought forward / ...					R 44 423 399,60
42	HIV/AIDS awareness: compliance with the requirements of SANS 1921-6	Sum	-	17 250,00	R 17 250,00
43	All other time-related obligations	Sum	-	92 765,00	R 92 765,00
	Provisional Sums:				
	Others sums stated provisionally by the Engineer				
44	Alterations to existing services by authorities/others	Provisional Sum		-	R 150 000,00
45	Percentage adjustment on Item 44 for Contractor's design, sourcing quotes, superintendence, and for overheads and profit (state as percentage an extend as amount)	%	150 000	15	R 22 500,00
46	Wayleave: Allow for the cost of obtaining wayleave as directed by the Engineer	Provisional Sum		-	R 30 000,00
47	Percentage adjustment on Item 46 for Contractor's design, sourcing quotes, superintendence, and for overheads and profit (state as percentage an extend as amount)	%	30 000	15	R 4 500,00
48	General training costs for socio-economic requirements	Provisional Sum		-	R 50 000,00
49	Percentage adjustment on Item 48 for Contractor's design, sourcing quotes, superintendence, and for overheads and profit (state as percentage an extend as amount)	%	50 000	15	R 7 500,00
50	Community Liaison Officer	Provisional Sum		-	R 80 000,
51	Percentage adjustment on Item 50 for Contractor's design, sourcing quotes, superintendence, and for overheads and profit (state as percentage an extend as amount)	%	80 000	15	R 12 000,00
52	Maintenance and workshop equipment	Provisional Sum		-	R 175 400,00
53	Percentage adjustment on Item 52 for Contractor's design, sourcing quotes, superintendence, and for overheads and profit (state as percentage an extend as amount)	%	175 400	15	R 26 310,00
Carried forward / ...					R 45 091 624,60

ITEM	DESCRIPTION	UNIT	QTY	RATE R c	AMOUNT R c
Brought forward / ...					R 45 091 624,60
54	Relocation of existing admin and control building equipment (i.e. IT servers, electronic hardware, control system etc.) to temporary accommodation on site as directed by the Engineer	Provisional Sum		-	R 80 000,00
55	Percentage adjustment on Item 54 for Contractor's design, sourcing quotes, superintendence, and for overheads and profit (state as percentage an extend as amount)	%	80 000	15	R 12 000,00
56	Other work as directed by the Engineer	Provisional Sum		-	R 150 000,00
57	Percentage adjustment on Item 56 for Contractor's design, sourcing quotes, superintendence, and for overheads and profit (state as percentage an extend as amount)	%	150 000	15	R 22 500,00
	Daywork (Provisional)				
	Allow for the cost of all labour (at full cost of employment), materials and plant, including overheads and profit, superintendence and management				
	Labour:				
58	General foreman	h	150	575,00	R 86 250,00
59	Skilled labour (Artisan/Electrician)	h	200	460	R 92 000,00
60	Unskilled labour (Labourer)	h	1000	41	R 41 000,00
61	Electrical foreman	h	150	656	R 98 400,00
62	Cable jointer	h	50	449	R 22 450,00
	Materials:				
63	Allow for net cost of goods or materials actually used	Provisional Sum			R 70 000,00
64	Percentage mark-up on Item 67 (state % and extend as an amount)	%	70 000	15	R 10 500,00
	Contractor's own plant on Site:				
65	Allow for all-inclusive cost of using Contractor's own plant on Site	Provisional Sum			R 50 000,00
Carried forward / ...					R 45 826 724,60

ITEM	DESCRIPTION	UNIT	QTY	RATE R	c	AMOUNT R	c
Brought forward / ...						R 45 826 724,60	
66	Percentage adjustment on Item 65 for Contractor's design, sourcing quotes, superintendence, and for overheads and profit (state as percentage an extend as amount)	%	50 000	15		R 7 500,00	
	Plant hired by Contractor:						
67	Allow for net cost of hired plant	Provisional Sum		-		R 60 000,00	
68	Percentage adjustment on Item 67 for Contractor's design, sourcing quotes, superintendence, and for overheads and profit (state as percentage an extend as amount)	%	60 000	15		R 9 000,00	
	Factory Inspections as Specified						
	Allow for all costs related to Factory Inspections as specified (including separate return flights, car hire, accommodation and subsistence costs incurred in connection with factory inspections) outside the Cape Metropolitan Area, by the City of Cape Town Engineer and his representatives (at least three persons in total). For the following systems/equipment:						
69	MBR Fine Screening Facility	Provisional Sum		-		R 140 000,00	
70	Percentage adjustment on Item 69 for Contractor's design, sourcing quotes, superintendence, and for overheads and profit (state as percentage an extend as amount)	%	140 000	15,00		R 21 000,00	
71	Fine Bubble Diffuser Aeration Equipment (Diffusers and Blowers)	Provisional Sum		-		R 140 000	
72	Percentage adjustment on Item 71 for Contractor's design, sourcing quotes, superintendence, and for overheads and profit (state as percentage an extend as amount)	%	140 000	15,00		R 21 000,00	
73	Membrane Blowers, Instrument Air Equipment and Pumps	Provisional Sum		-		R 160 000,00	
74	Percentage adjustment on Item 73 for Contractor's design, sourcing quotes, superintendence, and for overheads and profit (state as percentage an extend as amount)	%	160 000	15,00		R 24 000,00	
75	Bioreactor and Membrane Tank Feed Pumps	Provisional Sum		-		R 140 000,00	
Carried forward / ...						R 46 549 224,60	

ITEM	DESCRIPTION	UNIT	QTY	RATE R c	AMOUNT R c
Brought forward / ...					R 46 549 224,60
76	Percentage adjustment on Item 75 for Contractor's design, sourcing quotes, superintendence, and for overheads and profit (state as percentage an extend as amount)	%	140 000	15,00	R 21 000,00
77	MBR A: Membrane Equipment	Provisional Sum		-	R 160 000,00
78	Percentage adjustment on Item 77 for Contractor's design, sourcing quotes, superintendence, and for overheads and profit (state as percentage an extend as amount)	%	160 000	15,00	R 24 000,00
79	MBR B: Membrane Equipment	Provisional Sum		-	R 160 000,00
80	Percentage adjustment on Item 79 for Contractor's design, sourcing quotes, superintendence, and for overheads and profit (state as percentage an extend as amount)	%	160 000	15,00	R 24 000,00
81	1000 kVA Mini-sub	No	2	5 000,00	10 000,00
82	1250kVA Mini-sub	No	4	5 000,00	20 000,00
83	1600kVA Mini-sub	No	1	5 000,00	Rate Only
84	1800kVA Transformer	No	1	5 000,00	Rate Only
85	LV SWITCHGEAR AND CONTROLGEAR ASSEMBLIES	Provisional Sum		-	R 75 000,00
86	Percentage adjustment on Item 85 for Contractor's design, sourcing quotes, superintendence, and for overheads and profit (state as percentage an extend as amount)	%	75 000	15	R 11 250,00
87	Control System	Provisional Sum		-	R 75 000,00
88	Percentage adjustment on Item 87 for Contractor's design, sourcing quotes, superintendence, and for overheads and profit (state as percentage an extend as amount)	%	75 000	15	R 11 250,00
TOTAL OF SCHEDULE NO. A CARRIED TO SUMMARY					R 47 140 724,60

ITEM	DESCRIPTION	UNIT	QTY	RATE R	RATE c	AMOUNT R	AMOUNT c
	SCHEDULE Ba						
	SUNDRIES						
	Allow for all costs and expenses in connection with the following items:						
	Independent Inspectorate for for equipment (inclusive of common equipment) specified in:						
1	Section A of the Works	Sum	-	107 348,00	-	R	107 348,00
2	Section B of the Works	Sum	-	266 248,00	-	R	266 248,00
3	Section C of the Works	Sum	-	224 848,00	-	R	224 848,00
	Grouting in and/ or concreting in of equipment (inclusive of common equipment) for:						
4	Section A of the Works	Sum	-	455 400,00	-	R	455 400,00
5	Section B of the Works	Sum	-	130 928,00	-	R	130 928,00
6	Section C of the Works	Sum	-	130 928,00	-	R	130 928,00
	Corrossion protection and Painting of equipment (inclusive of common equipment) for:						
7	Section A of the Works	Sum	-	145 200,00	-	R	145 200,00
8	Section B of the Works	Sum	-	138 000,00	-	R	138 000,00
9	Section C of the Works	Sum	-	138 000,00	-	R	138 000,00
	Allow for all costs and expenses in connection with the following Servicing and/or Maintenance of the Works as instructed by Engineer						
	Provision shall be made for maintenance of plant as per the maintenance schedule. The tendered price shall include all costs associated with maintenance (consumables, spare parts, P&G's, etc.) as specified in Clause A51 (Volume 2A)						
10	Servicing of all equipment during the Defects Notification Period as ordered by the Engineer for Section A of the Works	No of visits	4	36 918,00	-	R	147 672,00
11	Servicing of all equipment during the Defects Notification Period as ordered by the Engineer for Section B of the Works	No of visits	4	23 524,00	-	R	94 096,00
Carried forward / ...						R	1 978 668,00

ITEM	DESCRIPTION	UNIT	QTY	RATE R c	AMOUNT R c
Brought forward / ...					R 1 978 668,00
12	Servicing of all equipment during the Defects Notification Period as ordered by the for Engineer Section C of the Works	No of visits	4	24 633,00	R 98 532,00
13	Servicing of all equipment during the Defects Notification Period as ordered by the Engineer for Equipment Common to Sections of the Works	No of visits	4	29 478,00	R 117 912,00
	Provisional Sums in connection with the following Laboratory Equipment:				
	Automatic Samplers				
14	Portable Sampler 24 x 1L (Hach or similar approved by Engineer)	Prov Sum	-		R 120 000,00
15	Percentage adjustment on Item 14 for Contractor's design, sourcing quotes, superintendence, and for overheads and profit (state as percentage an extend as amount)	%	120 000	15,00	R 18 000,00
16	Refrigerated Sampler 24 x 1L (Hach or similar approved by Engineer)	Prov Sum	-		R 160 000,00
17	Percentage adjustment on Item 16 for Contractor's design, sourcing quotes, superintendence, and for overheads and profit (state as percentage an extend as amount)	%	160 000	15,00	R 24 000,00
	Analytical Equipment				
18	Ammonium Cartridge (Hach LZY694 or similar approved by Engineer)	Prov Sum	-		R 37 500,00
19	Percentage adjustment on Item 18 for Contractor's design, sourcing quotes, superintendence, and for overheads and profit (state as percentage an extend as amount)	%	37 500	15,00	R 5 625,00
20	Nitrates Cartridge (Hach LZY694 or similar approved by Engineer)	Prov Sum	-		R 37 500,00
21	Percentage adjustment on Item 20 for Contractor's design, sourcing quotes, superintendence, and for overheads and profit (state as percentage an extend as amount)	%	37 500	15,00	R 5 625,00
22	4No x Phosphate Reagents (Hach 6776100 or similar approved by Engineer) x 4 quantities	Prov Sum	-		R 60 000,00
Carried forward / ...					R 2 663 362,00

ITEM	DESCRIPTION	UNIT	QTY	RATE R	c	AMOUNT R	c
	SCHEDULE M1a						
	LIFTING EQUIPMENT						
	Allow for all the costs and expenses in connection with the design, manufacture, painting, supplying, delivery, offloading and storage of the following materials and equipment:						
1	MBR fine screening gantry	No	1	285 875,00	-	R 285 875,00	-
2	MBR B membrane tanks overhead travelling crane	No	1	524 521,80	-	R 524 521,80	-
3	MBR B membrane tanks rails	m	120	2 909,76	-	R 349 170,7	
4	MBR B blower room overhead travelling crane	No	1	309 854,60	-	R 309 854,60	-
5	MBR B blower room rails	m	120	2 379,08	-	R 285 489,35	-
6	Dolly system including tracks,etc.	Sum	-	59 400,00	-	R 59 400,00	-
7	External blower manual lifting equipment	No	1	54 425,80	-	R 54 425,80	-
8	MBR B pump room mobile manual lifting equipment	No	1	8 827,50	-	R 8 827,50	-
9	MBR B pump room gantry lifting equipment	No	1	39 576,90	-	R 39 576,90	-
10	MBR A: Citric acid dosing room overhead travelling crane	No	1	276 995,00	-	R 276 995,00	-
11	MBR B: Citric acid dosing room overhead travelling crane	No	1	222 304,50	-	R 222 304,50	-
12	MBR B Ax-An recycle pumps gantry	No	3	139 262,00	-	R 417 786,0	-
13	MBR B Ae-Ax recycle pumps gantry	No	3	96 875,00	-	R 290 625,00	-
14	MBR B swing recycle mixed liquor recycle pumps gantry	No	1	51 875,00	-	R 51 875,00	-
15	MBR B membrane tanks feed pumps manual lifting equipment	No	1	4 527,60	-	R 4 527,60	-
16	MBR B mixer manual mobile lifting equipment	No	1	4 527,60	-	R 4 527,60	-
17	MBR B membrane tanks feed pumps manual lifting equipment	No	1	0,00	-	Removed in Addendum 2	
18	~~MBR B mixer manual mobile lifting equipment~~	~~No~~	~~1~~	0,00	-		
	Carried forward / ...					R 3 185 782,34	

ITEM	DESCRIPTION	UNIT	QTY	RATE R c	AMOUNT R c
Brought forward / ...					R 3 185 782,34
19	MBR B reactor basin cart	No	1	13 200,00	R 13 200,00
20	Chlorine building overhead travelling crane	No	1	236 832,20	R 236 832,20
21	Chlorine room rails	m	120	2 379,12	R 285 494,00
22	Existing Dewatering building overhead travelling crane	No	1	272 358,00	R 272 358,00
23	Existing Dewatering building support structure	Sum	-	172 500,00	R 172 500,00
24	Existing Dewatering building rails	m	80	3 347,00	R 267 760,00
	Allow for all costs and expenses in connection with the Site installation in terms of in terms of FIDIC and Part C3: Scope of Work (excluding pre-commissioning) for the following:				
25	MBR fine screening gantry	No	1	94 428,00	R 94 428,00
26	MBR B membrane tanks overhead travelling crane	No	1	52 536,00	R 52 536,00
27	MBR B membrane tanks rails	m	120		Included
28	MBR B blower room overhead travelling crane	No	1	54 472,00	R 54 472,00
29	MBR B blower room rails	m	120		Included
30	Dolly system including tracks,etc.	Sum	-	12 100,00	R 12 100,00
31	External blower manual lifting equipment	No	1	12 100,00	R 12 100,00
32	MBR B pump room mobile manual lifting equipment	No	1	8 250,00	R 8 250,00
33	MBR B pump room gantry lifting equipment	No	1	8 250,00	R 8 250,00
34	MBR A: Citric acid dosing room overhead travelling crane	No	1	42 647,00	R 42 647,00
35	MBR B: Citric acid dosing room overhead travelling crane	No	1	42 647,00	R 42 647,00
36	MBR B Ax-An recycle pumps gantry	No	3	63 003,00	R 189 009,00
37	MBR B Ae-Ax recycle pumps gantry	No	3	56 446,00	R 169 338,00
38	MBR B swing recycle mixed liquor recycle pumps gantry	No	1	37 891,00	R 37 891,00
Carried forward / ...					R 5 157 594,54

ITEM	DESCRIPTION	UNIT	QTY	RATE R	c.	AMOUNT R	c.
Brought forward / ...						R	5 157 594,54
39	MBR B membrane tanks feed pumps manual lifting equipment	No	1	4 400,00		R	4 400,00
40	MBR B mixer manual mobile lifting equipment	No	1	4 400,00		R	4 400,00
41	MBR B reactor basin cart	No	1	4 400,00		R	4 400,00
42	Chlorine building overhead travelling crane	No	1	46 761,00		R	46 761,00
43	Chlorine room rails	m	120	0,00		R	-
44	Existing Dewatering building overhead travelling crane	No	1	57 500,00		R	57 500,00
45	Existing Dewatering building support structure	Sum	-	28 750,00		R	28 750,00
46	Existing Dewatering building rails	m	80	360,00		R	28 800,00
	Allow for all costs and expenses in connection with pre-commsissioning in terms of FIDIC and Part C3: Scope of Work for the following:						
47	MBR fine screening gantry	No	1			R	Included
48	MBR B membrane tanks overhead travelling crane	No	1			R	Included
49	~~MBR B membrane tanks rails~~	~~m~~	~~120~~			R	-
50	MBR B blower room overhead travelling crane	No	1			R	Included
51	~~MBR B blower room rails~~	~~m~~	~~140~~			R	-
52	Dolly system including tracks,etc.	Sum	-			R	Included
53	External blower manual lifting equipment	No	1			R	Included
54	MBR B pump room mobile manual lifting equipment	No	1			R	Included
55	MBR B pump room gantry lifting equipment	No	1			R	Included
56	MBR A: Citric acid dosing room overhead travelling crane	No	1			R	Included
57	MBR B: Citric acid dosing room overhead travelling crane	No	1			R	Included
58	MBR B Ax-An recycle pumps gantry	No	3			R	Included
59	MBR B Ae-Ax recycle pumps gantry	No	3			R	Included
Carried forward / ...						R	5 332 605,54

ITEM	DESCRIPTION	UNIT	QTY	RATE R c	AMOUNT R c
Brought forward / ...					R 5 332 605,54
60	MBR B swing recycle mixed liquor recycle pumps gantry	No	1		Included
					R -
61	MBR B membrane tanks feed pumps manual lifting equipment	No	1		Included
					R -
62	MBR B mixer manual mobile lifting equipment	No	1		Included
					R -
63	MBR B reactor basin cart	No	1		Included
					R -
64	Chlorine building overhead travelling crane	No	1		Included
					R -
65	~~Chlorine room rails~~	~~m~~	~~80~~		R -
					R -
65a	Existing Dewatering building overhead travelling crane	No	1		Included
					R -
	~~Existing Dewatering building support structure~~	~~m~~	~~200~~		R -
					R -
	~~Existing Dewatering building rails~~	~~m~~	~~200~~		R -
					R -
					R -
	Storage of equipment as ordered by the Engineer including insurances where storage space is provided by:				R -
66	a. The Contractor	Month	3		No charge for 3 months
					R -
67	b. The City of Cape Town	Month	3		Nil
					R -
68	All other items not included above but which are nevertheless necessary to meet the Scope of Work and/or are required for the proper, safe and effective operation of the plant *(Specify)*	Item			R -
TOTAL OF SCHEDULE M1a CARRIED TO SUMMARY					R 5 332 605,54

Item	DESCRIPTION	UNIT	QTY	RATE R	c	AMOUNT R	c
	SCHEDULE M2						
	VALVES AND SLUICE GATES EQUIPMENT						
	Allow for all the costs and expenses in connection with the design, manufacture, painting, supplying, delivery, offloading and storage of the following materials and equipment:						
	Sluice Gate, Weir and Stop Logs for All Section of the Works						
	Channel-Mounted Sluice Gate Summary						
1	MBR B Upstream of Mixed Liquor Swing Recycle Pumps Isolation	No	1	79 835,38	R	79 835,38	
2	Actuator for item 1	No	1	81 341,28	R	81 341,28	
	Wall-Mounted Sluice Gate Summary						
3	MBR – Inlet of each fine screen	No	6	51 923,92	R	311 543,50	
4	Actuator for item 3	No	6	79 255,22	R	475 531,34	
5	MBR – Flow split to MBR A and MBR B downstream of fine screens.	No	3	67 571,66	R	202 714,97	
6	Actuator for item 5	No	3	94 982,28	R	284 946,83	
7	MBR B – Inlet to anaerobic zone	No	3	67 008,55	R	201 025,64	
8	Actuator for item 7	No	3	83 302,22	R	249 906,67	
9	MBR B – Outlet of aerobic zone to Membrane Tank Feed Pumps	No	3	66 340,30	R	199 020,89	
10	Actuator for item 9	No	3	94 981,16	R	284 943,49	
11	MBR B – Downward opening sluice gate upstream of Membrane tank feed pumps to WAS sump	No	1	157 213,39	R	157 213,39	
12	Actuator for item 11	No	1	88 728,41	R	88 728,41	
13	MBR B – Downward opening sluice gate at inlet of membrane filtration train	No	9	101 670,23	R	915 032,05	
14	Actuator for item 13	No	9	99 122,09	R	892 098,77	
	Carried forward / ...				R	4 423 882,59	

Item	DESCRIPTION	UNIT	QTY	RATE R c		AMOUNT R c
Brought forward / ...					R	4 423 882,59
15	MBR B – mixed liquor return to aerobic zone	No	3	55 204,58	R	165 613,73
16	Actuator for item 15	No	3	98 322,41	R	294 967,24
17	MBR B – aerobic zone outlet to scum collection chamber (downward opening)	No	3	73 441,57	R	220 324,70
18	Actuator for item 17	No	3	83 302,22	R	249 906,67
19	MBR B – Downstream of Mixed Liquor Swing Recycle Pumps Isolation	No	1	91 846,06	R	91 846,06
20	Actuator for item 19	No	1	85 388,28	R	85 388,28
21	MBR B – membrane train outlet to WAS sump	No	1	105 635,18	R	105 635,18
22	Actuator for item 21	No	1	99 122,09	R	99 122,09
23	MBR B – between WAS sump and membrane inspection sump	No	1	63 749,27	R	63 749,27
24	MBR B - Scum Skimmer Outlet	No	1	35 897,28	R	35 897,28
25	MBR A – Transfers Pump to MLSS Recycle Channel	No	3	33 578,23	R	100 734,68
26	Actuator for item 25	No	3	45 444,00	R	136 332,00
27	MBR A - Downward opening sluice gate at inlet of membrane filtration train	No	6	44 792,35	R	268 754,11
28	Actuator for item 27	No	6	49 491,00	R	296 946,00
29	MBR A – Recycle Channel to Anoxic Zone	No	5	37 122,62	R	185 613,12
30	Actuator for item 29	No	5	49 491,00	R	247 455,00
31	MBR A – Recycle Channel to Aerobic Zone	No	4	34 675,94	R	138 703,75
32	Actuator for item 31	No	4	49 491,00	R	197 964,00
33	CAS A – Outlet of reactor to SST	No	6	124 118,08	R	744 708,49
34	CAS B – Outlet of Reactor to SST	No	6	124 118,08	R	744 708,49
35	Final Effluent Collection Chamber – Outlet to CCT distribution chamber	No	2	100 488,76	R	200 977,52
Carried forward / ...					R	9 099 230,24

Item	DESCRIPTION	UNIT	QTY	RATE R c	AMOUNT R c
Brought forward / ...					R 9 099 230,24
36	Chlorine Contact Tank – Inlet to CCT distribution chamber	No	2	100 488,76	R 200 977,52
37	Chlorine Contact Tank – Inlet and outlet of each CCT	No	1	120 388,36	R 120 388,36
38	Chlorine Contact Tank – Inlet and outlet of each CCT	No	2	87 631,63	R 175 263,26
	Tilting Weir Summary				R -
39	CAS A – Reactor Aerobic Zone Outlet	No	2	130 757,00	R 261 514,00
40	CAS B – Reactor Aerobic Zone Outlet	No	2	130 757,00	R 261 514,00
	Weir Plate Summary				R -
41	MBR B – Inlet to Anaerobic Zone	No	3	4 891,44	R 14 674,33
42	MBR B – Anaerobic Zone 1 to Anaerobic Zone 2	No	3	2 445,72	R 7 337,17
43	MBR B – Anaerobic Zone 2 to Anoxic Zone 1	No	3	4 891,44	R 14 674,33
44	MBR B – Anoxic Zone 2 to Anoxic Zone 1	No	3	4 891,44	R 14 674,33
45	MBR B – Anoxic Zone 2 to Aerobic Zone	No	3	8 152,41	R 24 457,22
46	MBR B – Membrane tank Feed Pumps to MBR TANKS Distribution Channel	No	6	1 717,87	R 10 307,23
47	MBR B – Filtration Train Inlet	No	9	2 445,72	R 22 011,50
48	MBR B – Filtration Train Outlet	No	9	2 445,72	R 22 011,50
49	MBR B – Ax-An Recycle Pump Outlet	No	9	1 300,47	R 11 704,27
50	MBR B – Ae-Ax Recycle Pump Outlet	No	9	1 300,47	R 11 704,27
51	MBR B – Membrane to Aerobic Zone Inlet	No	3	1 310,25	R 3 930,76
52	MBR B – Swing Recycle Pump Outlet	No	4	1 306,59	R 5 226,34
53	MBR A – Transfers Pump to Membrane Distribution Channel	No	3	2 045,00	R 6 135,00
54	MBR A – Filtration Train Inlet	No	6	1 691,00	R 10 146,00
55	MBR A – Filtration Train Outlet	No	6	3 459,00	R 20 754,00
Carried forward / ...					R 10 318 635,65

Item	DESCRIPTION	UNIT	QTY	RATE R	C	AMOUNT R	C
Brought forward / ...						R	10 318 635,65
56	CAS A – Reactor Aerobic Zone Outlet to SST	No	6	3 105,00		R	18 630,00
57	CAS B – Reactor Aerobic Zone Outlet to SST	No	6	3 105,00		R	18 630,00
58	CAS A – Emergency overflow to SST	No	6	3 105,00		R	18 630,00
59	CAS B – Emergency overflow to SST	No	6	3 105,00		R	18 630,00
60	Service Water Supply Chamber	No	1	4 991,00		R	4 991,00
	Stop Log Summary						
61	CAS A – Aerobic zone to central WAS sump	No	1	40 016,00		R	40 016,00
62	CAS B – Aerobic zone to central WAS sump	No	1	40 016,00		R	40 016,00
63	CAS A – Emergency overflow to SST	No	6	56 364,00		R	338 184,00
64	CAS B – Emergency overflow to SST	No	6	56 364,00		R	338 184,00
	Valves for Section A of the Works						
	MBR Fine Screening Station						
65	MBR Fine Screening Station common wash water valves (isolation, pressure reducing and other)	Sum	-	28 735,54		R	28 735,54
66	Actuators for item 65	Sum	-				Included
	FBDA System						
67	FBDA V-Port knife gate valves (VAG or equal) for aeration control	No	9	16 202,80		R	145 825,22
68	Actuators for item 67	No	9	52 411,99		R	471 707,87
69	FBDA Condensate drain valves	Sum	-				Included
70	FBDA Formic Acid valves	Sum	-				Included
71	FBDA Blower - all valves for one blower (non return valve, isolation valves etc.)	No	5	6 706,19		R	33 530,97
72	Actuators for item 71	No	5	28 030,93		R	140 154,63
73	Scum Spray Valves	Sum	-	17 166,60		R	17 166,60
74	Actuators for item 73	Sum	-	148 622,36		R	148 622,36
Carried forward / ...						R	12 140 289,85

Item	DESCRIPTION	UNIT	QTY	RATE R c.	AMOUNT R c.
Brought forward / ...					R 12 140 289,85
	MBR Equipment				
75	Membrane Casette Air Scour Isolation Valve	No	126 ~~108~~	2 917,20	R 367 567,20
76	Membrane Filtration Train Sequential Aeration Valves per Train	No	18 ~~9~~	36 341,43	R 654 145,80
77	Actuators for item 76	No	18 ~~9~~	25 127,18	R 452 289,20
78	Membrane Filtration Train Sequential Aeration Isolation Valves	No	9	16 567,45	R 149 107,07
79	Membrane Casette Permeate Isolation Valve	No	63 ~~54~~	3 780,02	R 238 141,13
80	Membrane Filtration Train Permeate Isolation Valves	No	9		Duplicate of item
81	Chemical dosing diaphragm valves, Non return Valve and isolation valve	No	18	8 996,90	R 161 944,20
82	Actuators for item 81	No	18		Included
83	Membrene Filtration Train Drain Isolation Valve	No	9	16 202,80	R 145 825,22
84	Membrene Filtration Train Drain Isolation Valve (Actuated)	No	9	21 267,51	R 191 407,59
85	Actuators for item 84	No	9		Included
86	Membrane plant ventilation/ air ejection system Valves	Sum	-	73 469,00	R 73 469,00
87	Actuators for item 86	Sum	-		Included
88	Permeate Pump Safety Relief Valve	No	18	38 500,00	R 693 000,00
89	Permeate Pump Isolation Valve	No	9	6 517,70	R 58 659,28
90	Permeate Pump Isolation Valve (Actuated)	No	9	7 940,39	R 71 463,55
91	Actuators for item 90	No	9	43 028,70	R 387 258,30
92	Service Water Tank Make-up Valves	Sum	-	2 522,26	R 2 522,26
93	Actuators for item 92	Sum	-	8 478,95	R 8 478,95
94	Membrane Filtration Train Drain Pump Isolation Valve	No	6	11 842,71	R 71 056,26
95	Membrane Filtration Train Drain Pump Non Return Valve Valve	No	3	23 712,35	R 71 137,04
Carried forward / ...					R 15 937 761,90

Item	DESCRIPTION	UNIT	QTY	RATE R c	AMOUNT R c
Brought forward / ...					R 15 937 761,90
96	WAS Pump Isolation Valve	No	4	11 842,71	R 47 370,84
97	WAS Pump Non Return Valve Valve	No	2	23 712,35	R 47 424,70
98	WAS Pump Diverting (To WAS sump and to Mixed Liquor Recycle Channel)	No	2	16 630,28	R 33 260,57
99	Actuators for item 98	No	2		Included
100	WAS/Scum Sump Scum Spray Valves	Sum	-	2 514,40	R 2 514,40
101	Actuators for item 100	Sum	-	4 573,27	R 4 573,27
102	Air Scour - all valves for one blower (non return valve, isolation valves etc.)	No	6	16 800,83	R 100 804,97
103	Actuators for item 102	No	6	45 743,38	R 274 460,27
104	Air Scour Common Manifold Isolation valves	No	2	35 690,26	R 71 380,52
105	All Sodium Hypochlorite Valves	Sum	-	35 098,40	R 35 098,40
106	Actuators for item 105	Sum	-	13 200,00	R 13 200,00
107	All Citric Acid Valves	Sum	-	20 265,30	R 20 265,30
108	Actuators for item 107	Sum	-	9 900,00	R 9 900,00
109	All Instrument Air Valves	Sum	-	55 000,00	R 55 000,00
110	Actuators for item 109	Sum	-		Included
111	All Service Water Valves	Sum	-	55 000,00	R 55 000,00
112	Actuators for item 111	Sum	-		Included
	Valves for Section B of the Works				
113	Scum box isolation valves	No	8	30 941,00	R 247 528,00
114	Telescopic Valves	No	12	77 902,00	R 934 824,00
115	Actuators for item 114	No	12	82 368,00	R 988 416,00
116	WAS Pump Isolation Valve	No	8	12 660,00	R 101 280,00
117	WAS Pump Non Return Valve Valve	No	4	4 973,00	R 19 892,00
118	Scum Pump Isolation Valve	No	12	12 660,00	R 151 920,00
119	Scum Pump Non Return Valve Valve	No	6	4 973,00	R 29 838,00
Carried forward / ...					R 19 181 713,14

Item	DESCRIPTION	UNIT	QTY	RATE R c	AMOUNT R c
Brought forward / ...					R 22 159 636,14
162	Actuators for item 161	No	3	40 847,00	R 122 541,00
163	Air Scour Common Manifold Isolation valves	No	2	4 774,00	R 9 548,00
164	All Sodium Hypochlorite Valves	Sum	-	15 515,00	R 15 515,00
165	Actuators for item 164	Sum	-	428 322,00	R 428 322,00
166	All Citric Acid Valves	Sum	-	15 515,00	R 15 515,00
167	Actuators for item 166	Sum	-	428 322,00	R 428 322,00
168	All Instrumetn Air Valves	Sum	-	55 013,00	R 55 013,00
169	Actuators for item 168	Sum	-	37 502,00	R 37 502,00
170	All Service Water Valves	Sum	-	72 967,00	R 72 967,00
171	Actuators for item 170	Sum	-	285 548,00	R 285 548,00
172	Scum Pump isolation	No	4	17 027,00	R 68 108,00
173	Scum Pump non return	No	4		R 58 388,00
174	Scum Telescopic Valve	No	5	52 434,00	R 262 170,00
175	Scum Telescopic Valve Isolation Valve	No	5		R 63 300,00
	Valves for Equipment Common to Sections of the Works				
176	All Ferric Chloride Valves	Sum	-	35 792,00	R 35 792,00
177	Actuators for item 176	Sum	-	142 774,00	R 142 774,00
178	All Sodium Hydroxide Valves	Sum	-	35 792,00	R 35 792,00
179	Actuators for item 178	Sum	-	142 774,00	R 142 774,00
Carried forward / ...					R 24 439 527,14

Item	DESCRIPTION	UNIT	QTY	RATE R c	AMOUNT R c
Brought forward / ...					R 24 439 527,14
	SPARES				
	MBR Fine Screening Station				
180	Two each type and size used <DN50	Sum	-	28 735,54	R 28 735,54
	Fine Bubble Diffused Aeration			-	-
	MBR B			-	-
181	V-Port knife gate valves (Aeration zone 1)	No	2	16 202,80	R 32 405,60
182	Actuators for item 181	No	2	52 411,99	R 104 823,97
183	V-Port knife gate valves (Aeration zone 2)	No	2	16 202,80	R 32 405,60
184	Actuators for item 183	No	2	52 411,99	R 104 823,97
185	V-Port knife gate valves (Aeration zone 3)	No	2	16 202,80	R 32 405,60
186	Actuators for item 185	No	2	52 411,99	R 104 823,97
	MBR A			-	-
187	V-Port knife gate valve for dropleg 1	No	1	37 092,00	R 37 092,00
188	Actuators for item 187	No	1	52 791,00	R 52 791,00
189	V-Port knife gate valve for dropleg 2	No	1	37 955,00	R 37 955,00
190	Actuators for item 189	No	1	52 791,00	R 52 791,00
191	V-Port knife gate valve for dropleg 3	No	1	37 955,00	R 37 955,00
192	Actuators for item 191	No	1	52 791,00	R 52 791,00
193	V-Port knife gate valve for dropleg 4	No	1	37 955,00	R 37 955,00
194	Actuators for item 193	No	1	52 791,00	R 52 791,00
	Blowers				R -
	MBR B				-
					-
					R -
195	FBDA Blower Isolation Valves	No	2	6 706,19	R 13 412,39
196	Actuators for item 195	No	2	28 182,40	R 56 364,79
197	FBDA Blower Non return Valves	No	2	7 293,00	R 14 586,00
Carried forward / ...					R 25 326 435,59

Item	DESCRIPTION	UNIT	QTY	RATE R c	AMOUNT R c
Brought forward / ...					R 25 326 435,59
198	Air Scour Blower Isolation Valves	No	2	8 200,70	R 16 401,40
199	Actuators for item 198	No	2	45 743,94	R 91 487,88
200	Air Scour Blower Non Return Valves	No	2	8 600,13	R 17 200,26
	MBR A				
201	FBDA Blower Isolation Valves	No	2	18 350,00	R 36 700,00
202	Actuators for item 201	No	2	52 791,00	R 105 582,00
203	FBDA Blower Non return Valves	No	2	18 335,00	R 36 670,00
204	Air Scour Blower Isolation Valves	No	2	4 774,00	R 9 548,00
205	Actuators for item 204	No	2	40 847,00	R 81 694,00
206	Air Scour Blower Non Return Valves	No	2	4 851,00	R 9 702,00
	MBR Equipment				
	MBR B				
207	Permeate pump suction valve	No	2	7 940,39	R 15 880,79
208	Permeate pump discharge valve	No	2	5 709,86	R 11 419,72
209	Actuators for item 208	No	2	43 028,70	R 86 057,40
210	Membrane cassette permeate isolation valve	No	6	12 227,56	R 73 365,34
211	Membrane cassette air scour isolation valve	No	12	440,95	R 5 291,35
212	Chemical dosing diaphragm valves complete	No	18	6 843,17	R 123 176,99
213	Actuators for item 212	No	18	1 650,00	R 29 700,00
214	Sequential aeration Valves Complete (Equal to twice the number installed)	Sum	-	1 291 791,60	R 1 291 791,60
215	Actuators for item 214	Sum	-	899 078,40	R 899 078,40
	MBR A				
216	Permeate pump suction valve	No	2	3 153,00	R 6 306,00
217	Permeate pump discharge valve	No	2	3 887,00	R 7 774,00
218	Actuators for item 217	No	2	6 501,00	R 13 002,00
Carried forward / ...					R 28 294 264,71

Item	DESCRIPTION	UNIT	QTY	RATE R c	AMOUNT R c
Brought forward / ...					R 28 294 264,71
219	Membrane cassette permeate isolation valve	No	6	1 780,00	R 10 680,00
220	Membrane cassette air scour isolation valve	No	12	1 780,00	R 21 360,00
221	Chemical dosing diaphragm valves	No	12	3 347,00	R 40 164,00
222	Actuators for item 221	No	12	34 222,00	R 410 664,00
223	Sequential aeration Valves (Equal to twice the number installed)	Sum	-	746 726,00	R 746 726,00
224	Actuators for item 223	Sum	-	662 400,00	R 662 400,00
	Filtration Train Drain Pumps and Wasting Pumps (MBR B)				
225	Membrane Tank Drain Isolation valve	No	2	21 312,39	R 42 624,78
226	Actuators for item 225	No	2		Included
227	Membrane Tank Drain Isolation valve	No	2	16 202,80	R 32 405,60
228	Membrane tank drain pump suction valve	No	1	11 842,71	R 11 842,71
229	Membrane tank drain pump discharge valve	No	1	23 712,35	R 23 712,35
230	Scum/WAS pump suction valve	No	1	11 842,71	R 11 842,71
231	Scum/WAS pump discharge valve	No	1	11 842,71	R 11 842,71
232	Scum/WAS pump non return valve	No	1	23 712,35	R 23 712,35
233	Scum/WAS pump diverter valve (to WAS holding tank or mixed liquor recycle channel)	No	1	16 630,28	R 16 630,28
234	Actuators for item 233	No	1		Included
	Filtration Train Drain Pumps and Wasting Pumps (MBR A)				
235	Membrane Tank Drain Isolation valve	No	2	16 608,00	R 33 216,00
236	Actuators for item 235	No	2	47 888,00	R 95 776,00
237	Membrane Tank Drain Isolation valve	No	2	27 019,00	R 54 038,00
238	Membrane tank drain pump suction valve	No	1	27 019,00	R 27 019,00
239	Membrane tank drain pump discharge valve	No	1	27 019,00	R 27 019,00
Carried forward / ...					R 30 597 940,20

Item	DESCRIPTION	UNIT	QTY	RATE R c	AMOUNT R c
Brought forward / ...					R 30 597 940,20
240	WAS pump suction valve	7	1	12 660,00	R 12 660,00
241	WAS pump discharge valve	7	1	12 660,00	R 12 660,00
242	WAS pump non return valve	7	1	5 432,00	R 5 432,00
	Instrument Air				R -
	Valves (MBR B)				
243	One of each Valve type and size used <DN65	Sum	-	55 000,00	R 55 000,00
244	One of each Actuated valve type and size used (actuated)	Sum	-		Included
245	Actuators for item 244	Sum	-		Included
246	Blow-off (purge) valves	No	2	2 200,00	R 4 400,00
	Valves (MBR A)				
247	One of each Valve type and size used <DN65	Sum	-	3 380,00	R 3 380,00
248	One of each Actuated valve type and size used (actuated)	Sum	-	5 908,00	R 5 908,00
249	Actuators for item 248	Sum	-	2 102,00	R 2 102,00
250	Blow-off (purge) valves	No	2	4 446,00	R 8 892,00
	Service Water Pump Station				
	MBR B				
251	One of each Valve type and size used	Sum	-	22 000,00	R 22 000,00
252	Actuators for item 251	Sum	-		Included
	MBR A				
253	One of each Valve type and size used	Sum	-	16 327,00	R 16 327,00
254	Actuators for item 253	Sum	-	46 840,00	R 46 840,00
	UV Disinfection System (MBR B)				
255	Set of OEM recommended spares per unit	Sum	-		Refer M3 Item 97
256	10% of Bulbs supplied	Sum	-		Refer M3 Item 98
Carried forward / ...					R 30 793 541,20

Item	DESCRIPTION	UNIT	QTY	RATE R c	AMOUNT R c
Brought forward / ...					R 30 793 541,20
	Chemical Dosing Systems MBR A and MBR B and CAS				
257	Four each type and size used	Sum	-	210 788,00	R 210 788,00
258	Actuators for item 257	Sum	-	273 772,00	R 273 772,00
	Existing Plant WAS Pumps (CAS)				
259	Suction valve	No	1	21 649,00	R 21 649,00
260	Discharge valve	No	1	23 803,00	R 23 803,00
261	Non return valve	No	1	14 222,00	R 14 222,00
	Existing Plant Scum Pumps (CAS)				
262	Suction valve	No	1	15 163,00	R 15 163,00
263	Discharge valve	No	1	12 296,00	R 12 296,00
264	Non return valve	No	1	5 024,00	R 5 024,00
	New Chlorination Equipment (CAS)				
265	One of each valve type and size used <DN50	Sum	-	4 903,00	R 4 903,00
266	One of each actuated valve type and size used including actuator	Sum	-	38 316,00	R 38 316,00
267	Blow-off (purge) valves	No	2	22 350,00	R 44 700,00
	Sluice Gate, Weir and Stop Logs for All Section of the Works				
268	Actuators for sluice gates	No	8	58 600,00	R 468 800,00
	Allow for all costs and expenses in connection with the Site installation in terms of in terms of FIDIC and Part C3: Scope of Work (excluding pre-commissioning) for the following:				
	Sluice Gate, Weir and Stop Logs for All Section of the Works				
	Channel-Mounted Sluice Gate Summary				
269	MBR B Upstream of Mixed Liquor Swing Recycle Pumps Isolation	No	1	7 700,00	R 7 700,00
Carried forward / ...					R 31 934 677,20
Brought forward / ...					R 31 934 677,20

Item	DESCRIPTION	UNIT	QTY	RATE R c	AMOUNT R c
	Wall-Mounted Sluice Gate Summary				
270	MBR – Inlet of each fine screen	No	6	4 950,00	R 29 700,00
271	MBR – Flow split to MBR A and MBR B downstream of fine screens.	No	3	4 950,00	R 14 850,00
272	MBR B – Inlet to anaerobic zone	No	3	4 950,00	R 14 850,00
273	MBR B – Outlet of aerobic zone to Membrane Tank Feed Pumps	No	3	4 950,00	R 14 850,00
274	MBR B – Downward opening sluice gate upstream of Membrane tank feed pumps to WAS sump	No	1	4 950,00	R 4 950,00
275	MBR B – Downward opening sluice gate at inlet of membrane filtration train	No	9	4 950,00	R 44 550,00
276	MBR B – mixed liquor return to aerobic zone	No	3	4 950,00	R 14 850,00
277	MBR B – aerobic zone outlet to scum collection chamber (downward opening)	No	3	4 950,00	R 14 850,00
278	MBR B – Downstream of Mixed Liquor Swing Recycle Pumps Isolation	No	1	4 950,00	R 4 950,00
279	MBR B – membrane train outlet to WAS sump	No	1	4 950,00	R 4 950,00
280	MBR B – between WAS sump and membrane inspection sump	No	1	4 950,00	R 4 950,00
281	MBR A – Transfers Pump to MLSS Recycle Channel	No	3	2 875,00	R 8 625,00
282	MBR A - Downward opening sluice gate at inlet of membrane filtration train	No	6	2 875,00	R 17 250,00
283	MBR A – Recycle Channel to Anoxic Zone	No	5	2 875,00	R 14 375,00
284	MBR A – Recycle Channel to Aerobic Zone	No	4	2 875,00	R 11 500,00
285	CAS A – Outlet of reactor to SST	No	6	2 875,00	R 17 250,00
286	CAS B – Outlet of Reactor to SST	No	6	2 875,00	R 17 250,00
287	Chlorine Contact Tank – Inlet and outlet of each CCT	No	1	2 875,00	R 2 875,00
288	Chlorine Contact Tank – Inlet and outlet of each CCT	No	2	2 875,00	R 5 750,00
	Tilting Weir Summary				
289	CAS A – Reactor Aerobic Zone Outlet	No	2	3 594,00	R 7 188,00
Carried forward / ...					R 32 205 040,20

Item	DESCRIPTION	UNIT	QTY	RATE R c	AMOUNT R c
Brought forward / ...					R 32 205 040,20
290	CAS B – Reactor Aerobic Zone Outlet	No	2	3 594,00	R 7 188,00
	Weir Plate Summary				R -
291	MBR B – Inlet to Anaerobic Zone	No	3	770,00	R 2 310,00
292	MBR B – Anaerobic Zone 1 to Anaerobic Zone 2	No	3	770,00	R 2 310,00
293	MBR B – Anaerobic Zone 2 to Anoxic Zone 1	No	3	770,00	R 2 310,00
294	MBR B – Anoxic Zone 2 to Anoxic Zone 1	No	3	770,00	R 2 310,00
295	MBR B – Anaerobic Zone 2 to Anoxic Zone 1	No	3	770,00	R 2 310,00
296	MBR B – Anoxic Zone 2 to Anoxic Zone 1	No	3	770,00	R 2 310,00
297	MBR B – Anoxic Zone 2 to Aerobic Zone	No	3	770,00	R 2 310,00
298	MBR B – Membrane tank Feed Pumps to MBR TANKS Distribution Channel	No	6	770,00	R 4 620,00
299	MBR B – Filtration Train Inlet	No	9	770,00	R 6 930,00
300	MBR B – Filtration Train Outlet	No	9	770,00	R 6 930,00
301	MBR B – AxAn Recycle Pump Outlet	No	9	770,00	R 6 930,00
302	MBR B – AeAx Recycle Pump Outlet	No	9	770,00	R 6 930,00
303	MBR B – Membrane to Aerobic Zone Inlet	No	3	770,00	R 2 310,00
304	MBR B – Swing Recycle Pump Outlet	No	4	770,00	R 3 080,00
305	MBR A – Transfers Pump to Membrane Distribution Channel	No	3	1 438,00	R 4 314,00
306	MBR A – Filtration Train Inlet	No	6	1 438,00	R 8 628,00
307	MBR A – Filtration Train Outlet	No	6	1 438,00	R 8 628,00
308	CAS A – Reactor Aerobic Zone Outlet to SST	No	6	1 438,00	R 8 628,00
309	CAS B – Reactor Aerobic Zone Outlet to SST	No	6	1 438,00	R 8 628,00
310	CAS A – Emergency overflow to SST	No	6	1 438,00	R 8 628,00
311	CAS B – Emergency overflow to SST	No	6	1 438,00	R 8 628,00
312	Service Water Supply Chamber	No	1	1 438,00	R 1 438,00
	Stop Log Summary				
Carried forward / ...					R 32 323 648,20

Item	DESCRIPTION	UNIT	QTY	RATE R c	AMOUNT R c
Brought forward / ...					R 32 323 648,20
313	CAS A – Aerobic zone to central WAS sump	No	1	1 438,00	R 1 438,00
314	CAS B – Aerobic zone to central WAS sump	No	1	1 438,00	R 1 438,00
315	CAS A – Emergency overflow to SST	No	6	1 438,00	R 8 628,00
316	CAS B – Emergency overflow to SST	No	6	1 438,00	R 8 628,00
	Valves for Section C of the Works				R -
317	Included in Relevant Sections	Sum	-		R 57 500,00
	Valves for Section C of the Works				R -
318	Included in Relevant Sections	Sum	-		R 115 000,00
	Valves for Section C of the Works				R -
319	Included in Relevant Sections	Sum	-		R 115 000,00
	Valves for Equipment Common to Sections of the Works				R -
320	Included in Relevant Sections	Sum	-		R 163 250,00
	Allow for all costs and expenses in connection with pre-commsissioning in terms of FIDIC and Part C3: Scope of Work for the following:				R -
321	Sluive Gates, weirs, tilting weirs and handstops	Sum	-		R 159 110,00
	Storage of equipment as ordered by the Engineer including insurances where storage space is provided by:				R -
322	a. The Contractor	Month	3	5 750,00	R 17 250,00
323	b. The City of Cape Town	Month	3	5 750,00	R 17 250,00
	Other:				R -
324	All other Nos not included above but which are nevertheless necessary to meet the Scope of Work and/or are required for the proper, safe and effective operation of the plant (Specify)	No			R -
TOTAL OF SCHEDULE M2 CARRIED TO SUMMARY					R 32 988 140,20

ITEM	DESCRIPTION	UNIT	QTY	RATE R c.	AMOUNT R c.
	SCHEDULE M3a				
	SPARES				
	Allow for all the costs and expenses in connection with the following equipment:				
	MBR Fine Screening Station				
	MBR Fine Screens				
1	Sets of replacement brushes (one for each screen)	No	6	15 422,70	R 92 536,20
2	Sets of recommended spares (one for each screen)	No	6	62 860,05	R 377 160,30
3	Fine Screen motor and gearbox assembly	No	2	37 009,82	R 74 019,65
4	Spare screws for fine screen conveyor	No	3	24 833,60	R 74 500,80
5	Spare shock absorber	No	3	15 639,99	R 46 919,98
6	Spare Brush assembly including shaft and supports	No	6	120 391,22	R 722 347,34
7	Motor and gearbox assembly for screen screw conveyor	No	1	24 864,64	R 24 864,64
8	UHMPE liners for screw conveyor	No	6	22 893,48	R 137 360,85
9	Complete set of screw conveyor critical spares (if different from the above)	No	6	294,90	R 1 769,39
	Screw Conveyor				
10	Motor and gearbox assembly for screen screw conveyor	No	1	27 500,00	R 27 500,00
11	Spare screw for collection conveyor	No	2	40 700,00	R 81 400,00
12	UHMPE liners for screw conveyor	No	4	7 700,00	R 30 800,00
13	Spare bearing sets for screen screw conveyor	No	4		Integrated
14	Complete set of screw conveyor critical spares (if different from the above)	No	2		Above is adequate
	Screenings Screw Press				
15	Motor and gearbox assembly	No	1	42 527,54	R 42 527,54
16	Spare screw	No	1	30 731,58	R 30 731,58
17	UHMPE liners (if applicable)	No	2		N/A
Carried forward / ...					R 1 764 438,28

ITEM	DESCRIPTION	UNIT	QTY	RATE R c	AMOUNT R c
Brought forward / ...					R 1 764 438,28
18	Spare bearing sets for screen screw conveyor	No	2	3 802,65	R 7 605,29
19	Complete set of screenings press critical spares for each press (if different from the above)	No	2	457,87	R 915,74
	Skip Dolly				
20	Complete drive unit (complete with motor, gearbox, etc.)	No	1	27 500,00	R 27 500,00
	Mixers				
	Top Entry Mixers (MBR B)				
21	Complete Motor and gearbox assembly for Anaerobic zone mixer	No	1	44 457,60	R 44 457,60
22	Complete Motor and gearbox assembly for Anoxic zone mixer	No	1	65 655,70	R 65 655,70
23	Sets of recommended spares (one per mixer installed)	No	24	No spares recommended	
	Submersible Mixers (CAS)				
24	Complete mixer units (Anoxic Zone 1 and Anoxic Zone 2)	No	2	148 469,00	R 296 938,00
25	Complete mixer units (Anoxic Zone 3)	No	3	148 469,00	R 445 407,00
26	Complete impeller assemblies (Anoxic Zone 1 and Anoxic Zone 2)	No	2	36 800,00	R 73 600,00
27	Complete impeller assemblies (Anoxic Zone 3)	No	3	36 800,00	R 110 400,00
28	Sets of recommended spares (one per mixer installed)	No	12	18 239,00	R 218 868,00
	Top Entry Mixers (MBR A)				
29	Complete Anaerobic Zone Motor and gearbox assembly	No	1	103 529,00	R 103 529,00
30	Complete Anoxic Zone Motor and gearbox assembly	No	1	103 529,00	R 103 529,00
31	Sets of recommended spares (one per mixer installed)	No	12	19 407,00	R 232 884,00
Carried forward / ...					R 3 495 727,61

ITEM	DESCRIPTION	UNIT	QTY	RATE R c	AMOUNT R c
Brought forward / ...					R 3 495 727,61
	Fine Bubble Diffused Aeration				
	Diffusers (MBR B)				
32	N/A	Sum	-		
	Diffusers (MBR A)				
33	N/A	Sum	-		
	Blowers				
	FBDA Centrifugal Blowers (MBR B)				R -
					R -
					R -
34	Oil for first oil change per unit	Sum	-	23 281,50	R 23 281,50
35	Sets of OEM recommended spares	No	5	Not required for 2 yrs	-
36	Three Blower inlet filters per unit	Sum	-	55 875,60	R 55 875,60
	Air Scour Rotary Lobe Blowers (MBR B)				-
37	Oil for first oil change per unit	Sum	-	24 195,60	R 24 195,60
38	Sets of OEM recommended spares	No	6	No spares recommended	-
39	Three Blower inlet filters per unit	Sum	-	13 530,00	R 13 530,00
40	Two Sets of V-belts for each blower unit	No	2	4 375,80	R 8 751,60
	Air Scour Rotary Lobe Blowers (MBR A)				-
41	Oil for first oil change per unit	Sum	-	4 216,00	R 4 216,00
42	Sets of OEM recommended spares	No	3	13 865,00	R 41 595,00
43	Three Blower inlet filters per unit	Sum	-	14 145,00	R 14 145,00
44	Two Sets of V-belts for each blower unit	Sum	-	18 299,00	R 18 299,00
	FBDA Centrifugal Blowers (MBR BA)				-
45	Oil for first oil change per unit	Sum	-	5 750,00	R 5 750,00
46	Sets of OEM recommended spares	No	3	20 284,00	R 60 852,00
47	Three Blower inlet filters per unit	Sum	-	88 667,00	R 88 667,00
Carried forward / ...					R 3 854 885,91

ITEM	DESCRIPTION	UNIT	QTY	RATE R	RATE c	AMOUNT R	AMOUNT c
Brought forward / ...						R	3 854 885,91
	Recycle and Feed Pumps						
	MBR B						
48	Complete Swing Recycle pump assembly	No	1	287 645,60		R	287 645,60
49	Complete AxAn pump assembly	No	1	69 939,10		R	69 939,10
50	Complete AeAn pump assembly	No	1	124 824,70		R	124 824,70
51	Complete Membrane Tank Feed pump assembly	No	1	287 645,60		R	287 645,60
52	Sets of recommended spares (one per pump installed)	No	28	No spares recommend			
	MBR A						
53	Complete AxAn pump assembly	No	1	179 839,00		R	179 839,00
54	Complete Membrane Tank Feed pump assembly	No	1	714 295,00		R	714 295,00
55	Sets of recommended AxAn Pump spares (one per pump installed)	No	2	35 968,00		R	71 936,00
56	Sets of recommended Transfer Pump spares (one per pump installed)	No	3	152 370,00		R	457 110,00
	MBR Equipment (MBR B)						
	Membrane Equipment						
57	Membrane cassette dummy header A (Equal to the number of Modules installed per full cassette)	Sum	-	13 305,60		R	13 305
58	Membrane cassette dummy header B (Equal to the number of Modules installed per full cassette)	Sum	-	13 305,60		R	13 305,60
59	Membrane Cassette Element Endcap (Equal to the number of Modules installed per full train)	Sum	-	2 883,10		R	2 883,10
60	EPDM O-ring - membrane module and dummy header (Equal to twice the number of Modules installed per full train)	Sum	-	4 435,20		R	4 435,20
61	EPDM O-ring - top permeate saddle adapter, inner (Equal to the number of Modules installed per full train)	Sum	-	886,60		R	886,60
Carried forward / ...						R	6 082 937,01

ITEM	DESCRIPTION	UNIT	QTY	RATE R c	AMOUNT R c
Brought forward / ...					R 6 082 937,01
62	EPDM O-ring - top permeate saddle adapter, outer (Equal to the number of Modules installed per full train)	Sum	-	1 552,10	R 1 552,10
63	EPDM O-ring - permeate pipe (Equal to the number of Modules installed per full train)	Sum	-	886,60	R 886,60
	Permeate Pumps				
64	Complete Permeate/Backpulse pump assemblies	No	3	393 225,80	R 1 179 677,40
65	Pairs of rotors and a set of casing linings	No	12	32 519,30	R 390 231,60
66	Sets of recommended spares (if different from the above)	No	12	0,00	R -
	Other				
67	Membrane Fibre Repair Kit	No	1	5 500,00	R 5 500,00
	Existing Plant MBR Equipment (MBR A)				
	Membrane Equipment				
68	Membrane cassette dummy header A (Equal to the number of Modules installed per full cassette)	Sum	-	14 020,00	R 14 020,00
69	Membrane cassette dummy header B (Equal to the number of Modules installed per full cassette)	Sum	-	14 020,00	R 14 020,00
70	Membrane Cassette Element Endcap (Equal to the number of Modules installed per full train)	Sum	-	2 321,00	R 2 321,00
71	EPDM O-ring - membrane module and dummy header (Equal to twice the number of Modules installed per full train)	Sum	-	3 570,00	R 3 570,00
72	EPDM O-ring - top permeate saddle adapter, inner (Equal to the number of Modules installed per full train)	Sum	-	714,00	R 714,00
73	EPDM O-ring - top permeate saddle adapter, outer (Equal to the number of Modules installed per full train)	Sum	-	1 250,00	R 1 250,00
74	EPDM O-ring - permeate pipe (Equal to the number of Modules installed per full train)	Sum	-	714,00	R 714,00
Carried forward / ...					R 7 697 393,71

ITEM	DESCRIPTION	UNIT	QTY	RATE R c	AMOUNT R c
Brought forward / ...					R 7 697 393,71
	Permeate Pumps				
75	Complete Permeate/Backpulse pump assemblies	No	3	590 063,00	R 1 770 189,00
76	Pairs of rotors and a set of casing linings	No	9	226 939,00	R 2 042 451,00
77	Sets of recommended spares (if different from the above)	No	9	24 713,00	R 222 417,00
	Other				
78	Membrane Fibre Repair Kit	No	1	6 325,00	R 6 325,00
	Filtration Train Drain Pumps and Wasting Pumps (MBR B)				
79	Complete pump assembly	No	1	216 015,80	R 216 015,80
80	Pairs of rotors and a set of casing linings	No	6	39 881,60	R 239 289,60
81	Sets of recommended spares (if different from the above)	No	5		Not required
	Filtration Train Drain Pumps and Wasting Pumps (MBR A)				
82	Complete pump assembly for Filtration Train Drain	No	1	227 955,00	R 227 955,00
83	Complete pump assembly for WAS	No	1	51 771,00	R 51 771,00
84	Pairs of rotors and a set of casing linings for Filtration Train Drain	No	3	245 330,00	R 735 990,00
85	Pairs of rotors and stators linings for WAS	No	2	50 051,00	R 100 102,00
86	Sets of recommended spares (if different from the above) for Filtration Train Drain	No	3	123 562,00	R 370 686,00
87	Sets of recommended spares (if different from the above) for WAS	No	3		Not required
	Instrument Air				
	Compressors (MBR B)				
88	Set of recommended spares per compressor	Sum	-		No spares recommended
89	Set of recommended spare for desiccant dryer	Sum	-		No spares recommended
Carried forward / ...					R 13 680 585,11

ITEM	DESCRIPTION	UNIT	QTY	RATE R c	AMOUNT R c
Brought forward / ...					R 13 680 585,11
90	Two sets of spare compressor inlet filters per compressor	Sum	-	6 406,40	R 6 406,40
					R -
	Compressors (MBR A)				R -
					R -
91	Set of recommended spares per compressor	Sum	-	No spares recommended	
					R -
92	Set of recommended spare for desiccant dryer	Sum	-	No spares recommended	
					R -
93	Two sets of spare compressor inlet filters per compressor	Sum	-	9 900,00	R 9 900,00
					R -
	Service Water Pump Station				R -
					R -
	Pump Set (MBR B)				R -
					R -
94	Set of recommended spares	Sum	-	No spares recommended	
					R -
	Pump Set (MBR A)				R -
					R -
95	Set of recommended spares	Sum	-	No spares recommended	
					R -
	UV Disinfection System (MBR B)				R -
					R -
96	Set of OEM recommended spares per unit	Sum	-	50 707,11	R 50 707,11
				-	-
97	Bulbs (10% of installed)	Sum	-		Included
					R -
98	Replace any initially provided spares above and shall provide all spare required for the first the 2 years odf operation (bulbs , Quarts sleeve , O , seals and replaceable wiper components	Sum	-		Included
	Chemical Dosing Systems MBR A and MBR B and CAS				
	MBR B				
99	One Service kit per pump	Sum	-	16 500,00	R 16 500,00
				-	-
100	Set of recommended spares per dosing station	Sum	-	16 500,00	R 16 500,00
				-	-
	MBR A			-	-
				-	-
101	One Service kit per pump	Sum	-	3 932,00	R 3 932,00
				-	-
102	Set of recommended spares per dosing station	Sum	-	11 920,00	R 11 920,00
Carried forward / ...					R 13 796 450,62

ITEM	DESCRIPTION	UNIT	QTY	RATE R c	AMOUNT R c
Brought forward / ...					R 13 796 450,62
	Common to Plant				
103	One Service kit per pump	Sum	-	3 932,00	R 3 932,00
104	Set of recommended spares per dosing station	Sum	-	11 920,00	R 11 920,00
	Lifting Equipment				
105	N/A	Sum	-		
	Ventilation Equipment (HVAC)				
106	N/A	Sum	-		
	Surface Mounted Aerators (CAS)				
107	N/A	Sum	-		
	Existing Plant WAS Pumps (CAS)				
108	Sets of V-Belts	No	4	6 325,00	R 25 300,00
109	Set of recommended spares (if different from the above)	No	4	20 940,00	R 83 760,00
	Existing Plant RAS Pumps (CAS)				
110	Sets of recommended spares (one per pump installed)	No	4	48 113,00	R 192 452,00
111	Complete pump assemblies	No	2	240 561,00	R 481 122,00
	Existing Plant Secondary Settling Tanks (CAS)				
112	Motor and gearbox assemblies (including torque switch)	No	2	27 917,00	R 55 834,00
	New Chlorination Equipment (CAS)				
	Booster Pump				
113	N/A	Sum	-		
114	Sets of recommended (one for each pump provided)	No	4	5 233,00	R 20 932,00
	Dosing Equipment				
115	N/A	Sum	-		
Carried forward / ...					R 14 671 702,62

ITEM	DESCRIPTION	UNIT	QTY	RATE R c	AMOUNT R c
Brought forward / ...					R 14 671 702,62
	Chlorine Scrubber				
116	N/A	Sum	-		R -
					R -
	Instrument Air				R -
					R -
117	Set of recommended spares per compressor	Sum	-	76 487,00	R 76 487,00
				-	-
118	Two Sets of spare compressor inlet filters per compressor	No	2	39 219,00	R 78 438,00
	Storage of equipment as ordered by the Engineer including insurances where storage space is provided by:			-	-
				-	-
119	a. The Contractor	Month	3	5 750,00	R 17 250,00
				-	-
120	b. The City of Cape Town	Month	3	5 750,00	R 17 250,00
					R -
	Other				R -
					R -
121	All other items not included above but which are nevertheless necessary to meet the Scope of Work and/or are required for the proper, safe and effective operation of the plant *(Specify)*	Item	-		-
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TOTAL OF SCHEDULE M3a CARRIED TO SUMMARY					R 14 861 127,62

SECTION A OF THE WORKS: MODULE B MECHANICAL EQUIPMENT

Continued Overleaf

ITEM	DESCRIPTION	UNIT	QTY	RATE R	c	AMOUNT R	c
	SCHEDULE M4a						
	MBR FINE SCREENING FACILITY						
	Allow for all the costs and expenses in connection with the design, manufacture, painting, supplying, delivery, offloading and storage of the following materials and equipment:						
1	Fine Screen Inlet Pipework	No	6	106 486,95		R 638 921,71	
2	Fine Screen ~~units with integrated instrumentation, conveyors etc.~~	No	6	1 468 809,26		R 8 812 855,55	
3	Overflow Pipework for all Fine Screens complete	Sum	-	1 311 121,15		R 1 311 121,15	
4	Screenings Conveyor units, with pipework and chutes	No	2	187 582,43		R 375 164,86	
5	Screenings Compactors/ Screw Presses with pipework and chutes	No	2	335 280,06		R 670 560,11	
6	All Washwater/ service water pipework as required	Sum	-	88 731,05		R 88 731,05	
7	All Drain Pipework as required	Sum	-	16 500,00		R 16 500,00	
8	Skip Dolly System, rails, etc.	No	2	93 916,48		R 187 832,96	
9	~~All Anchors and~~ Supports	Sum	-			Included	
10	~~All Pipe Flanges and Flexible Connections~~	~~Sum~~	-				
	Allow for all costs and expenses in connection with the Site installation in terms of in terms of FIDIC and Part C3: Scope of Work (excluding pre-commissioning) for the following:						
11	Fine Screen Inlet Pipework	No	6	9 533,33		R 57 200,00	
12	Fine Screen ~~units with integrated instrumentation, conveyors etc.~~	No	6	18 516,67		R 111 100,00	
13	Overflow Pipework for all Fine Screens complete	Sum	-	59 400,00		R 59 400,00	
14	Screenings Conveyor units, with pipework and chutes	No	2	21 450,00		R 42 900,00	
15	Screenings Compactors/ Screw Presses with pipework and chutes	No	2	18 700,00		R 37 400,00	
16	All Washwater/ service water pipework as required	Sum	-	28 600,00		R 28 600,00	
17	All Drain Pipework as required	Sum	-	7 700,00		R 7 700,00	
Carried forward / ...						R 12 445 987,37	

ITEM	DESCRIPTION	UNIT	QTY	RATE R c	AMOUNT R c
Brought forward / ...					R 12 445 987,37
18	Skip Dolly System, rails, etc.	No	2	23 650,00	R 47 300,00
19	~~All Anchors and~~ Supports	Sum	-	7 700,00	R 7 700,00
20	~~All Pipe Flanges and Flexible Connections~~	~~Sum~~	-		R -
	Allow for all costs and expenses in connection with pre-commsissioning in terms of FIDIC and Part C3: Scope of Work for the following:				
21	Complete Fine Screening Facility	Sum	-	38 500,00	R 38 500,00
	Storage of equipment as ordered by the Engineer including insurances where storage space is provided by:				
22	a. The Contractor	Month	3		No charge for 3 months
23	b. The City of Cape Town	Month	3		Nil
	Other:				
24	All other items not included above but which are nevertheless necessary to meet the Scope of Work and/or are required for the proper, safe and effective operation of the plant *(Specify)*	Item			
TOTAL OF SCHEDULE M4a CARRIED TO SUMMARY					R 12 539 487,37

ITEM	DESCRIPTION	UNIT	QTY	RATE R c	AMOUNT R c
	SCHEDULE M5				
	BIOREACTOR MIXING EQUIPMENT				
	Allow for all costs in connection with the following general items:				
1	CFD Analysis on Anoxic Zone mixers	Sum	-	82 500,00	R 82 500,00
2	CFD Analysis on Anaerobic Zone mixers	Sum	-	82 500,00	R 82 500,00
	Allow for all the costs and expenses in connection with the design, manufacture, painting, supplying, delivery, offloading and storage of the following materials and equipment:				
3	Anaerobic Zone Mixers	No	12	85 624,73	R 1 027 496,80
4	Anoxic Zone Mixers	No	12	137 441,33	R 1 649 296,00
	Allow for all costs and expenses in connection with the Site installation in terms of in terms of FIDIC and Part C3: Scope of Work (excluding pre-commissioning) for the following:				
5	Anaerobic Zone Mixers	No	12	5 545,83	R 66 550,00
6	Anoxic Zone Mixers	No	12	5 545,83	R 66 550,00
	Allow for all costs and expenses in connection with pre-commsissioning in terms of FIDIC and Part C3: Scope of Work for the following:				
7	Complete mixing system	Sum	-	15 400,00	R 15 400
8	Mixing homogeneity tests	Sum	-	18 700,00	R 18 700,00
	Storage of equipment as ordered by the Engineer including insurances where storage space is provided by:				
9	a. The Contractor	Month	3	No charge for 3 months	R -
10	b. The City of Cape Town	Month	3		Nil
	Carried forward / ...				R 3 008 992,80

ITEM	DESCRIPTION	UNIT	QTY	RATE R c	AMOUNT R c
Brought forward / ...					R 3 008 992,80
	Other:				
11	All other items not included above but which are nevertheless necessary to meet the Scope of Work and/or are required for the proper, safe and effective operation of the plant *(Specify)*	Item			
TOTAL OF SCHEDULE M5 CARRIED TO SUMMARY					R 3 008 992,80

ITEM	DESCRIPTION	UNIT	QTY	RATE R c	AMOUNT R c
	SCHEDULE M6a FINE BUBBLE DIFFUSED AERATION (FBDA) EQUIPMENT **Allow for all the costs and expenses in connection with the design, manufacture, painting, supplying, delivery, offloading and storage of the following materials and equipment:**				
	FBDA System				
1	Blowers	No	5	2 033 966,36	R 10 169 831,80
2	Blower discharge pipework	Sum	-	468 281,48	R 468 281,
3	Main header/ manifold pipework	Sum	-	1 695 328,61	R 1 695 328,61
4	Sub manifold pipework connecting B1 aerobic zones	Sum	-	505 431,83	R 505 431,83
5	Sub manifold pipework connecting B2 & B3 aerobic zones	Sum	-	1 026 075,22	R 1 026 075,22
6	Downlegs/ Droplegs Pipework	Sum	-	1 204 918,96	R 1 204 918,96
7	Laterals pipework and zone headers	Sum	-	0,00	Included in Item 8
8	Diffusers and membrane assemblies etc.	Sum	-	1 682 251,26	R 1 682 251,26
9	Condensate and Acid Injection System	Sum	-	61 215,00	R 61 215,00
10	Manifold and downleg pipe supports	Sum	-	1 190 758,61	R 1 190 758,61
11	Lateral and zone header supports	Sum	-	0,00	R -
12	~~Pipe specials such as flanges, blank flanges, stubs, reducers, lobsters, elbows, flexible connections, etc. required for a proper and safe functioning of the FBDA equipment~~	~~Sum~~	-	0,00	R -
	Aerobic Zone Scum Suppression Equipment				
13	Scum/Foam Suppression Spray equipment	Sum	-	132 000,00	R 132 000,00
	Formic Acid Dosing Skid				
14	Formic Acid mobile dosing skid system~~, along with all the pipe connections, injection/ quick release fittings on the dropleg etc for safe and proper functioning of the FBDA equipment~~	Sum	-	56 589,86	R 56 589,86
Carried forward / ...					R 18 192 682,62

ITEM	DESCRIPTION	UNIT	QTY	RATE R c	AMOUNT R c
Brought forward / ...					R 18 192 682,62
15	Formic Acid for commissioning (at least 50L)	Sum	-	1 650,00	R 1 650,00
16	Formic Acid Skid - one tank fill	No	-	1 650,00	R 1 650,00
	Allow for all costs and expenses in connection with the Site installation in terms of in terms of FIDIC and Part C3: Scope of Work (excluding pre-commissioning) for the following:				
17	Blowers	No	5	39 600,00	R 198 000,00
18	Blower discharge pipework	Sum	-	66 000,00	R 66 000,00
19	Main header/ manifold pipework	Sum	-	73 700,00	R 73 700,00
20	Sub manifold pipework connecting B1 aerobic zones	Sum	-	41 800,00	R 41 800,00
21	Sub manifold pipework connecting B2 & B3 aerobic zones	Sum	-	41 800,00	R 41 800,00
22	Downlegs/ Droplegs Pipework	Sum	-	37 400,00	R 37 400,00
23	Laterals pipework and zone headers	Sum	-	126 500,00	R 126 500,00
24	Diffusers and membrane assemblies etc.	Sum	-	126 500,00	R 126 500,00
25	Condensate and Acid Injection System	Sum	-	18 700,00	R 18 700,00
26	Manifold and downleg pipe supports	Sum	-	33 550,00	R 33 550,00
27	Lateral and zone header supports	Sum	-	33 550,00	R 33 550,00
	Aerobic Zone Scum Suppression Equipment				
28	Scum/Foam Suppression Spray equipment	Sum	-	7 700,00	R 7 700,00
	Formic Acid Dosing Skid				
29	Formic Acid for commissioning (at least 50L)	Sum	-	2 750,00	R 2 750,00
30	Formic Acid Skid - one tank fill	Sum	-	550,00	R 550,00
Carried forward / ...					R 19 004 482,62

ITEM	DESCRIPTION	UNIT	QTY	RATE R c	AMOUNT R c
Brought forward / ...					R 19 004 482,62
	Allow for all costs and expenses in connection with pre-commsissioning in terms of FIDIC and Part C3: Scope of Work for the following:				
31	Complete FBDA System	Sum	-	92 400,00	R 92 400,00
32	Oxygen transfer testing of entire FBDA system	Sum	-	53 900,00	R 53 900,00
					R -
	Storage of equipment as ordered by the Engineer including insurances where storage space is provided by:				R -
					R -
33	a. The Contractor	Month	3		No charge for 3 months
					R
34	b. The City of Cape Town	Month	3		Nil
					R -
	Other:				R -
35	All other items not included above but which are nevertheless necessary to meet the Scope of Work and/or are required for the proper, safe and effective operation of the plant *(Specify)*	Item	1		-
TOTAL OF SCHEDULE M6a CARRIED TO SUMMARY					R 19 150 782,62

ITEM	DESCRIPTION	UNIT	QTY	RATE R c	AMOUNT R c
	SCHEDULE M7				
	MIXED LIQUOR RECYCLE (MLR) PUMP				
	Allow for all the costs and expenses in connection with the design, manufacture, painting, supplying, delivery, offloading and storage of the following materials and equipment:				
1	Ax-An Recycle Pumps	No	9	90 395,56 -	R 813 560,00 -
2	Ae-Ax Recycle Pumps	No	9	149 741,66 -	R 1 347 674,90 -
3	Mixed Liquor Swing-Recycle pumps	No	4	316 364,95 - -	R 1 265 459,80 - -
	Allow for all costs and expenses in connection with the Site installation in terms of in terms of FIDIC and Part C3: Scope of Work (excluding pre-commissioning) for the following:			-	-
4	Ax-An Recycle Pumps	No	9	6 722,22 -	R 60 500,00 -
5	Ae-Ax Recycle Pumps	No	9	6 722,22 -	R 60 500,00 -
6	Mixed Liquor Swing-Recycle pumps	No	4	6 600,00	R 26 400,00 R - -
	Allow for all costs and expenses in connection with pre-commsissioning in terms of FIDIC and Part C3: Scope of Work for the following:				R -
7	Ax-An Recycle Pumps	Sum	-	11 550,00	R 11 550,00 R -
8	Ae-Ax Recycle Pumps	Sum	-	11 550,00	R 11 550,00
9	Mixed Liquor Swing-Recycle pumps	Sum	-	7 700,00	R 7 700,00 R - R -
	Storage of equipment as ordered by the Engineer including insurances where storage space is provided by:				R -
10	a. The Contractor	Month	3		No charge for 3 months R -
11	b. The City of Cape Town	Month	3		Nil
	Carried forward / ...				R 3 604 894,70

ITEM	DESCRIPTION	UNIT	QTY	RATE R c	AMOUNT R c
Brought forward / ...					R 3 604 894,70
	Other:				
12	All other items not included above but which are nevertheless necessary to meet the Scope of Work and/or are required for the proper, safe and effective operation of the plant *(Specify)*	Item			
TOTAL OF SCHEDULE M7 CARRIED TO SUMMARY					R 3 604 894,70

ITEM	DESCRIPTION	UNIT	QTY	RATE R c	AMOUNT R c
	SCHEDULE M8a				
	NEW ULTRA-FILTRATION (UF) MEMBRANE BIOREACTOR (MBR) PLANT EQUIPMENT				
	Allow for all the costs and expenses in connection with the following:				
1	Membrane supplier technical support and advisory services	Sum	-	1 457 538,50	R 1 457 538,50
					R -
	Allow for all the costs and expenses in connection with the design, manufacture, painting,supplying, delivery, offloading and storage of the following materials and equipment:				
					R -
	Membrane Tanks Feed/ Mixed Liquor Transfer Pumps				R -
2	Membrane Tank Feed (Mixed Liquor Transfer) Pump	No	6	315 952,45	R 1 895 714,70
	Ultra-Filtration Membrane Bioreactor Plant Equipment				
3	Membrane filtration trains	No	9	5 262 410,45	R 47 361 694,01
4	Flow Control Baffle	No	9	16 374,72	R 147 372,50
5	Membrane plant ventilation/air ejection system	Sum	-	32 238,80	R 32 238,80
6	Membrane integrity testing equipment (excluding turbidity analysers which are scheduled elsewhere)	Sum	-	30 800,00	R 30 800,00
7	On-line performance and process monitoring service and associated equipment	Sum	-	620 400,00	R 620 400,00
8	Membrane unit lifting bracket / cradle	No	1	27 500,00	R 27 500,00
9	Other membrane plant pipework and associated equipment (EN Grade 1.4401) not mentioned above, but are required for proper and safe operation of the membrane filtration system	Sum	-		R -
					R -
	Air Scour Equipment				
10	Blowers	No	6	929 441,50	R 5 576 649,00
11	Blower discharge pipework	Sum	-	474 920,29	R 474 920,29
	Carried forward / ...				R 57 624 827,80

ITEM	DESCRIPTION	UNIT	QTY	RATE R c	AMOUNT R c
Brought forward / ...					R 57 624 827,80
12	Air scour main manifold	Sum	-	1 514 842,23	R 1 514 842,23
13	Air scour distribution pipework to membrane casettes	Sum	-	2 260 102,90	R 2 260 102,90
14	Air manifold pipe supports	Sum	-		Included
	Permeate/Backpulse Pumps				R -
15	Permeate / backpulse pump	No	9	411 546,92	R 3 703 922,30
16	Permeate suction pipework	Sum	-	911 345,49	R 911 345,49
17	Permeate discharge pipework	Sum	-		Inclu
18	Common permeate collection manifold to backpulse tank	Sum	-	1 138 278,26	R 1 138 278,26
19	Pipe supports	Sum	-		Included
	Filtration Tanks Drain Pumps				R -
20	Filtration train drain pump	No	3	217 299,13	R 651 897,40
21	Filtration train drain suction pipework	No	9	39 579,53	R 356 215,80
22	Common suction manifold	Sum	-	322 494,67	R 322 494,67
23	Pump suction pipework	No	3	28 546,13	R 85 638,40
24	Pump discharge pipework	No	3	32 747,88	R 98 243,64
25	Common discharge manifold	Sum	-	53 557,53	R 53 557
26	Pipe supports	Sum	-	0,00	R -
	Scum/ WAS Pumps				
27	Scum/WAS pumps	No	2	217 390,80	R 434 781,60
28	Common suction manifold	Sum	-	49 181,78	R 49 181,78
29	Pump suction pipework	No	3	21 434,67	R 42 869,33
30	Pump discharge pipework	No	3	33 034,96	R 66 069,91
31	Common discharge manifold	Sum	-	61 692,49	R 61 692,49
32	Pipe supports	Sum	-		Included
Carried forward / ...					R 69 375 961,52

ITEM	DESCRIPTION	UNIT	QTY	RATE R c	AMOUNT R c
Brought forward / ...					R 69 375 961,52
	GRP Covers				
33	GRP covers for membrane tanks	m²	700	3 410,00	R 2 387 000,00
34	GRP covers for channels	m²	500	2 697,54	R 1 348 772,48
	CIP: Sodium Hypochlorite Dosing Equipment				
35	Chemical room ventilation system	Sum	-	7 830,90	R 7 830,90
36	CIP: Sodium hypochlorite dosing system (bunded skids and cabinet etc) as specified	Sum	-	307 049,60	R 307 049,60
37	Scum suppression system: Sodium hypochlorite dosing system	Sum	-	84 592,20	R 84 592,20
38	Storage tank	Sum	-	55 000,00	R 55 000,00
39	Pipework	Sum	-	68 565,20	R 68 565,20
40	Pipe supports	Sum	-	12 320,00	R 12 320,00
41	Filling station pump and pipework	Sum	-	32 450,00	R 32 450,00
42	Sodium hypochlorite required during the entire performance period (commissioning) of the MBR plant	Sum	-	23 760,00	R 23 760,00
43	Sodium hypochlorite - one tank fill	Sum	-	2 750,00	R 2 750,00
44	Access platform	Sum	-	26 950,00	R 26 950,00
	CIP: Citric Acid Dosing Equipment				
45	Chemical room ventilation system	Sum	-	7 830,90	R 7 830,90
46	CIP: Citric acid dosing system (bunded skids and cabinet etc) as specified	Sum	-	307 049,60	R 307 049,60
47	Storage tank	Sum	-	55 000,00	R 55 000,00
48	Pipework	Sum	-	76 815,20	R 76 815,20
49	Supports	Sum	-	12 320,00	R 12 320,00
50	Filling station pump and pipework	Sum	-	40 150,00	R 40 150,00
51	Citric acid required during the entire performance period (commissioning) of the MBR plant	Sum	-	11 880,00	R 11 880,00
Carried forward / ...					R 74 244 047,60

ITEM	DESCRIPTION	UNIT	QTY	RATE R c	AMOUNT R c
Brought forward / ...					R 74 244 047,60
52	Citric acid - one tank fill	Sum	-	2 750,00	R 2 750,00
53	Citric acid Batching Equipment	Sum	-	395 821,80	R 395 821,80
54	Citric acid batching dust collection system	Sum	-	233 200,00	R 233 200,00
55	Access platform	Sum	-	26 950,00	R 26 950,00
	Allow for all costs and expenses in connection with the Site installation in terms of in terms of FIDIC and Part C3: Scope of Work (excluding pre-commissioning) for the following:				R - R -
	Membrane Tanks Feed/ Mixed Liquor Transfer Pumps				R R -
56	Membrane Tank Feed (Mixed Liquor Transfer) Pump	No	6	13 016,67	R - R 78 100,00
	Ultra-Filtration Membrane Bioreactor Plant Equipment				R - R -
57	Membrane filtration units for one train	No	9	74 800,00	R - R 673 200,00
58	Flow Control Baffle	No	9	3 850,00	R 34 650,00
59	Membrane plant ventilation/air ejection system	Sum	-	15 400,00	R 15 400,00
60	Membrane integrity testing equipment (excluding turbidity analysers which are scheduled elsewhere)	Sum	-	3 850,00	R 3 850,00
61	On-line performance and process monitoring service and associated equipment	Sum	-	15 400,00	R 15 400,00
62	Membrane unit lifting bracket / cradle	No	1	3 850,00	R 3 850,00
63	Other membrane plant pipework and associated equipment (EN Grade 1.4401) not mentioned above, but are required for proper and safe operation of the membrane filtration system	Sum	-		R -
	Air Scour Equipment				R -
64	Blowers	No	6	22 733,33	R 136 400,00
65	Blower discharge pipework	Sum	-	73 700,00	R 73 700,00
66	Air scour main manifold	Sum	-	82 500,00	R 82 500,00
Carried forward / ...					R 76 019 819,40

ITEM	DESCRIPTION	UNIT	QTY	RATE R c	AMOUNT R c
Brought forward / ...					R 76 019 819,40
67	Air scour distribution pipework to membrane casettes	Sum	-	138 600,00	R 138 600,00
68	Air manifold pipe supports	Sum	-	51 700,00	R 51 700,00
	Permeate/Backpulse Pumps				
69	Permeate / backpulse pump	No	9	3 788,89	R 34 100,00
70	Permeate suction pipework	Sum	-	34 100,00	R 34 100,00
71	Permeate discharge pipework	Sum	-	34 100,00	R 34 100,00
72	Common permeate collection manifold to backpulse tank	Sum	-	41 800,00	R 41 800,00
73	Pipe supports	Sum	-	20 900,00	R 20 900,00
	Filtration Tanks Drain Pumps				
74	Filtration train drain pump	No	3	4 400,00	R 13 200,00
75	Filtration train drain suction pipework	No	9	1 466,67	R 13 200,00
76	Common suction manifold	Sum	-	13 200,00	R 13 200,00
77	Pump suction pipework	No	3	4 400,00	R 13 200,00
78	Pump discharge pipework	No	3	4 400,00	R 13 200,00
79	Common discharge manifold	Sum	-	20 900,00	R 20 900,00
80	Supports	Sum	-	7 700,00	R 7 700,00
	Scum/ WAS Pumps				
81	Scum/WAS pumps	No	2	6 600,00	R 13 200,00
82	Common suction manifold	Sum	-	13 200,00	R 13 200,00
83	Pump suction pipework	No	3	6 600,00	R 13 200,00
84	Pump discharge pipework	No	3	6 600,00	R 13 200,00
85	Common discharge manifold	Sum	-	13 200,00	R 13 200,00
86	Pipe supports	Sum	-	7 700,00	R 7 700,00
Carried forward / ...					R 76 543 419,40

ITEM	DESCRIPTION	UNIT	QTY	RATE R c	AMOUNT R c
Brought forward / ...					R 76 543 419,40
	GRP Covers				
87	GRP covers for membrane tanks	m²	700	55,79	R 39 050,00
88	GRP covers for channels	m²	500	216,70	R 108 350,00
	CIP: Sodium Hypochlorite Dosing Equipment				
89	Chemical room ventilation system	Sum	-	935,00	R 935,00
90	CIP: Sodium hypochlorite dosing system (bunded skids and cabinet etc) as specified	Sum	-	6 336,00	R 6 336,00
91	Scum spray: Sodium hypochlorite dosing system	Sum	-	6 336,00	R 6 336
92	Storage tank	Sum	-	12 100,00	R 12 100,00
93	Pipework	Sum	-	18 568,00	R 18 568,00
94	Pipe supports	Sum	-	9 020,00	R 9 020,00
95	Filling station pump and pipework	Sum	-	7 700,00	R 7 700,00
96	Sodium hypochlorite required during the entire performance period (commissioning) of the MBR plant	Sum	-	7 700,00	R 7 700,00
97	Sodium hypochlorite - one tank fill	Sum	-	3 850,00	R 3 850,00
98	Access platform	Sum	-	6 600,00	R 6 600,00
	CIP: Citric Acid Dosing Equipment				
99	Chemical room ventilation system	Sum	-	935,00	R 935,00
100	CIP: Citric acid dosing system (bunded skids and cabinet etc) as specified	Sum	-	6 336,00	R 6 336,00
101	Storage tank	Sum	-	12 100,00	R 12 100,00
102	Pipework	Sum	-	20 856,00	R 20 856,00
103	Pipe supports	Sum	-	0,00	R -
104	Filling station pump and pipework	Sum	-	7 700,00	R 7 700,00
105	Citric acid required during the entire performance period (commissioning) of the MBR plant	Sum	-	7 700,00	R 7 700,00
106	Citric acid - one tank fill	Sum	-	3 850,00	R 3 850,00
Carried forward / ...					R 76 829 441,40

ITEM	DESCRIPTION	UNIT	QTY	RATE R c	AMOUNT R c
Brought forward / ...					R 76 829 441,40
107	Citric acid Batching Equipment	Sum	-	25 850,00 -	R 25 850,00 -
108	Citric acid batching dust collection system	Sum	-	44 000,00 -	R 44 000,00 -
109	Access platform	Sum	-	6 600,00	R 6 600,00
					R -
110	**Allow for all costs and expenses in connection with pre-commsissioning in terms of FIDIC and Part C3: Scope of Work for the following:**	Sum	-		R -
					R -
111	Complete Membrane Plant Equipment	Sum	-	145 200,00	R 145 200,00
	~~Membrane Tanks Feed/ Mixed Liquor Transfer Pumps~~				
					R -
112	~~Ultra-Filtration Membrane Bioreactor Plant Equipment~~	~~Sum~~	-		R -
					R -
113	~~Air Scour Equipment~~	~~Sum~~	-		R -
					R -
114	~~Permeate/Backpulse Pumps~~	~~Sum~~	-		R -
					R -
115	~~Filtration Tanks Drain Pumps~~	~~Sum~~	-		R -
					R -
116	~~Scum/ WAS Pumps~~	~~Sum~~	-		R -
					R -
117	~~CIP: Sodium Hypochlorite Dosing Equipment~~	~~Sum~~	-		R -
					R -
118	~~CIP: Citric Acid Dosing Equipment~~	~~Sum~~	-		R -
					R -
119	Other membrane plant and associated equipment not mentioned above, but are required for proper and safe operation of the membrane filtration system (Specify):	Item	-		-
Carried forward / ...					R 77 051 091,40

ITEM	DESCRIPTION	UNIT	QTY	RATE R c	AMOUNT R c
Brought forward / ...					R 77 051 091,40
	Storage of equipment as ordered by the Engineer including insurances where storage space is provided by:				
120	a. The Contractor	Month	4		No charge for 4 months R -
121	b. The City of Cape Town	Month	4		Nil R -
	Other:				-
122	All other items not included above but which are nevertheless necessary to meet the Scope of Work and/or are required for the proper, safe and effective operation of the plant *(Specify)*:	Item			-
TOTAL OF SCHEDULE M8a CARRIED TO SUMMARY					R 77 051 091,40

ITEM	DESCRIPTION	UNIT	QTY	RATE R	c	AMOUNT R	c
	SCHEDULE M9a						
	INSTRUMENT AIR EQUIPMENT						
	Allow for all the costs and expenses in connection with the design, manufacture, painting, supplying, delivery, offloading and storage of the following materials and equipment:						
	Instrument Air						
1	Compressors	No	2	282 612,55	R	565 225,10	
2	Desiccant driers complete	Sum	-	132 702,90	R	132 702,90	
3	~~Refrigerant driers complete~~	~~Sum~~	-				
4	Air receiver (moisture trap)	No	2			Included	
5	Air receiver	No	2	53 344,50	R	106 689,00	
6	Condensate management system	Sum	-	18 575,70	R	18 575,70	
7	~~All connecting~~ Pipework and supports	Sum	-	110 000,00	R	110 000,00	
8	Seperator units and filter sets	No	3	12 461,90	R	37 385,70	
	Pneumatic Actuation Equipment						
9	Pneumatic Actuation Equipment for each Process Area	Sum	-			Included	
	~~UV stabalised/ resistant flexible tubing and connections form valve terminal cabinet to actuators~~	~~Sum~~	-				
	Allow for all costs and expenses in connection with the Site installation in terms of in terms of FIDIC and Part C3: Scope of Work (excluding pre-commissioning) for the following:						
	Instrument Air						
10	Compressors	No	2	6 600,00	R	13 200,00	
11	Desiccant driers complete	Sum	-	3 850,00	R	3 850,00	
12	~~Refrigerant driers complete~~	~~Sum~~	-				
	Carried forward / ...				R	987 628,40	

ITEM	DESCRIPTION	UNIT	QTY	RATE R c	AMOUNT R c
Brought forward / ...					R 987 628,40
13	Air receiver (moisture trap)	No	2	1 925,00	R 3 850,00
14	Air receiver	No	2	6 600,00	R 13 200,00
15	Condensate management system	Sum	-	7 700,00	R 7 700,00
16	~~All connecting~~ Pipework and supports	Sum	-	46 200,00	R 46 200,00
17	Seperator units and filter sets	No	3	1 283,33	R 3 850,00
	Pneumatic Actuation Equipment				R -
18	Pneumatic Actuation Equipment for each Process Area	Sum	-		Included
	~~UV stabalised/ resistant flexible tubing and connections form valve terminal cabinet to actuators~~	~~Sum~~	-		R -
	~~**Pneumatic Actuation Equipment**~~				R -
19	~~Pneumatic control system~~	~~Sum~~	-		R -
	Allow for all costs and expenses in connection with pre-commsissioning in terms of FIDIC and Part C3: Scope of Work for the following:				R -
20	Complete Process air system	Sum	-	15 400,00	R 15 400,00
	Storage of equipment as ordered by the Engineer including insurances where storage space is provided by:				R -
21	a. The Contractor	Month	3		No charge for 3 mc
22	b. The City of Cape Town	Month	3		R - Nil
	Other:				-
23	All other items not included above but which are nevertheless necessary to meet the Scope of Work and/or are required for the proper, safe and effective operation of the plant *(Specify)*	Item			-
TOTAL OF SCHEDULE M9a CARRIED TO SUMMARY					R 1 077 828,40

ITEM	DESCRIPTION	UNIT	QTY	RATE R c	AMOUNT R c
	SCHEDULE M10a				
	SERVICE WATER EQUIPMENT				
	Allow for all the costs and expenses in connection with the design, manufacture, painting, supplying, delivery, offloading and storage of the following materials and equipment:				
1	Service Water Pumps	No	4	169 279,55 -	R 677 118,20 -
2	UV Disinfection Units	No	2	341 073,98 -	R 682 147,95 -
3	Accumulators	No	2	61 296,58 -	R 122 593,17 -
4	Pipework	Sum	-	0,00 -	R - -
5	Supports	Sum	-	0,00	R -
					R -
	Allow for all costs and expenses in connection with the Site installation in terms of in terms of FIDIC and Part C3: Scope of Work (excluding pre-commissioning) for the following:				R -
6	Service Water Pumps	No	4	1 925,00 -	R 7 700,00 -
7	UV Disinfection Units	No	2	3 850,00 -	R 7 700,00 -
8	Accumulators	No	2	3 850,00 -	R 7 700,00 -
9	Pipework	Sum	-	38 500,00 -	R 38 500,00 -
10	Supports	Sum	-	15 400,00	R 15 400,00
	Allow for all costs and expenses in connection with pre-commsissioning in terms of FIDIC and Part C3: Scope of Work for the following:				
11	Complete Service water system	Sum	-	15 400,00	R 15 400,00
					R -
	Storage of equipment as ordered by the Engineer including insurances where storage space is provided by:				R -
12	a. The Contractor	Month	3		No charge for 3 months
					R -
13	b. The City of Cape Town	Month	3		Nil
	Carried forward / ...				R 1 574 259,32

ITEM	DESCRIPTION	UNIT	QTY	RATE R c	AMOUNT R c
Brought forward / ...					R 1 574 259,32
	Other:				
14	All other items not included above but which are nevertheless necessary to meet the Scope of Work and/or are required for the proper, safe and effective operation of the plant *(Specify)*	Item			
TOTAL OF SCHEDULE M10a CARRIED TO SUMMARY					R 1 574 259,32

ITEM	DESCRIPTION	UNIT	QTY	RATE R	C	AMOUNT R	C
	SCHEDULE M11						
	HEATING VENTILATION AND AIR-CONDITIONING (HVAC) EQUIPMENT						
	Allow for all the costs and expenses in connection with the design, manufacture, painting, supplying, delivery, offloading and storage of the following materials and equipment:						
1	Machine Building: MBR B MCC (Membrane Plant)	Sum	-	1 517 758,00	R	1 517 758,00	
2	Machine Building: MBR B MCC (Bioreactor and Blower Room)	Sum	-	1 914 398,20	R	1 914 398,20	
3	Machine Building: Control room	Sum	-	47 652,00	R	47 652,00	
4	Machine Building: Laboratory	Sum	-	143 687,50	R	143 687,50	
5	Machine Building: Chemical store and ablution facility	Sum	-	50 891,50	R	50 891,50	
6	Machine Building: MBR B blower room forced air cooling system	Sum	-	820 534,00	R	820 534,00	
7	Machine Building: MBR B pump room and membrane room forced air cooling system	Sum	-	620 730,00	R	620 730,00	
8	Refurbishment of Existing Dewatering Building ventilation system	Provisional Sum		-	R	175 400,00	
9	Percentage adjustment on Item 8 for Contractor's design, sourcing quotes, superintendence, and for overheads and profit (state as percentage an extend as amount)	%	175 400	15	R	26 310,00	
10	Temporary air conditioning system for Existing Dewatering Building ventilation system	Provisional Sum		-	R	175 400,00	
11	Percentage adjustment on Item 10 for Contractor's design, sourcing quotes, superintendence, and for overheads and profit (state as percentage an extend as amount)	%	175 400	15	R	26 310,00	

ITEM	DESCRIPTION	UNIT	QTY	RATE R c	AMOUNT R c
Carried forward / ...					R 5 519 071,20
Brought forward / ...					R 5 519 071,20
	Allow for all costs and expenses in connection with the Site installation in terms of in terms of FIDIC and Part C3: Scope of Work (excluding pre-commissioning) for the following:				
12	Machine Building: MBR B MCC (Membrane Plant)	Sum	-	79 882,00	R 79 882,00
13	Machine Building: MBR B MCC (Bioreactor and Blower Room)	Sum	-	100 757,80	R 100 757,80
14	Machine Building: Control room	Sum	-	2 508,00	R 2 508,00
15	Machine Building: Laboratory	Sum	-	7 562,50	R 7 562,50
16	Machine Building: Chemical store and ablution facility	Sum	-	2 678,50	R 2 678,50
17	Machine Building: MBR B blower room forced air cooling system	Sum	-	43 186,00	R 43 186,00
18	Machine Building: MBR B pump room and membrane room forced air cooling system	Sum	-	32 670,00	R 32 670,00
					R -
	Allow for all costs and expenses in connection with pre-commsissioning in terms of FIDIC and Part C3: Scope of Work for the following:				R -
					R -
19	Machine Building: MBR B MCC (Membrane Plant)	Sum	-	1 650,00	R 1 650,00
20	Machine Building: MBR B MCC (Bioreactor and Blower Room)	Sum	-	1 650,00	R 1 650,00
21	Machine Building: Control room	Sum	-	1 650,00	R 1 650,00
22	Machine Building: Laboratory	Sum	-	1 650,00	R 1 650,00
23	Machine Building: Chemical store and ablution facility	Sum	-	1 650,00	R 1 650,00
24	Machine Building: MBR B blower room forced air cooling system	Sum	-	1 650,00	R 1 650,00
25	Machine Building: MBR B pump room and membrane room forced air cooling system	Sum	-	1 650,00	R 1 650,00
					R -
	Storage of equipment as ordered by the Engineer including insurances where storage space is provided by:				R -
					R -
26	a. The Contractor	Month	3		No charge for 3 months
					R -
27	b. The City of Cape Town	Month	3		Nil
Carried forward / ...					R 5 799 866,00

ITEM	DESCRIPTION	UNIT	QTY	RATE R c	AMOUNT R c
Brought forward / ...					R 5 799 866,00
	Other:				
28	All other items not included above but which are nevertheless necessary to meet the Scope of Work and/or are required for the proper, safe and effective operation of the plant *(Specify)*	Item			R -
TOTAL OF SCHEDULE M11 CARRIED TO SUMMARY					R 5 799 866,00

ITEM	DESCRIPTION	UNIT	QTY	PRICE R	c	AMOUNT R	c
	SCHEDULE M12a						
	MBR FINE SCREENING ODOUR CONTROL						
	Allow for all costs in connection with the following general items:						
1	Odour Control Study as specified	Sum	-	-		R	156 792,90
2	Inspection reports as specified	Sum	-	-		R	11 000,00
						R	-
	Allow for all the costs and expenses in connection with the design, manufacture, painting, factory testing, supplying, delivery, offloading and storage of the following materials and equipment:					R	-
5	Equipment covers as specified	m^2	75	2 574,00		R	193 050,00
6	Extraction piping and supports	Sum	-	-		R	-
7	Concrete slab with reinforcement for odour control equipment	m^3	20	8 580,00		R	243 389,30
8	Brickwork and concrete slab for extraction pipe manifold and drain points chamber	Sum	-	-		R	-
9	Biological or chemical odour control system including media (if applicable)	Sum	-	-		R	171 600,00
10	Media / chemicals as required	Sum	-	-		R	-
11	Extraction fans (incl. motor and supports)	Sum	-	-		R	31 295,00
12	Nutrient supply for one year continuous operation (if required)	Sum	-	-		R	1 749 611,60
							-
	Allow for all costs and expenses in connection with the Site installation in terms of in terms of FIDIC and Part C3: Scope of Work (excluding pre-commissioning) for the following:						Included
13	Complete Odour Control Equipment	Sum	-	-		R	80 514,50
							-
						R	32 67
						R	-
						R	-
						R	-
						R	218 509,50
Carried forward / ...						R	2 888 432,80

ITEM	DESCRIPTION	UNIT	QTY	PRICE R c	AMOUNT R c
Brought forward / ...					R 2 888 432,80
	Allow for all costs and expenses in connection with pre-commsissioning in terms of FIDIC and Part C3: Scope of Work for the following:				
14	Complete Odour Control Equipment	Sum	-	-	R 42 295,00
					R -
	Storage of equipment as ordered by the Engineer including insurances where storage space is provided by:				R -
					R -
15	a. The Contractor	Month	3		R 4 950,00
					-
16	b. The City of Cape Town	Month	3		R 1 650,00
	Provisional Sums:				
17	~~Odour Control Study~~	~~Provisional Sum~~		-	~~R 120 000,00~~
18	~~Percentage adjustment on Item 16 for Contractor's design, sourcing quotes, superintendence, and for overheads and profit (state as percentage an extend as amount)~~	~~%~~	~~120 000~~		
	Other:				
19	All other items not included above but which are nevertheless necessary to meet the Scope of Work and/or are required for the proper, safe and effective operation of the plant *(Specify)*	Item	1		R 207 178,40
TOTAL OF SCHEDULE M12a CARRIED TO SUMMARY					R 3 144 506,20

ITEM	DESCRIPTION	UNIT	QTY	RATE R c	AMOUNT R c
	SCHEDULE M13				
	SCUM REMOVAL EQUIPMENT				
	Allow for all the costs and expenses in connection with the design, manufacture, painting, supplying, delivery, offloading and storage of the following materials and equipment:				
1	Rotating Pipe Scum Skimmer	Sum	-	194 747,96	R 194 747,96
	Allow for all costs and expenses in connection with the Site installation in terms of in terms of FIDIC and Part C3: Scope of Work (excluding pre-commissioning) for the following:				
2	Rotating Pipe Scum Skimmer	Sum	-	23 650,00	R 23 650,00
	Allow for all costs and expenses in connection with pre-commsissioning in terms of FIDIC and Part C3: Scope of Work for the following:				
3	Rotating Pipe Scum Skimmer	Sum	-	7 700,00	R 7 700,00
	Storage of equipment as ordered by the Engineer including insurances where storage space is provided by:				
4	a. The Contractor	Month	3		No charge for 3 months
5	b. The City of Cape Town	Month	3		Nil
	Other:				
6	All other items not included above but which are nevertheless necessary to meet the Scope of Work and/or are required for the proper, safe and effective operation of the plant *(Specify)*	Item			
	TOTAL OF SCHEDULE M13 CARRIED TO SUMMARY				R 226 097,96

SECTION B OF THE WORKS: CAS A AND B PLANTS MECHANICAL EQUIPMENT

Continued Overleaf

ITEM	DESCRIPTION	UNIT	QTY	RATE R c		AMOUNT R c
	SCHEDULE M14a					
	EXISTING CAS REACTOR EQUIPMENT					
	Allow for all costs in connection with the following general items:					
1	Inspection reports as specified	Sum	-	86 250,00	R	86 250,00
2	CFD Analysis as specified for mixers and aerators	Sum	-	50 830,00	R	50 830,00
	Handling of Existing Equipment					
3	Dismantling, decommissioning and removal of existing equipment	Sum	-	341 222,00	R	341 222,00
4	Transport of decommissioned equipment	km	250	28,00	R	7 000,00
	Allow for all the costs and expenses in connection with the design, manufacture, painting, factory testing, supplying, delivery, offloading and storage of the following materials and equipment:					
5	CAS Reactor A Submersible Mixers for Anoxic Zone A1 and A2	No	2	150 481,00	R	300 962,00
6	CAS Reactor A Submersible Mixers for Anoxic Zone A3	No	6	150 481,00	R	902 886,00
7	CAS Reactor B Submersible Mixers for Anoxic Zone B1 and B2	No	2	150 481,00	R	300 962,00
8	CAS Reactor B Submersible Mixers for Anoxic Zone B3	No	6	150 481,00	R	902 886,00
9	CAS Reactor A: Surface-Mounted Aerators for Zone A1	No	3	642 635,00	R	1 927 905,00
10	CAS Reactor A: Surface-Mounted Aerators for Zone A2	No	3	595 872,00	R	1 787 616,00
11	CAS Reactor A: Surface-Mounted Aerators for Zone A3	No	4	435 645,00	R	1 742 580,00
12	CAS Reactor B: Surface-Mounted Aerators for Zone B1	No	3	642 623,00	R	1 927 869,00
13	CAS Reactor B: Surface-Mounted Aerators for Zone B2	No	3	595 872,00	R	1 787 616,00
14	CAS Reactor B: Surface-Mounted Aerators for Zone B3	No	4	439 964,00	R	1 759 856,00
Carried forward / ...					R	13 826 440,00

ITEM	DESCRIPTION	UNIT	QTY	RATE R c	AMOUNT R c
Brought forward / ...					R 13 826 440,00
15	~~CAS Reactor B: Surface-Mounted Aerators for Zone B2~~	~~No~~	~~3~~		
16	~~CAS Reactor B: Surface-Mounted Aerators for Zone B3~~	~~No~~	~~4~~		
17	CAS Reactor A: Internal Mixed Liquor Recycle (A-Recycle) Pumps including discharge pipework	No	3	515 274,00	R 1 545 822,00
18	CAS Reactor B: Internal Mixed Liquor Recycle (A-Recycle) Pumps including discharge pipework	No	3	506 530,00	R 1 519 590,00
19	CAS Reactor A & B Outlet Chamber: Provision and installation of new bridges over tilitng weirs	No	4	49 997,00	R 199 988,00
	Allow for all costs and expenses in connection with the Site installation in terms of in terms of FIDIC and Part C3: Scope of Work (excluding pre-commissioning) for the following:				
20	CAS Reactor A Submersible Mixers for Anoxic Zone A1 and A2	No	2	5 175,00	R 10 350,00
21	CAS Reactor A Submersible Mixers for Anoxic Zone A3	No	6	5 367,00	R 32 202,00
22	CAS Reactor B Submersible Mixers for Anoxic Zone B1 and B2	No	2	5 175,00	R 10 350,00
23	CAS Reactor B Submersible Mixers for Anoxic Zone B3	No	6	5 367,00	R 32 202,00
24	CAS Reactor A: Surface-Mounted Aerators for Zone A1	No	3	9 967,00	R 29 9(
25	CAS Reactor A: Surface-Mounted Aerators for Zone A2	No	3	9 967,00	R 29 901,00
26	CAS Reactor A: Surface-Mounted Aerators for Zone A3	No	4	10 638,00	R 42 552,00
27	CAS Reactor B: Surface-Mounted Aerators for Zone B1	No	3	9 967,00	R 29 901,00
28	CAS Reactor B: Surface-Mounted Aerators for Zone B2	No	3	9 967,00	R 29 901,00
29	CAS Reactor B: Surface-Mounted Aerators for Zone B3	No	4	10 638,00	R 42 552,00
Carried forward / ...					R 17 381 652,00

ITEM	DESCRIPTION	UNIT	QTY	RATE R c	AMOUNT R c
Brought forward / ...					R 17 381 652,00
30	CAS Reactor A: Internal Mixed Liquor Recycle (A-Recycle) Pumps including discharge pipework	No	3	3 834,00	R 11 502,00
31	CAS Reactor B: Internal Mixed Liquor Recycle (A-Recycle) Pumps including discharge pipework	No	3	3 834,00	R 11 502,00
32	CAS Reactor A & B Outlet Chamber: Provision and installation of new bridges over tililtng weirs	No	4	2 300,00	R 9 200,00
33	CAS Reactor A & B Outlet : Provision and installation of new bridges over manual sluice gates at the outlet to SSTs	No	4	2 300,00	R 9 200,00
	Allow for all costs and expenses in connection with pre-commsissioning in terms of FIDIC and Part C3: Scope of Work for the following:				
34	CAS Reactor A Submersible Mixers	No	2	1 369,00	R 2 738,00
35	CAS Reactor B Submersible Mixers	No	2	1 369,00	R 2 738,00
36	CAS Reactor A Surface-Mounted Aerators	No	4	8 775,00	R 35 100,00
37	CAS Reactor B Surface-Mounted Aerators	No	4	8 775,00	R 35 100,00
38	CAS Reactor A: Internal Mixed Liquor Recycle (A-Recycle) Pumps including discharge pipework	No	3	2 053,00	R 6 159,00
39	CAS Reactor B: Internal Mixed Liquor Recycle (A-Recycle) Pumps including discharge pipework	No	3	2 053,00	R 6 159,00
40	CAS Reactor A & B Outlet Chamber: New bridges over tililtng weirs	No	4	685,00	R 2 740,00
	Storage of equipment as ordered by the Engineer including insurances where storage space is provided by:				
41	a. The Contractor	Month	3	5 750,00	R 17 250,00
42	b. The City of Cape Town	Month	3	5 750,00	R 17 250,00
Carried forward / ...					R 17 548 290,00

ITEM	DESCRIPTION	UNIT	QTY	RATE R C	AMOUNT R C
Brought forward / ...					R 17 548 290,00
	Other:				
43	All other items not included above but which are nevertheless necessary to meet the Scope of Work and/or are required for the proper, safe and effective operation of the plant *(Specify)*	Item			
TOTAL OF SCHEDULE M14a CARRIED TO SUMMARY					R 17 548 290,00

ITEM	DESCRIPTION	UNIT	QTY	RATE R c	AMOUNT R c
	SCHEDULE M15				
	EXISTING RAS AND WAS PUMPSTATIONS EQUIPMENT				
	Handling of Existing Equipment				
1	Dismantling, decommissioning and removal of existing equipment	Sum	-	47 610,00	R 47 610,00
2	Transport of decommissioned equipment	km	250	28,00	R 7 000,00
	Allow for all the costs and expenses in connection with the design, manufacture, painting, factory testing, supplying, delivery, offloading and storage of the following materials				
	RAS Pumpstation				
3	Vertical Shaft Axial Flow Pumps	No	4	236 966,00	R 947 864,00
4	Pipework Refurbishment and modification	No	4	256 946,00	R 1 027 784,00
	WAS Pumpstation				
5	Self-priming centrifugal pumps	No	4	108 059,00	R 432 236,00
6	Suction pipework	No	2	104 129,00	R 208 258,00
7	Delivery Pipework	No	2	61 432,00	R 122 864,00
8	Supports	No	2	4 106,00	R 8 212,00
	Allow for all costs and expenses in connection with the Site installation in terms of in terms of FIDIC and Part C3: Scope of Work (excluding pre-commissioning) for the following:				
9	RAS pumpstation complete (i.e. RAS A & RAS B)	No	2	14 375,00	R 28 750,00
10	WAS pumpstation complete (i.e. WAS A & WAS B)	No	2	14 375,00	R 28 750,00
	Allow for all costs and expenses in connection with pre-commsissioning in terms of FIDIC and Part C3: Scope of Work for the following:				
11	RAS pumpstation complete (i.e. RAS A & RAS B)	No	2	30 774,00	R 61 548,00
12	WAS pumpstation complete (i.e. WAS A & WAS B)	No	2	29 670,00	R 59 340,00
Carried forward / ...					R 2 980 216,00

ITEM	DESCRIPTION	UNIT	QTY	RATE R c	AMOUNT R c
Brought forward / ...					R 2 980 216,00
	Storage of equipment as ordered by the Engineer including insurances where storage space is provided by:				
13	a. The Contractor	Month	3	5 750,00	R 17 250,00
14	b. The City of Cape Town	Month	3	5 750,00	R 17 250,00
	Other:				R -
					R -
					R -
15	All other items not included above but which are nevertheless necessary to meet the Scope of Work and/or are required for the proper, safe and effective operation of the plant *(Specify)*	Item			R -
TOTAL OF SCHEDULE M15 CARRIED TO SUMMARY					R 3 014 716,00

ITEM	DESCRIPTION	UNIT	QTY	RATE R c		AMOUNT R c
	SCHEDULE M16a EXISTING SECONDARY SETTLING TANK EQUIPMENT **Allow for all costs and expenses in connection with the site inspection, opening up, removal if required, specialist input, determination of refurbishment required and reporting as specified of the following:**					
1	Complete inspection of existing SST equipment and reporting as specified. **Handling of Existing Equipment (Provisional Sums):**	Sum	-	113 620,00	R	113 620,00
2	Dismantling, decommissioning and removal (including emtying of clarifier/ pumping to CAS plant) of existing equipment	Sum	-	294 718,00	R	294 718,00
3	Transport of decommissioned equipment **Allow for all the costs and expenses in connection with the design, manufacture, painting, factory testing, supplying, delivery, offloading and storage of the following materials and equipment**	km	250	28,00	R	7 000,00
4	Sloped-bottom clarifier Half Bridge and supports complete with centre bearings, sludge scrapers, end carriage, drive, access ladders and associated equipment	No	5	718 795,00	R	3 593 975,00
5	Sloped-bottom clarifier Full Bridge and supports complete with centre bearings, sludge scrapers, end carriage, drive, access ladders and associated equipment	No	3	844 649,00	R	2 533 947,00
6	Central inlet pipe and stilling well/ chamber for SST's (for one complete tank)	No	8	799 239,00	R	6 393 912,00
7	SS V-notch weirs ~~(75 mm deep)~~ for full circumference of the clarifier	No	8	49 640,00	R	397 120,00
8	SS scum baffle plates for full circumference of the clarifier	No	8	201 394,00	R	1 611 152,00
9	SS Scum trough/ box and draw-off mechanism	No	8	65 263,00	R	522 104,00
Carried forward / ...					R	15 467 548,00

ITEM	DESCRIPTION	UNIT	QTY	RATE R c	AMOUNT R c
Brought forward / ...					R 15 467 548,00
10	SS Scum withdrawal pipework, flanges and fittings (for all clarifiers)	Sum	-	103 783,00	R 103 783,00
	Allow for all costs and expenses in connection with the Site installation in terms of FIDIC and Part C3: Scope of Work (excluding pre-commissioning) for the following (Provisional Sums):				
11	Sloped-bottom clarifier Half Bridge and supports complete with centre bearings, sludge scrapers, end carriage, drive, access ladders and associated equipment	No	5	24 960,00	R 124 800,00
12	Sloped-bottom clarifier Full Bridge and supports complete with centre bearings, sludge scrapers, end carriage, drive, access ladders and associated equipment	No	3	42 044,00	R 126 13.
13	Central inlet pipe and stilling well/ chamber for SST's (for one complete tank)	No	8	8 050,00	R 64 400,00
14	SS V-notch weirs ~~(75 mm deep)~~ for full circumference of the clarifier	No	8	8 050,00	R 64 400,00
15	SS scum baffle plates for full circumference of the clarifier	No	8	8 050,00	R 64 400,00
16	SS Scum trough/ box and draw-off mechanism	No	8	8 050,00	R 64 400,00
17	SS Scum withdrawal pipework, flanges and fittings (for all clarifiers)	Sum	-	64 400,00	R 64 400,00
	Allow for all costs and expenses in connection with pre-commsissioning in terms of FIDIC and Part C3: Scope of Work for the following (Provisional Sums):				
	Complete Half Bridge Clarifier equipment	Sum	-	27370	R 27 370,00
	Complete Full Bridge Clarifier equipment	Sum	-	27370	R 27 370,00
	Storage of equipment as ordered by the Engineer including insurances where storage space is provided by (Provisional Sums):				
18	a. The Contractor	Month	3	5 750,00	R 17 250,00
19	b. The City of Cape Town	Month	3	5 750,00	R 17 250,00
Carried forward / ...					R 16 233 503,00

ITEM	DESCRIPTION	UNIT	QTY	RATE R c	AMOUNT R c
Brought forward / ...					R 16 233 503,00
	Other:				
20	All other items not included above but which are nevertheless necessary to meet the Scope of Work and/or are required for the proper, safe and effective operation of the plant *(Specify)*	Item			R -
TOTAL OF SCHEDULE M16a CARRIED TO SUMMARY					R 16 233 503,00

ITEM	DESCRIPTION	UNIT	QTY	RATE R c		AMOUNT R c
	SCHEDULE M17a					
	NEW SECONDARY SETTLING TANK EQUIPMENT					
	Allow for all costs in connection with the following general items:					
1	Grano Screeding of Clarifiers (SSTs) floors	Sum	-	1 399 815,00	R	1 399 815,00
	Allow for all the costs and expenses in connection with the design, manufacture, painting, factory testing, supplying, delivery, offloading and storage of the following materials and equipment:					
2	Sloped-bottom clarifier Full Bridge and supports complete with centre bearings, sludge scrapers, end carriage, drive, access ladders and associated equipment	No	4	878 116,00	R	3 512 46
3	Central inlet pipe and stilling well/ chamber for SST's (for one complete tank)	No	4	673 210,00	R	2 692 840,00
4	SS V-notch weirs ~~(75 mm deep)~~ for full circumference of the clarifier	No	4	55 936,00	R	223 744,00
5	SS scum baffle plates for full circumference of the clarifier	No	4	200 100,00	R	800 400,00
6	SS Scum trough/ box and draw-off mechanism	No	8	126 500,00	R	1 012 000,00
7	SS Scum withdrawal pipework, flanges and fittings (for all clarifiers)	Sum	-	101 982,00	R	101 982,00
	Allow for all costs and expenses in connection with the Site installation in terms of in terms of FIDIC and Part C3: Scope of Work (excluding pre-commissioning) for the following:					
8	Sloped-bottom clarifier full bridge and supports complete with centre bearings, sludge scrapers, end carriage, drive and associated equipment	No	4	23 575,00	R	94 300,00
9	Central inlet pipe and stilling well/ chamber for SST's (for one complete tank)	No	4	16 100,00	R	64 400,00
10	SS V-notch weirs ~~(75 mm deep)~~ for full circumference of the clarifier	No	4	8 050,00	R	32 200,00
Carried forward / ...					R	9 934 145,00

ITEM	DESCRIPTION	UNIT	QTY	RATE R c	AMOUNT R c
Brought forward / ...					R 9 934 145,00
11	SS scum baffle plates for full circumference of the clarifier	No	4	16 100,00	R 64 400,00
12	SS Scum trough/ box and draw-off mechanism	No	8	8 050,00	R 64 400,00
13	SS Scum withdrawal pipework, flanges and fittings (for all clarifiers)	Sum	-	32 200,00	R 32 200,00
	Allow for all costs and expenses in connection with pre-commsissioning in terms of FIDIC and Part C3: Scope of Work for the following:				R -
14	Complete Clarifier equipment	Sum	-	21 896,00	R 21 896,00
	Storage of equipment as ordered by the Engineer including insurances where storage space is provided by:				R -
15	a. The Contractor	Month	3	5 750,00	R 17 250,00
16	b. The City of Cape Town	Month	3	5 750,00	R 17 250,00
	Other:		-		R -
17	All other items not included above but which are nevertheless necessary to meet the Scope of Work and/or are required for the proper, safe and effective operation of the plant *(Specify)*	Item			-
TOTAL OF SCHEDULE M17a CARRIED TO SUMMARY					R 10 151 541,00

ITEM	DESCRIPTION	UNIT	QTY	RATE R	RATE c	AMOUNT R	AMOUNT c
	SCHEDULE M18a						
	CHLORINE DISINFECTION EQUIPMENT						
	Allow for all costs in connection with the following general items:						
	Handling of Existing Equipment						
1	Dismantling, decommissioning and removal of existing equipment	Sum	-	7 498,00		R	7 498,00
2	Transport of decommissioned equipment	km	250	28,00		R	7 000,00
	Allow for all the costs and expenses in connection with the design, manufacture, painting, factory testing, supplying, delivery, offloading and storage of the following materials and equipment:						
	High Pressure Room Chlorine Dosing Equipment:						
3	Auto Changeover Device	No	1	32 821,00		R	32 821,00
4	Drum Cradles with Scales (mass meters)	No	8	18 216,00		R	145 728,00
4a	Drum Cradles without Scales	No	8	4 856,00		R	38 848,00
5	All chlorine gas pipework complete as specified, including valves, pressure reducing ~~valves~~ devices, catchpots, heaters, vaporisers, pigtails supports etc., as required	Sum	-	136 131,00		R	136 131,00
6	Vacuum Regulator	No	2	69 086,00		R	138 17
	Low Pressure Room Chlorine Dosing Equipment:						
7	Chlorinator Skids Complete	No	2	132 814,00		R	265 628,00
8	Injectors	No	2	34 115,00		R	68 230,00
9	Complete Booster Pumps	No	3	26 163,00		R	78 489,00
10	~~Chlorine dilution water pipework~~	~~Sum~~	-				
11	Pipework and supports ~~as required~~	Sum	-	9 821,00		R	9 821,00
12	Submerged dispersion bar pipe complete (located at the chlorine disinfection chamber)	Sum	-	1 898,00		R	1 898,00
	Carried forward / ...					R	930 264,00

ITEM	DESCRIPTION	UNIT	QTY	RATE R c	AMOUNT R c
Brought forward / ...					R 930 264,00
13	Residual chlorine meters	Sum	-	123 026,00	R 123 026,00
					R -
	Chlorine Dosing Safety Equipment:				R -
					R -
14	Gas Leak Detector, including beacon and siren	No	1	24 311,00	R 24 311,00
				-	-
15	Breathing Apparatus set including enclosure	No	2	18 760,00	R 37 520,00
				-	-
16	Windsock	No	1	5 374,00	R 5 374,00
				-	-
17	Emergency Closure Kit (safety equipment including weather proof cabinet, gas masks, eye wash bottle, etc.)	No	1	34 641,00	R 34 641,00
					R -
18	Ventilation System (vent fan)	Sum	-	39 227,00	R 39 227,00
				-	-
19	Safety Signage (wall charts)	Sum	-	1 139,00	R 1 139,00
				-	-
20	Complete Shower Stainless Steel full body shower and eye bath (including Accumulator and Pumps)	Sum	-	23 449,00	R 23 449,00
					R -
	Temporary Chlorine Supply:				R -
					R -
21	Chlorine Chip Doser (or similar approved) and Chlorine as specified	Month	8	218 603,00	R 1 748 824,00
					-
	Chlorine Scrubber:				-
					-
22	Dry Chlorine Scrubber as specified	Sum	-	3 605 832,00	R 3 605 832,00
				-	-
	Instrument Air			-	-
				-	-
22a	Compressors	No	2	227 146,00	R 454 292,00
				-	-
22b	Air receiver (moisture trap)	No	1	52 022,00	R 52 022,00
				-	-
22c	Air receiver	No	1	62 629,00	R 62 629,00
				-	-
22d	Condensate management system	Sum	-	22 016,00	R 22 016,00
				-	-
22e	Pipework and supports	Sum	-	28 750,00	R 28 750,00
				-	-
22f	Seperator units and filter sets	No	3	39 219,00	R 117 657,00
				-	-
	Pneumatic Actuation Equipment			-	-
				-	-
22g	Pneumatic Actuation Equipment for each Process Area	Sum	-	228 298,00	R 228 298,00
Carried forward / ...					R 7 539 271,00

ITEM	DESCRIPTION	UNIT	QTY	RATE R c	AMOUNT R c
Brought forward / ...					R 7 539 271,00
	Allow for all costs and expenses in connection with the Site installation in terms of in terms of FIDIC and Part C3: Scope of Work (excluding pre-commissioning) for the following:				
	High Pressure Room Chlorine Dosing Equipment				
23	Auto Changeover Device	No	1	1 668,00	R 1 668,00
24	Drum Cradles with Scales (mass meters)	No	8	209,00	R 1 672,00
24a	Drum Cradles without Scales	No	8	209,00	R 1 672,00
25	All chlorine gas pipework complete as specified, including valves, pressure reducing ~~valves~~ devices, catchpots, heaters, vaporisers, pigtails supports etc., as required	Sum	-	1 668,00	R 1 668
26	Vacuum Regulator	No	2	834,00	R 1 668,00
	Low Pressure Room Chlorine Dosing Equipment:				
27	Chlorinator Skids Complete	No	2	834,00	R 1 668,00
28	Injectors	No	2	834,00	R 1 668,00
29	Complete Booster Pumps	No	3	556,00	R 1 668,00
30	~~Chlorine dilution water pipework~~	~~Sum~~	-		R -
31	Pipework and supports ~~as required~~	Sum	-	1 668,00	R 1 668,00
32	Submerged dispersion bar pipe complete (located at the chlorine disinfection chamber)	Sum	-	1 668,00	R 1 668
	Chlorine Dosing Safety Equipment:				
33	Gas Leak Detector, including beacon and siren	No	1	1 668,00	R 1 668,00
34	Breathing Apparatus set including enclosure	No	2	834,00	R 1 668,00
35	Windsock	No	1	1 668,00	R 1 668,00
36	Emergency Closure Kit (safety equipment including weather proof cabinet, gas masks, eye wash bottle, etc.)	No	1	1 668,00	R 1 668,00
37	Ventilation System (vent fan)	Sum	-	1 668,00	R 1 668,00
Carried forward / ...					R 7 564 299,00

ITEM	DESCRIPTION	UNIT	QTY	RATE R c	AMOUNT R c
Brought forward / ...					R 7 564 299,00
37a	Safety Signage (wall charts)	Sum	-	1 668,00	R 1 668,00
37b	Complete Shower Stainless Steel full body shower and eye bath (including Accumulator and Pumps)	Sum	-	1 668,00	R 1 668,00
38	Residual chlorine meters	Sum	-	8 142,00	R 8 142,00
	Temporary Chlorine Supply				R -
39	Chlorine Chip Doser (or similar approved) and Chlorine as specified	Month	8	1 018,00	R 8 144,00
	Chlorine Scrubber				R -
40	Dry Chlorine Scrubber as specified	Sum	-	9 258,00	R 9 258,00
	Instrument Air				R -
41a	Compressors	No	2	4 071,00	R 8 142,00
41b	Air receiver (moisture trap)	No	1	1 668,00	R 1 668,00
41c	Air receiver	No	1	1 668,00	R 1 668,00
41d	Condensate management system	Sum	-	1 668,00	R 1 668,00
41e	Pipework and supports	Sum	-	8 142,00	R 8 142,00
41f	Seperator units and filter sets	No	3	556,00	R 1 668,00
	Pneumatic Actuation Equipment				-
41g	Pneumatic Actuation Equipment for each Process Area	Sum	-	4 416,00	R 4 416,00
	Allow for all costs and expenses in connection with pre-commsissioning in terms of FIDIC and Part C3: Scope of Work for the following:				R -
41	Chlorine Dosing System	Sum	-	9 292,00	R 9 292,00
42	Dry Chlorine Scrubber system	Sum	-	9 292,00	R 9 292,00
Carried forward / ...					R 7 639 135,00

ITEM	DESCRIPTION	UNIT	QTY	RATE R c	AMOUNT R c
Brought forward / ...					R 7 639 135,00
	Storage of equipment as ordered by the Engineer including insurances where storage space is provided by:				
43	a. The Contractor	Month	3	5 750,00	R 17 250,00
				-	-
44	b. The City of Cape Town	Month	3	5 750,00	R 17 250,00
					R -
	Other:				R -
					R -
45	All other items not included above but which are nevertheless necessary to meet the Scope of Work and/or are required for the proper, safe and effective operation of the plant *(Specify)*	Item			R -
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TOTAL OF SCHEDULE M18a CARRIED TO SUMMARY					R 7 673 635,00

ITEM	DESCRIPTION	UNIT	QTY	RATE R c	AMOUNT R c
	SCHEDULE M19a				
	CLARIFIERS SCUM PUMP STATION EQUIPMENT				
	Allow for all costs in connection with the following general items:				
	Handling of Existing Equipment				
1	Dismantling, decommissioning and removal of existing equipment	Sum	-	13 513,00	R 13 513,00
2	Transport of decommissioned equipment	km	250	28,00	R 7 000,00
	Allow for all the costs and expenses in connection with the design, manufacture, painting, factory testing, supplying, delivery, offloading and storage of the following materials and equipment:				
3	Self-priming centrifugal pumps	No	6	90 000,00	R 540 000,00
4	Suction pipework per scum pump station	No	3	43 468,00	R 130 404,00
5	Delivery Pipework per scum pump station	No	3	43 187,00	R 129 561,00
6	Pipe supports	No	3	3 565,00	R 10 695,00
	Allow for all costs and expenses in connection with the Site installation in terms of in terms of FIDIC and Part C3: Scope of Work (excluding pre-commissioning) for the following:				
7	Scum Pumpstations complete	No	3	17 787,00	R 53 361,00
	Allow for all costs and expenses in connection with pre-commsissioning in terms of FIDIC and Part C3: Scope of Work for the following:				
8	Scum Pumpstations complete	Sum	-	21 896,00	R 21 896,00
	Storage of equipment as ordered by the Engineer including insurances where storage space is provided by:				
9	a. The Contractor	Month	3	5 750,00	R 17 250,00
10	b. The City of Cape Town	Month	3	5 750,00	R 17 250,00
Carried forward / ...					R 940 930,00

ITEM	DESCRIPTION	UNIT	QTY	RATE R c	AMOUNT R c
Brought forward / ...					R 940 930,00
	Other:				
11	All other items not included above but which are nevertheless necessary to meet the Scope of Work and/or are required for the proper, safe and effective operation of the plant *(Specify)*	Item			R -
TOTAL OF SCHEDULE M19a CARRIED TO SUMMARY					R 940 930,00

SECTION C OF THE WORKS: MODULE A - MECHANICAL EQUIPMENT

Continued Overleaf

ITEM	DESCRIPTION	UNIT	QTY	RATE R c		AMOUNT R c
	SCHEDULE M20a					
	CHEMICAL DOSING EQUIPMENT					
	Allow for all costs in connection with the following general items:					
	Handling of Existing Equipment					
1	Dismantling, decommissioning and removal of existing equipment	Sum	-	6 751,00	R	6 751,00
2	Transport of decommissioned equipment	km	250	28,00	R	7 000,00
	Allow for all the costs and expenses in connection with the design, manufacture, painting, factory testing, supplying, delivery, offloading and storage of the following materials and equipment:				R	-
	Sodium Hydroxide (Caustic Soda) Equipment					
3	Chemical room ventilation system	Sum	-	8 187,00	R	8 187,00
4	Dosing system (bunded skids and cabinet etc) as specified	Sum	-	467 291,00	R	467 291,00
5	Pressurised storage tanks	No	2	521 360,00	R	1 042 720,00
6	Pipework	Sum	-	4 738,00	R	4 738,00
7	Filling station booster pump (inclusive of bunded skids and cabinet etc)	Sum	-	76 688,00	R	76 688,00
8	Supports	Sum	-	4 830,00	R	4 830,00
9	FRP banded grating and frame support	m^2	60	2 151,00	R	129 060,00
10	Grating support beams (50 x 150 x 5mm) as shown on drawings	Sum	-	9 843,00	R	9 843,00
11	Chemical required during the entire performance period (commissioning) of the plant	Sum	-	34 454,00	R	34 454,00
12	Chemical - one tank fill	No	2	358 938,00	R	717 876,00
	Coagulant for P-removal Equipment					
13	Chemical room ventilation system	Sum	-	8 187,00	R	8 187,00
Carried forward / ...					R	2 517 625,00

ITEM	DESCRIPTION	UNIT	QTY	RATE R c	AMOUNT R c
Brought forward / ...					R 2 517 625,00
14	Dosing system (bunded skids and cabinet etc) as specified	Sum	-	467 291,00	R 467 291,00
15	Pressurised storage tanks	No	2	451 747,00	R 903 494,00
16	Pipework	Sum	-	4 738,00	R 4 738,00
17	Filling station booster pump (inclusive of bunded skids and cabinet etc)	Sum	-	76 688,00	R 76 688,00
18	Supports	Sum	-	4 830,00	R 4 830,00
19	FRP banded grating and frame support	m^2	60	2 151,00	R 129 060,00
20	Grating support beams (50 x 150 x 5mm) as shown on drawings	Sum	-	9 843,00	R 9 84
21	Chemical required during the entire performance period (commissioning) of the plant	Sum	-	14 656,00	R 14 656,00
22	Chemical - one tank fill	No	2	160 310,00	R 320 620,00
	Allow for all costs and expenses in connection with the Site installation in terms of in terms of FIDIC and Part C3: Scope of Work (excluding pre-commissioning) for the following:				
	Sodium Hydroxide (Caustic Soda) Equipment				
23	Chemical room ventilation system	Sum	-	978,00	R 978,00
24	Dosing system (bunded skids and cabinet etc) as specified	Sum	-	16 675,00	R 16 675,00
25	Pressurised storage tanks	No	2	5 750,00	R 11 500,00
26	Pipework	Sum	-	1 380,00	R 1 380,00
27	Filling station booster pump (inclusive of bunded skids and cabinet etc)	Sum	-	2 530,00	R 2 530,00
28	Supports	Sum	-	5 750,00	R 5 750,00
29	FRP banded grating and frame support	m^2	60	288,00	R 17 280,00
30	Grating support beams (50 x 150 x 5mm) as shown on drawings	Sum	-	10 925,00	R 10 925,00
Carried forward / ...					R 4 515 863,00

ITEM	DESCRIPTION	UNIT	QTY	RATE R c	AMOUNT R c
Brought forward / ...					R 4 515 863,00
31	Chemical required during the entire performance period (commissioning) of the plant	Sum	-	2 300,00	R 2 300,00
	Coagulant for P-removal Equipment			-	-
32	Chemical room ventilation system	Sum	-	978,00	R 978,00
33	Dosing system (bunded skids and cabinet etc) as specified	Sum	-	16 675,00	R 16 675,00
34	Pressurised storage tanks	No	2	5 750,00	R 11 500,00
35	Pipework	Sum	-	1 380,00	R 1 380,00
36	Filling station booster pump (inclusive of bunded skids and cabinet etc)	Sum	-	2 530,00	R 2 530,00
37	Supports	Sum	-	5 750,00	R 5 750,00
38	FRP banded grating and frame support	m^2	60	288,00	R 17 280,00
39	Grating support beams (50 x 150 x 5mm) as shown on drawings	Sum	-	10 925,00	R 10 925,00
40	Chemical required during the entire performance period (commissioning) of the plant	Sum	-	2 300,00	R 2 300,00
	Allow for all costs and expenses in connection with pre-commsissioning in terms of FIDIC and Part C3: Scope of Work for the following:			-	-
41	Entire Sodium Hydroxide System	Sum	-	4 658,00	R 4 658,00
42	Entire Coagulant for P-removal System	Sum	-	4 658,00	R 4 658,00
	Allow for all costs and expenses in connection with Chemical Dosing Safety Equipment for the following:			-	-
	Sodium Hydroxide (Caustic Soda) Equipment			-	-
43	Supply of full set of Chemical Handling PPE (including Goggles, Aprons, Respirators, Masks, Aprons/Body Suits etc.) as required by chemical.	No	12	2 317,00	R 27 804,00
44	Windsock	No	1	5 374,00	R 5 374,00
45	Safety equipment including weather proof cabinet, gas masks, eye wash bottle, etc.)	No	2	3 163,00	R 6 326,00
Carried forward / ...					R 4 636 301,00

ITEM	DESCRIPTION	UNIT	QTY	RATE R c	AMOUNT R c
Brought forward / ...					R 4 636 301,00
46	Safety Signage (wall charts)	Sum	-	1 139,00	R 1 139,00
47	Complete Shower Stainless Steel full body shower and eye bath (including Accumulator and Pumps)	No	1	23 456,00	R 23 456,00
	Coagulant for P-removal Equipment				
	Supply of full set of Chemical Handling PPE (including Goggles, Aprons, Respirators, Masks, Aprons/Body Suits etc.) as required by chemical.	No	12	2 317,00	R 27 804,00
48	Windsock	No	1	5 374,00	R 5 374,00
49	Safety equipment including weather proof cabinet, gas masks, eye wash bottle, etc.)	No	2	3 163,00	R 6 326,00
50	Safety Signage (wall charts)	Sum	-	1 139,00	R 1 139,00
51	Complete Shower Stainless Steel full body shower and eye bath (including Accumulator and Pumps)	No	1	23 456,00	R 23 456,00
	Storage of equipment as ordered by the Engineer including insurances where storage space is provided by:				
52	a. The Contractor	Month	3	5 750,00	R 17 250,00
53	b. The City of Cape Town	Month	3	5 750,00	R 17 250,00
	Other:				R -
	All other items not included above but which are nevertheless necessary to meet the Scope of Work and/or are required for the proper, safe and effective operation of the plant *(Specify)*	Item			R - R -
TOTAL OF SCHEDULE M20a CARRIED TO SUMMARY					R 4 759 495,00

ITEM	DESCRIPTION	UNIT	QTY	RATE R c	AMOUNT R c
	SCHEDULE M21a				
	BIOREACTOR MIXING EQUIPMENT				
	Allow for all costs in connection with the following general items:				
1	CFD Analysis on Anoxic Zone mixers	Sum	-	54 970,00	R 54 970,00
2	CFD Analysis on Anaerobic Zone mixers	Sum	-	54 970,00	R 54 970,00
	Handling of Existing Equipment				R -
3	Dismantling, decommissioning and removal (including emtying of reactor/ pumping to CAS plant) of existing equipment	Sum	-	60 950,00	R 60 950,00
4	Transport of decommissioned equipment	km	250	28,00	R 7 000,00
	Allow for all the costs and expenses in connection with the design, manufacture, painting, factory testing, supplying, delivery, offloading and storage of the following materials and equipment:				R -
5	Anaerobic Zone Mixer	No	6	105 542,00	R 633 252,00
6	Anoxic Zone Mixer	No	6	105 542,00	R 633 252,00
	Allow for all costs and expenses in connection with the Site installation in terms of in terms of FIDIC and Part C3: Scope of Work (excluding pre-commissioning) for the following:				-
7	Anaerobic Zone Mixer	No	6	6 517,00	R 39 102,00
8	Anoxic Zone Mixer	No	6	6 517,00	R 39 102,00
	Allow for all costs and expenses in connection with pre-commsissioning in terms of FIDIC and Part C3: Scope of Work for the following:				R -
9	Complete mixing system	Sum	-	13 685,00	R 13 685,00
10	Mixing homogeneity tests	Sum	-	27 370,00	R 27 370,00
Carried forward / ...					R 1 563 653,00

ITEM	DESCRIPTION	UNIT	QTY	RATE R c	AMOUNT R c
Brought forward / ...					R 1 563 653,00
	Storage of equipment as ordered by the Engineer including insurances where storage space is provided by:				
11	a. The Contractor	Month	3	5 750,00	R 17 250,00
12	b. The City of Cape Town	Month	3	5 750,00	R 17 250,00
TOTAL OF SCHEDULE M21a CARRIED TO SUMMARY					R 1 598 153,00

ITEM	DESCRIPTION	UNIT	QTY	RATE R	C	AMOUNT R	C
	SCHEDULE M22a						
	FINE BUBBLE DIFFUSED AERATION (FBDA) EQUIPMENT						
	Allow for all costs in connection with the following general items:						
1	Inspection reports as specified	Sum	-	98 555,00		R	98 555,00
						R	-
	Handling of Existing Equipment						
2	Dismantling, decommissioning and removal (including emtying of reactor/ pumping to CAS plant) of existing equipment	Sum	-	237 251,00		R	237 251,00
				-			-
3	Transport of decommissioned equipment	km	250	28,00		R	7 000,00
						R	-
	Allow for all costs in connection with the following general items:					R	-
						R	-
4	Inspection reports (FBDA and Air Scour)	Sum	-	27 370,00		R	27 370,00
						R	-
	Allow for all the costs and expenses in connection with the design, manufacture, painting, factory testing, supplying, delivery, offloading and storage of the following materials and equipment:					R	-
	Provisional Sums for FBDA equipment:					R	-
						R	-
5	Blowers	No	3	2 167 930,00		R	6 503 790,00
				-			-
6	Refurbishment of pipework	Sum	-	3 828 162,00		R	3 828 162,00
				-			-
7	Laterals pipework and zone headers	Sum	-	484 846,00		R	484 846,00
				-			-
8	Diffusers and membrane assemblies etc.	Sum	-	796 719,00		R	796 719,00
				-			-
9	Condensate and Acid Injection System	Sum	-	35 584,00		R	35 584,00
				-			-
10	Manifold and downleg supports	Sum	-	560 351,00		R	560 351,00
				-			-
11	Lateral and zone header supports	Sum	-	268 083,00		R	268 083,00
						R	-
	Aerobic Zone Scum Suppression Equipment					R	-
						R	-
12	Scum/Foam Spray System	Sum	-	440 025,00		R	440 025,00
Carried forward / ...						R	13 287 736,00

ITEM	DESCRIPTION	UNIT	QTY	RATE R c	AMOUNT R c
Brought forward / ...					R 13 287 736,00
	Formic Acid				
13	Formic Acid mobile dosing skid ~~system, along with all the pipe connections, injection/ quick release fittings on the dropleg etc for safe and proper functioning of the FBDA equipment~~	Sum	-	30 999,00	R 30 999,00
					R -
14	Formic Acid for commissioning (at least 50L)	Sum	-	1 725,00	R 1 725,00
				-	-
15	Formic Acid Skid - one tank fill	No	-	1 725,00	R 1 725,00
					R -
	Allow for all costs and expenses in connection with the Site installation in terms of in terms of FIDIC and Part C3: Scope of Work (excluding pre-commissioning) for the following:				R -
					R -
	Provisional Sums for FBDA equipment:				R -
16	Blowers	No	~~5~~ 3	19 493,00	R 58 479,00
					R -
17	Refurbishment of pipework	Sum	-	173 765,00	R 173 765,00
18	Laterals pipework and zone headers	Sum	-	80 500,00	R 80 500,00
				-	-
19	Diffusers and membrane assemblies etc.	Sum	-	34 328,00	R 34 328,00
				-	-
20	Condensate System	Sum	-	8 050,00	R 8 050,00
				-	-
21	Manifold and downleg supports	Sum	-	32 200,00	R 32 200,00
				-	-
22	Lateral and zone header supports	Sum	-	32 200,00	R 32 200,00
					R -
	Aerobic Zone Scum Suppression Equipment				R
					R -
23	Scum/Foam Spray System	Sum	-	16 100,00	R 16 100,00
					R -
	Formic Acid				R -
					R -
~~24~~	~~Formic Acid mobile dosing skid system, along with all the pipe connections, injection/ quick release fittings on the dropleg etc for safe and proper functioning of the FBDA equipment~~	~~Sum~~	-		R -
					R -
25	Formic Acid for commissioning (at least 50L)	Sum	-	12 190,00	R 12 190,00
				-	-
26	Formic Acid Skid - one tank fill	Sum	-	1 219,00	R 1 219,00
Carried forward / ...					R 13 771 216,00

ITEM	DESCRIPTION	UNIT	QTY	RATE R c	AMOUNT R c
Brought forward / ...					R 13 771 216,00
	Allow for all costs and expenses in connection with the Site installation in terms of in terms of FIDIC and Part C3: Scope of Work (excluding pre-commissioning) for the following:				
27	Complete FBDA System	Sum	-	404 340,00	R 404 340,00
28	Oxygen transfer testing of entire FBDA system	Sum	-	24 150,00	R 24 150,00
	Storage of equipment as ordered by the Engineer including insurances where storage space is provided by:				
29	a. The Contractor	Month	3	5 750,00	R 17 250,00
30	b. The City of Cape Town	Month	3	5 750,00	R 17 250,00
	Other:				R -
31	All other items not included above but which are nevertheless necessary to meet the Scope of Work and/or are required for the proper, safe and effective operation of the plant *(Specify)*	Item	1		-
TOTAL OF SCHEDULE M22a CARRIED TO SUMMARY					R 14 234 206,00

ITEM	DESCRIPTION	UNIT	QTY	RATE R c	AMOUNT R c
	SCHEDULE M23				
	MIXED LIQUOR RECYCLE (MLR) PUMP EQUIPMENT				
	Allow for all costs in connection with the following general items:				
	Handling of Existing Equipment				
1	Dismantling, decommissioning and removal (including emtying of reactor/ pumping to CAS plant) of existing equipment	Sum	-	26 278,00	R 26 278,00
2	Transport of decommissioned equipment	km	250	28,00	R 7 000,00
	Allow for all the costs and expenses in connection with the design, manufacture, painting, factory testing, supplying, delivery, offloading and storage of the following materials and equipment:				
3	Ax-An Recycle Pump	No	2	183 289,00	R 366 578,00
	Allow for all costs and expenses in connection with the Site installation in terms of in terms of FIDIC and Part C3: Scope of Work (excluding pre-commissioning) for the following:				
4	Ax-An Recycle Pump	No.	2	13 139,00	R 26 278,00
	Allow for all costs and expenses in connection with pre-commsissioning in terms of FIDIC and Part C3: Scope of Work for the following:				
5	Ax-An Recycle Pump	Sum	-	10 948,00	R 10 94
	Storage of equipment as ordered by the Engineer including insurances where storage space is provided by:				
6	a. The Contractor	Month	3	5 750,00	R 17 250,00
7	b. The City of Cape Town	Month	3	5 750,00	R 17 250,00
	Carried forward / ...				R 471 582,00

ITEM	DESCRIPTION	UNIT	QTY	RATE R c	AMOUNT R c
Brought forward / ...					R 471 582,00
	Other:				
8	All other items not included above but which are nevertheless necessary to meet the Scope of Work and/or are required for the proper, safe and effective operation of the plant *(Specify)*	Item			R -
TOTAL OF SCHEDULE M23 CARRIED TO SUMMARY					R 471 582,00

ITEM	DESCRIPTION	UNIT	QTY	RATE R	RATE c	AMOUNT R	AMOUNT c
	SCHEDULE M24a						
	EXISTING ULTRA-FILTRATION (UF) MEMBRANE BIOREACTOR PLANT (MBR) EQUIPMENT						
	Allow for all the costs and expenses in connection with the following:						
1	Membrane supplier technical support and advisory services	Sum	-	941 137,00		R	941 137,00
						R	-
	Handling of Existing Equipment:						-
2	Dismantling, decommissioning and removal (including emtying of reactor/ pumping to CAS plant) of existing equipment	Sum	-	362 250,00		R	362 250,00
3	Transport of decommissioned equipment	km	250	28,00		R	7 000,00
						R	-
	Allow for all the costs and expenses in connection with the design, manufacture, painting, supplying, delivery, offloading and storage of the following materials and equipment:						
						R	-
	Membrane Tanks Feed/ Mixed Liquor Transfer Pumps					R	-
4	Membrane Tank Feed (Mixed Liquor Transfer) Pump	No	3	765 297,00		R	2 295 891,00
	Ultra-Filtration Membrane Bioreactor Plant Equipment						
5	Membrane filtration trains	No	6	4 695 624,00		R	28 173 744,00
6	Flow Control Baffle	No	6	24 150,00		R	144 90
7	Membrane plant ventilation/air ejection system	Sum	-	172 500,00		R	172 500,00
8	Membrane integrity testing equipment (excluding turbidity analysers which are scheduled elsewhere)	Sum	-	98 785,00		R	98 785,00
9	On-line performance and process monitoring service and associated equipment	Sum	-	503 022,00		R	503 022,00
10	Membrane unit lifting bracket / cradle	No	1	14 795,00		R	14 795,00
11	Other membrane plant pipework and associated equipment (EN Grade 1.4401) not mentioned above, but are required for proper and safe operation of the membrane filtration system	Sum	-	367 477,00		R	367 477,00
Carried forward / ...						R	33 081 501,00

ITEM	DESCRIPTION	UNIT	QTY	RATE R c	AMOUNT R c
Brought forward / ...					R 33 081 501,00
	Air Scour Equipment (Provisional Sums)				
12	Blowers	No	3	909 876,00	R 2 729 628,00
13	Refurbishment and modification of air scour pipework to and from membrane casettes	Sum	-	534 164,00	rate only
14	New air scour distribution pipework to membrane casettes	Sum	-	1 172 930,00	R 1 172 930,00
15	Supports	Sum	-	25 392,00	R 25 392,00
	Permeate/Backpulse Pumps				
16	Permeate / backpulse pump	No	6	343 425,00	R 2 060 550,00
17	Refurbishment and modification of permeate pipework from pumps up to membrane casettes headers	Sum	-	274 563,00	rate only
17a	New Permeate suction pipework	Sum	-	398 815,00	R 398 815,00
17b	New Permeate discharge pipework	Sum	-	368 810,00	R 368 810,00
18	Supports	Sum	-	11 385,00	R 11 385,00
	Filtration Tanks Drain Pumps				
19	Filtration train drain pump	No	2	229 967,00	R 459 934,00
20	Refurbishment and modification of pipework	Sum	-	154 528,00	R 154 528,00
21	Supports	Sum	-	3 163,00	R 3 163,00
	Scum/ WAS Pumps				
22	Scum/WAS pumps	No	2	53 784,00	R 107 568,00
23	Refurbishment of pipework	Sum	-	90 287,00	R 90 287,00
24	Supports	Sum	-	3 163,00	R 3 163,00
	GRP Covers				
25	GRP covers for membrane tanks	m²	300	3 594,00	R 1 078 200,00
	CIP: Sodium Hypochlorite Dosing Equipment				
26	Chemical room ventilation system	Sum	-	8 187,00	R 8 187,00
Carried forward / ...					R 41 754 041,00

ITEM	DESCRIPTION	UNIT	QTY	RATE R c	AMOUNT R c
Brought forward / ...					R 41 754 041,00
27	CIP: Sodium hypochlorite dosing system (bunded skids and cabinet etc) as specified	Sum	-	253 666,00	R 253 666,00
28	Scum suppression system: Sodium hypochlorite dosing system	Sum	-	113 568,00	R 113 568,00
29	Storage tank	Sum	-	108 224,00	R 108 224,00
30	Pipework	Sum	-	4 830,00	R 4 830,00
31	Pipe supports	Sum	-	1 380,00	R 1 380,00
32	Filling station pump and pipework	Sum	-	67 080,00	R 67 080,00
33	Sodium hypochlorite required during the entire performance period (commissioning) of the MBR plant	Sum	-	39 807,00	R 39 80
34	Sodium hypochlorite - one tank fill	Sum	-	71 553,00	R 71 553,00
35	Access platform	Sum	-	28 750,00	R 28 750,00
	CIP: Citric Acid Dosing Equipment				
36	Chemical room ventilation system	Sum	-	8 187,00	R 8 187,00
37	CIP: Citric acid dosing system (bunded skids and cabinet etc) as specified	Sum	-	253 666,00	R 253 666,00
38	Storage tank	Sum	-	99 967,00	R 99 967,00
39	Pipework	Sum	-	2 415,00	R 2 415,00
40	Supports	Sum	-	690,00	R 69
41	Filling station pump and pipework	Sum	-	67 080,00	R 67 080,00
42	Citric acid required during the entire performance period (commissioning) of the MBR plant	Sum	-	7 878,00	R 7 878,00
43	Citric acid - one tank fill	Sum	-	26 795,00	R 26 795,00
44	Citric acid Batching Equipment	Sum	-	90 563,00	R 90 563,00
45	Citric acid batching dust collection system	Sum	-	243 800,00	R 243 800,00
46	Access platform	Sum	-	28 750,00	R 28 750,00
Carried forward / ...					R 43 272 690,00

ITEM	DESCRIPTION	UNIT	QTY	RATE R C	AMOUNT R C
Brought forward / ...					R 43 272 690,00
	Allow for all costs and expenses in connection with the Site installation in terms of in terms of FIDIC and Part C3: Scope of Work (excluding pre-commissioning) for the following:				
	Membrane Tanks Feed/ Mixed Liquor Transfer Pumps				
47	Membrane Tank Feed (Mixed Liquor Transfer) Pump	No	3	16 100,00	R 48 300,00
					R -
	Ultra-Filtration Membrane Bioreactor Plant Equipment				R -
					R -
48	Membrane filtration units for one train	No	6	8 050,00	R 48 300,00
				-	-
49	Flow Control Baffle	No	6	2 684,00	R 16 104,00
				-	-
50	Membrane plant ventilation/air ejection system	Sum	-	17 250,00	R 17 250,00
				-	-
51	Filtration train protective lining	No	6	4 025,00	R 24 150,00
				-	-
52	Membrane integrity testing equipment (excluding turbidity analysers which are scheduled elsewhere)	Sum	-	41 400,00	R 41 400,00
				-	-
53	On-line performance and process monitoring service and associated equipment	Sum	-	5 750,00	R 5 750,00
				-	-
54	Membrane unit lifting bracket	No	1	8 050,00	R 8 050,00
					R -
55	Other membrane plant pipework and associated equipment (EN Grade 1.4401) not mentioned above, but are required for proper and safe operation of the membrane filtration system	Sum	-	48 300,00	R 48 300,00
					R -
	Air Scour Equipment (Provisional Sums)				-
					-
56	Blowers	No	3	16 100,00	R 48 300,00
				-	-
~~57~~	~~Refurbishment of pipework~~	~~Sum~~	-		R -
				-	-
58	Air scour distribution pipework to membrane casettes	Sum	-	40 250,00	R 40 250,00
				-	-
59	Supports	Sum	-	24 150,00	R 24 150,00
					R -
	Permeate/Backpulse Pumps				R -
					R -
60	Permeate / backpulse pump	No	6	2 684,00	R 16 104,00
					R -
~~61~~	~~Refurbishment and modification of pipework~~	~~Sum~~	-		R -
Carried forward / ...					R 43 659 098,00

ITEM	DESCRIPTION	UNIT	QTY	RATE R c	AMOUNT R c
Brought forward / ...					R 43 659 098,00
61a	New Permeate suction pipework	Sum	-	28 463,00	R 28 463,00
61b	New Permeate discharge pipework	Sum	-	28 463,00	R 28 463,00
62	Supports	Sum	-		Included
	Filtration Tanks Drain Pumps				R -
63	Filtration train drain pump	No	2	4 025,00	R 8 050,00
64	Refurbishment and modification of pipework	Sum	-	24 150,00	R 24 150,00
65	Supports	Sum	-	8 050,00	R 8 050,00
	Scum/ WAS Pumps				R -
66	Scum/WAS pumps	No	2	4 025,00	R 8 050,00
67	Refurbishment of pipework	Sum	-	24 150,00	R 24 150,00
68	Supports	Sum	-	8 050,00	R 8 050,00
	GRP Covers				R -
69	GRP covers for membrane tanks	m²	300	54,00	R 16 200,00
	CIP: Sodium Hypochlorite Dosing Equipment				R -
70	Chemical room ventilation system	Sum	-	978,00	R 978,00
71	CIP: Sodium hypochlorite dosing system (bunded skids and cabinet etc) as specified	Sum	-	6 624,00	R 6 624,00
72	Scum suppression system: Sodium hypochlorite dosing system	Sum	-	6 624,00	R 6 6[illegible]
73	Storage tank	Sum	-	3 312,00	R 3 312,00
74	Pipework	Sum	-	3 312,00	R 3 312,00
75	Pipe supports	Sum	-	1 380,00	R 1 380,00
76	Filling station pump and pipework	Sum	-	3 312,00	R 3 312,00
77	Sodium hypochlorite required during the entire performance period (commissioning) of the MBR plant	Sum	-	978,00	R 978,00
78	Sodium hypochlorite - one tank fill	Sum	-	978,00	R 978,00
Carried forward / ...					R 43 840 222,00

ITEM	DESCRIPTION	UNIT	QTY	RATE R c	AMOUNT R c
Brought forward / ...					R 43 840 222,00
79	Access platform	Sum	-	2 162,00	R 2 162,00
					R -
	CIP: Citric Acid Dosing Equipment				R -
					R -
80	Chemical room ventilation system	Sum	-	978,00	R 978,00
81	CIP: Citric acid dosing system (bunded skids and cabinet etc) as specified	Sum	-	6 624,00	R 6 624,00
82	Storage tank	Sum	-	332,00	R 332,00
83	Pipework	Sum	-	3 312,00	R 3 312,00
84	Supports	Sum	-	1 380,00	R 1 380,00
85	Filling station pump and pipework	Sum	-	3 312,00	R 3 312,00
86	Citric acid required during the entire performance period (commissioning) of the MBR plant	Sum	-	978,00	R 978,00
87	Citric acid - one tank fill	Sum	-	978,00	R 978,00
88	Citric acid Batching Equipment	Sum	-	11 362,00	R 11 362,00
89	Citric acid batching dust collection system	Sum	-	14 122,00	R 14 122,00
90	Access platform	Sum	-	2 162,00	R 2 162,00
					R -
	Allow for all costs and expenses in connection with pre-commsissioning in terms of FIDIC and Part C3: Scope of Work for the following:				R -
					R -
91	Complete membrane filtration train system including wasting systems, drain systems, etc.	Sum	-	56 550,00	R 56 550,00
	Storage of equipment as ordered by the Engineer including insurances where storage space is provided by:				- -
92	a. The Contractor	Month	4	5 750,00	R 23 000,00
93	b. The City of Cape Town	Month	4	5 750,00	R 23 000,00
	~~**Handling of Existing Equipment**~~				
~~94~~	~~Decommissioning, removal and disposal of existing equipment~~	~~Sum~~	-		
~~95~~	~~Transport of decommissioned equipment~~	~~km~~	~~250,00~~		
Carried forward / ...					R 43 990 474,00

ITEM	DESCRIPTION	UNIT	QTY	RATE R c	AMOUNT R c
Brought forward / ...					R 43 990 474,00
	Other:				
96	All other items not included above but which are nevertheless necessary to meet the Scope of Work and/or are required for the proper, safe and effective operation of the plant *(Specify)*	Item			
TOTAL OF SCHEDULE M24a CARRIED TO SUMMARY					R 43 990 474,00

ITEM	DESCRIPTION	UNIT	QTY	RATE R c	AMOUNT R c
	SCHEDULE M25a				
	INSTRUMENT AIR EQUIPMENT				
	Allow for all costs in connection with the following general items:				
	Handling of Existing Equipment				
1	Dismantling, decommissioning and removal (including emtying of reactor/ pumping to CAS plant) of existing equipment	Sum	-	24 150,00	R 24 150,00
2	Transport of decommissioned equipment	km	250	28,00	R 7 000,00
					R -
	Allow for all the costs and expenses in connection with the design, manufacture, painting, factory testing, supplying, delivery, offloading and storage of the following materials and equipment:				R -
	Instrument Air				R -
					R -
3	Compressors	No	2	383 873,00	R 767 746,00
4	Desiccant driers complete	Sum	-	194 102,00	R 194 102,00
5	~~Refrigerant driers complete~~	~~Sum~~	-	0,00	-
6	Air receiver (moisture trap)	No	2	3 992,00	R 7 984,00
7	Air receiver	No	2	56 920,00	R 113 840,00
8	Condensate management system	Sum	-	19 881,00	R 19 881,00
9	~~All connecting~~ Pipework and supports	Sum	-	95 240,00	R 95 240,00
10	Seperator units and filter sets	No	3	20 086,00	R 60 258,00
	Pneumatic Actuation Equipment				R -
					R -
11	Pneumatic Actuation Equipment for each Process Area	Sum	-	507 242,00	R 507 242,00
					R -
	~~UV stabalised/ resistant flexible tubing and connections form valve terminal cabinet to actuators~~	~~Sum~~	-		-
Carried forward / ...					R 1 797 443,00

ITEM	DESCRIPTION	UNIT	QTY	RATE R c	AMOUNT R c
Brought forward / ...					R 1 797 443,00
	Allow for all costs and expenses in connection with the Site installation in terms of in terms of FIDIC and Part C3: Scope of Work (excluding pre-commissioning) for the following:				
	Instrument Air				
12	Compressors	No	2	4 025,00	R 8 050,00
13	Desiccant driers complete	Sum	-	4 025,00	R 4 025,00
14	~~Refrigerant driers complete~~	~~Sum~~	-		
15	Air receiver (moisture trap)	No	2	2 013,00	R 4 026,00
16	Air receiver	No	2	4 025,00	R 8 050,00
17	Condensate management system	Sum	-	8 050,00	R 8 050,00
18	~~All connecting~~ Pipework and supports	Sum	-	32 200,00	R 32 200,00
19	Seperator units and filter sets	No	3	2 684,00	R 8 052,00
	~~Pneumatic Actuation Equipment~~				R -
20	Pneumatic Actuation Equipment for each Process Area	Sum	-	8 050,00	R 8 050,00
21	~~UV stabalised/ resistant flexible tubing and connections form valve terminal cabinet to actuators~~	~~Sum~~	-		R -
	~~Pneumatic Actuation Equipment~~				
22	~~Pneumatic control system~~	~~Sum~~	-		R -
	Allow for all costs and expenses in connection with pre-commsissioning in terms of FIDIC and Part C3: Scope of Work for the following:				R -
23	Complete Process air system	Sum	-	16 422,00	R 16 422,00
	Storage of equipment as ordered by the Engineer including insurances where storage space is provided by:				R -
24	a. The Contractor	Month	3	5 750,00	R 17 250,00
25	b. The City of Cape Town	Month	3	5 750,00	R 17 250,00
Carried forward / ...					R 1 928 868,00

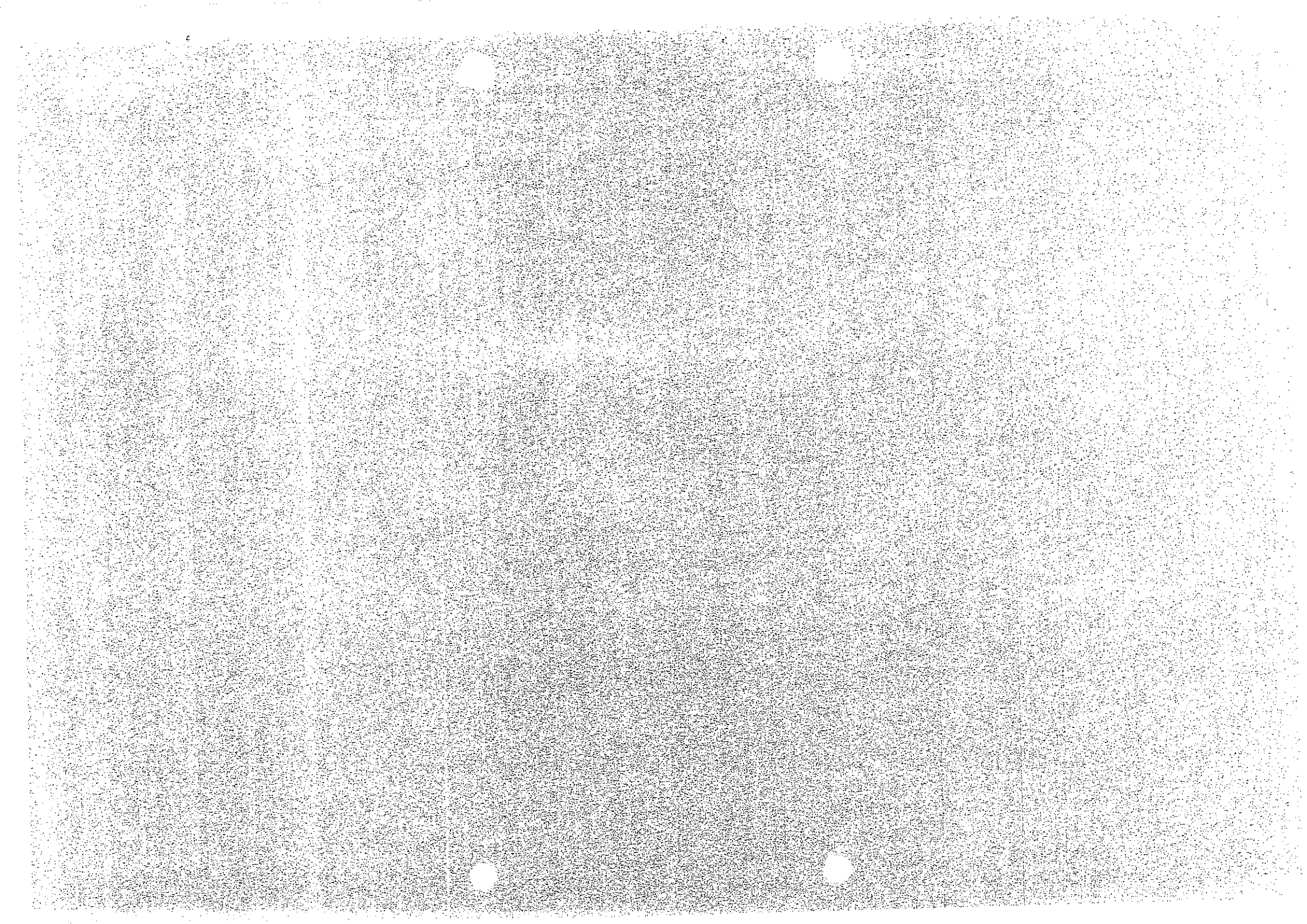
ITEM	DESCRIPTION	UNIT	QTY	RATE R c	AMOUNT R c
Brought forward / ...					R 1 928 868,00
	Other:				
26	All other items not included above but which are nevertheless necessary to meet the Scope of Work and/or are required for the proper, safe and effective operation of the plant *(Specify)*	Item			
TOTAL OF SCHEDULE M25a CARRIED TO SUMMARY					R 1 928 868,00

ITEM	DESCRIPTION	UNIT	QTY	RATE R c	AMOUNT R c
	SCHEDULE M26				
	SERVICE WATER EQUIPMENT				
	Allow for all costs in connection with the following general items:				
	Handling of Existing Equipment:				
1	Dismantling, decommissioning and removal of existing equipment	Sum	-	24 150,00	R 24 150,00
2	Transport of decommissioned equipment	km	250	28,00	R 7 000,00
	Allow for all the costs and expenses in connection with the design, manufacture, painting, factory testing, supplying, delivery, offloading and storage of the following materials and equipment:				
3	Service Water Pumps	Sum	-	536 988,00	R 536 988,00
4	Accumulators	No	2	76 900,00	R 153 800,00
5	Pipework	Sum	-	215 153,00	R 215 153,00
6	Supports	Sum	-	3 623,00	R 3 623,00
	Allow for all costs and expenses in connection with the Site installation in terms of in terms of FIDIC and Part C3: Scope of Work (excluding pre-commissioning) for the following:				
7	Service Water Pumps	Sum	-	8 050,00	R 8 05
8	Accumulators	No	2	4 025,00	R 8 050,00
9	Pipework	Sum	-	24 150,00	R 24 150,00
10	Supports	Sum	-	8 050,00	R 8 050,00
	Allow for all costs and expenses in connection with pre-commsissioning in terms of FIDIC and Part C3: Scope of Work for the following:				
11	Complete Service water system	Sum	-	27 370,00	R 27 370,00
Carried forward / ...					R 1 016 384,00

ITEM	DESCRIPTION	UNIT	QTY	RATE R c	AMOUNT R c
Brought forward / ...					R 1 016 384,00
	Storage of equipment as ordered by the Engineer including insurances where storage space is provided by:				
12	a. The Contractor	Month	3	5 750,00	R 17 250,00
13	b. The City of Cape Town	Month	3	5 750,00	R 17 250,00
	Handling of Existing Equipment				
14	Decommissioning, removal and disposal of existing equipment	Sum	-	28 750,00	R 28 750,00
15	Transport of decommissioned equipment	km	250,00	28,00	R 7 000,00
	Other:				
16	All other items not included above but which are nevertheless necessary to meet the Scope of Work and/or are required for the proper, safe and effective operation of the plant *(Specify)*	Item			
TOTAL OF SCHEDULE M26 CARRIED TO SUMMARY					R 1 086 634,00

ITEM	DESCRIPTION	UNIT	QTY	RATE R	C	AMOUNT R	C
	SCHEDULE M27						
	SCUM REMOVAL EQUIPMENT						
	Allow for all costs in connection with the following general items:						
	Handling of Existing Equipment						
1	Dismantling, decommissioning and removal (including emtying of reactor/ pumping to CAS plant) of existing equipment	Sum	-	5 750,00	R	5 750,00	
2	Transport of decommissioned equipment	km	250	28,00	R	7 000,00	
					R	-	
	Allow for all the costs and expenses in connection with the design, manufacture, painting, factory testing, supplying, delivery, offloading and storage of the following materials and equipment:				R		
3	Suspended Telescopic Valve Structure - Aerobic Zone	No	2	54 417,00	R	108 834,00	
4	Suction pipework from Telescopic Valves to pump suction - Aerobic Zone	Sum	-	71 314,00	R	71 314,00	
5	Scum Pump - Aerobic Zone	No	1	50 891,00	R	50 891,00	
6	Discharge pipework from pumps to WAS Discharge Line - Aerobic Zone	Sum	-	108 114,00	R	108 114,00	
7	Suspended Telescopic Valve Structure - Anoxic Zone	No	3	53 986,00	R	161 958,00	
8	Suction pipework from Telescopic Valves to pump suction - Anoxic Zone	Sum	-	111 460,00	R	111 46	
9	Scum Pump - Anoxic Zone	No	1	50 885,00	R	50 885,00	
10	Discharge pipework from pumps to WAS Discharge Line - Anoxic Zone	Sum	-	108 114,00	R	108 114,00	
					R	-	
	Allow for all costs and expenses in connection with the Site installation in terms of in terms of FIDIC and Part C3: Scope of Work (excluding pre-commissioning) for the following:						
11	Suspended Telescopic Valve Structure - Aerobic Zone	No	2	8 050,00	R	16 100,00	
12	Suction pipework from Telescopic Valves to pump suction - Aerobic Zone	Sum	-	18 745,00	R	18 745,00	
Carried forward / ...					R	819 165,00	

ITEM	DESCRIPTION	UNIT	QTY	RATE R c	AMOUNT R c
Brought forward / ...					R 819 165,00
13	Scum Pump - Aerobic Zone	No	1	8 050,00	R 8 050,00
14	Discharge pipework from pumps to WAS Discharge Line - Aerobic Zone	Sum	-	8 050,00	R 8 050,00
15	Suspended Telescopic Valve Structure - Anoxic Zone	No	3	8 050,00	R 24 150,00
16	Suction pipework from Telescopic Valves to pump suction - Anoxic Zone	Sum	-	27 773,00	R 27 773,00
17	Scum Pump - Anoxic Zone	No	1	8 050,00	R 8 050,00
18	Discharge pipework from pumps to WAS Discharge Line - Anoxic Zone	Sum	-	8 050,00	R 8 050,00
					R -
	Allow for all costs and expenses in connection with pre-commsissioning in terms of FIDIC and Part C3: Scope of Work for the following:				
19	Complete Scum removal System - Aerobic Zone	Sum	-	27 370,00	R 27 370,00
20	Complete Scum removal System - Anoxic Zone	Sum	-	21 896,00	R 21 896,00
					R -
	Storage of equipment as ordered by the Engineer including insurances where storage space is provided by:				R -
					R -
21	a. The Contractor	Month	3	5 750,00	R 17 250,00
22	b. The City of Cape Town	Month	3	5 750,00	R 17 250,00
					R -
	Other:				R -
					R -
23	All other items not included above but which are nevertheless necessary to meet the Scope of Work and/or are required for the proper, safe and effective operation of the plant *(Specify)*	Item			-
TOTAL OF SCHEDULE M27 CARRIED TO SUMMARY					R 987 054,00



SECTION A OF THE WORKS: MODULE B ELECTRICAL AND ELECTRONIC EQUIPMENT

Continued Overleaf

ITEM	DESCRIPTION	UNIT	QTY	RATE R c	AMOUNT R c
	SCHEDULE E1				
	MINIATURE SUBSTATIONS				
	Allow for all the costs and expenses in connection with the following:				
1	Protection coordination specialist at Zandvliet WWTW, including site test report and protection settings	Sum	1	14 500,00	R 14 500,00
	Allow for all the costs and expenses in connection with the design, manufacture, painting, supplying, delivery, offloading and storage of the following materials and equipment:				
	Mini-Subs				
	Supply Mini-Subs complete				
2	1000 kVA	No	2	466 318,00	R 932 636,00
3	1250kVA	No	4	600 246,00	R 2 400 984,00
4	1600kVA	No	1	659 015,00	Rate Only
	Transformers				
	Supply Oil-filled transformer complete				
5	1800 kVA (11kV/420V)	No	1	497 410,00	Rate Only
	Allow for all costs and expenses in connection with the Site installation in terms of in terms of FIDIC and Part C3: Scope of Work (excluding pre-commissioning) for the following:				
	Mini-Subs				
6	1000 kVA	No	2	10 500,00	R 21 000,00
7	1250kVA	No	4	10 500,00	R 42 000,00
8	1600kVA	No	1	10 500,00	Rate Only
	Transformers				
	Install Oil-filled transformer complete				
Carried forward / ...					R 3 411 120,00

ITEM	DESCRIPTION	UNIT	QTY	RATE R	c	AMOUNT R	c
Brought forward / ...						R	3 411 120,00
9	1800 kVA (11kV/420V)	No	1	16 200,00			Rate Only
10	Supply, factory acceptance testing, delivery, installation and commissioning of 4-way, 11 kV, indoor SF6 insulated RMU, 2 x 200A incomer vacuum circuit breaker, 2 x 200A feeder vacuum circuit breaker; OC/EF protection	Sum	1	1125000			Rate Only
	Allow for all costs and expenses in connection with pre-commsissioning in terms of FIDIC and Part C3: Scope of Work for the following:						
11	1000 kVA Mini-sub	No	2	2 000,00		R	4 000,00
12	1250kVA Mini-sub	No	4	2 000,00		R	8 000,00
13	1600kVA Mini-sub	No	1	2 000,00			Rate Only
14	1800kVA Transformer	No	1	1 800,00			Rate Only
	Transformers						
15	Transformers for the MBR-B supply as directed by the Engineer	Provisional Sum					175 400,00
16	Percentage adjustment on Item 15 for Contractor's design, sourcing quotes, superintendence, and for overheads and profit (state as percentage an extend as amount)	%	175 400			R	26 310,00
	MV switchgear						
17	MV Switchgear for the MBR-B transformers supply as directed by the Engineer	Prov Sum	1				175 400,00
18	Percentage adjustment on Item 17 for Contractor's design, sourcing quotes, superintendence, and for overheads and profit (state as percentage an extend as amount)	%	175 400			R	26 310,00
	Allow for all the costs and expenses in connection with the design, manufacture, painting, supplying, delivery, offloading, storage and installation of the following miscellanious						
19	Earthing of all MV cable terminations	Sum	1	4 500,00		R	4 500,00
20	Earthing (per mini-sub)	No	6	5 000,00		R	30 000,00
Carried forward / ...						R	3 861 040,00

ITEM	DESCRIPTION	UNIT	QTY	RATE R c	AMOUNT R c
Brought forward / ...					R 3 861 040,00
21	Plinth (per mini-sub)	No	6	7 250,00	R 43 500,00
	Allow for all costs and expenses in connection with pre-commsissioning in terms of FIDIC and Part C3: Scope of Work for the following:			-	-
22	For equipment scheduled above	Sum	1	40 000,00	R 40 000,00
23	All other items not included above but which are nevertheless necessary to meet the Scope of Work and/or are required for the proper, safe and effective operation of the plant (Specify):-	Item			R -
TOTAL OF SCHEDULE E1 CARRIED TO SUMMARY					3 944 540,00

ITEM	DESCRIPTION	UNIT	QTY	RATE R	c	AMOUNT R	c
	SCHEDULE E2						
	MV RETICULATION						
	Allow for all the costs and expenses in connection with the design, manufacture, painting, supplying, delivery, offloading and storage of the following materials and equipment:						
	Medium Voltage Cables						
	6.35/11kV, cable with stranded conductors;						
1	95mm² x 3 core; Cu/XLPE, SWA	m	800	540,00		R	432 000,00
2	185mm² x 3 core; Cu/XLPE, SWA	m	1	967,00			Rate Only
3	185mm² x 3 core; Cu/PILC, DSTA	m	350	1 117,00		R	390 950,00
	Cable terminations for 6.35/11kV, cable with stranded conductors complete, including shroud, lugs, number tags, etc. and connection.						
4	95mm² x 3 core; Cu/XLPE, SWA	No	14	6 890,00		R	96 460,00
5	185mm² x 3 core; Cu/XLPE, SWA	m	1	7 580,00			Rate Only
6	185mm² x 3 core; Cu/PILC, DSTA	No	2	9 250,00		R	18 500,00
	Cable Joints						
	Cable joints for 6.35/11kV; complete with all necessary items for installation						
7	95mm² x 3 core; Cu/XLPE, SWA	No	4	5 250,00		R	21 000,00
8	185mm² x 3 core; Cu/XLPE, SWA	No	1	7 850,00			Rate Only
9	185mm² x 3 core; Cu/PILC, DSTA	No	2	8 500,00		R	17 000,00
	Earth Conductors						
	Bare Copper Earth conductor with stranded conductors.						
10	70mm²	m	1150	67,00		R	77 050,00
Carried forward / ...						R	1 052 960,00

ITEM	DESCRIPTION	UNIT	QTY	RATE R c	AMOUNT R c
Brought forward / ...					R 1 052 960,00
	Cable terminations for bare copper earth conductor, complete, including gland shroud, lugs, number tags, etc. and connection.				
11	70mm²	No	16	15,00	R 240,00
					R -
12	All other items not included above but which are nevertheless necessary to meet the Scope of Work and/or are required for the proper, safe and effective operation of the plant (Specify):-	Item			R -
TOTAL OF SCHEDULE E2 CARRIED TO SUMMARY					1 053 200,00

ITEM	DESCRIPTION	UNIT	QTY	RATE R	RATE c	AMOUNT R	AMOUNT c
	SCHEDULE E3						
	MV RETICULATION INSTALLATION						
	Allow for all costs and expenses in connection with the Site installation in terms of in terms of FIDIC and Part C3: Scope of Work (excluding pre-commissioning) for the following:						
	General						
1	Liaison with local authorities, Eskom, plant operators for power outages and switching of MV switchgear	Sum	1	12 500,00		R	12 500,00
2	Liaison with Civil Contractor for cable route coordination	Sum	1	7 500,00		R	7 500,00
	Medium Voltage Cables						
	Install Cu/PILC, DSTA, 6.35/11kV; cable with stranded conductors fixed to cable tray, drawn into sleeves or laid into trenches.						
3	95mm² x 3 core; Cu/XLPE, SWA	m	800	56,00		R	44 800,00
4	185mm² x 3 core; Cu/PILC, DSTA	m	350	89,00		R	31 150,00
	Install cable terminations for Cu/PILC; DSTA, 6.35/11kV, cable with stranded conductors complete, including shroud, lugs, number tags, etc. and connection.						
5	95mm² x 3 core; Cu/XLPE, SWA	No	14	4 752,00		R	66 528,00
6	185mm² x 3 core; Cu/PILC, DSTA	No	2	6 510,00		R	13 020,00
	Cable Joints						
	Install Cable joints for Cu/PILC, DSTA, 6.35/11kV; complete with all necessary items for installation						
7	95mm² x 3 core; Cu/XLPE, SWA	No	4	5 170,00		R	20 680,00
8	185mm² x 3 core; Cu/PILC, DSTA	No	2	7 270,00		R	14 540,00
Carried forward / ...						R	210 718,00

ITEM	DESCRIPTION	UNIT	QTY	RATE R	RATE c	AMOUNT R	AMOUNT c
Brought forward / ...						R	210 718,00
	Earthing						
	Install Bare Copper Earth conductor with stranded conductors.						
9	70mm²	m	1150		28,00	R	32 200,00
	Install Cable terminations for bare copper earth conductor, complete, including gland shroud, lugs, number tags, etc. and connection.						
10	70mm²	No	16		73,00	R	1 168,00
	Earth resistivity reading at mini-sub location, and reporting thereof						
11	70mm²	No	5		1 540,00	R	7 700,00
	Excavations, etc.						
	Excavate and set excavated material aside for re-use as filling for cable or sleeve trench not exceeding 1m deep						
12	In earth	m	1150		135,00	R	155 250,00
13	In soft rock	m³	100		340,00	R	34 000,00
14	In rock	m³	25		510,00	R	12 750,00
15	Selected and approved material for backfilling, bedding and cover	m³	460		170,00	R	78 20
16	Cement compacted backfilling (3%) material mix	m³	20		460,00	R	9 200,00
17	Surplus excavated material spread and leveled on site as directed	m³	50		90,00	R	4 500,00
18	Danger tape - 400mm wide overlapping	m	1265		4,00	R	5 060,00
19	Cement slabs as part of backfill	m	100		310,00	R	31 000,00
20	Cable marker, with engraved aluminium plate	No	30		195,00	R	5 850,00
21	900mm x 900mm Manhole with cast iron cover	No	1		6 250,00	R	6 250,00
Carried forward / ...						R	593 846,00

ITEM	DESCRIPTION	UNIT	QTY	RATE R c	AMOUNT R c
Brought forward / ...					R 593 846,00
	Allow for all costs and expenses in connection with pre-commsissioning in terms of FIDIC and Part C3: Scope of Work for the following:				
22	For equipment scheduled above	Sum	1	5 000,00	R 5 000,00
					R -
23	All other items not included above but which are nevertheless necessary to meet the Scope of Work and/or are required for the proper, safe and effective operation of the plant (Specify):-	Item			R -
TOTAL OF SCHEDULE E3 CARRIED TO SUMMARY					598 846,00

ITEM	DESCRIPTION	UNIT	QTY	RATE R	RATE C	AMOUNT R	AMOUNT C
	SCHEDULE E4a						
	LV ELECTRICAL AND CONTROL CABLES						
	Allow for all the costs and expenses in connection with the design, manufacture, painting, supplying, delivery, offloading and storage of the following materials and equipment:						
	LV Cables						
	Cu/PVC Insulated/PVC Bedded/SWA/PVC Sheathed 600/1000V multicore cable with stranded conductors.						
1	2.5mm² x 4 core	m	11000	25,00	-	R	275 000,00 -
2	4.0mm² x 4 core	m	1700	33,00	-	R	56 100,00 -
3	6mm² x 4 core	m	200	42,00	-	R	8 400,00 -
4	10mm² x 4 core	m	4000	64,00	-	R	256 000,00 -
5	16mm² x 4 core	m	900	83,00	-	R	74 700,00 -
6	16mm² x 3 core	m	400	69,00	-	R	27 600,00 -
7	25mm² x 4 core	m	200	127,00	-	R	25 400,00 -
8	35mm² x 4 core	m	400	174,00	-	R	69 600,00 -
9	50mm² x 4 core	m	200	239,00	-	R	47 800,00 -
10	75mm² x 4 core	m	1	356,00	-	R	356,00 -
11	95mm² x 4 core	m	1	471,00	-	R	471,00 -
12	120mm² x 4 core	m	250	554,00	-	R	138 500,00 -
13	150mm² x 4 core	m	1	718,00	-	R	718,00 -
14	185mm² x 4 core	m	250	856,00	-	R	214 000,00 -
Carried forward / ...						R	1 194 645,00

ITEM	DESCRIPTION	UNIT	QTY	RATE R C	AMOUNT R C
Brought forward / ...					R 1 194 645,00
	Cable terminations for Cu/PVC Insulated/PVC Bedded/SWA/PVC Sheathed 600/1000V multicore cables, complete, including gland shroud, lugs, number tags, etc. and connection.				
15	2.5mm² x 4 core	No	330	32,00	R 10 560,00
16	4.0mm² x 4 core	No	36	36,00	R 1 296,00
17	6mm² x 4 core	No	8	42,00	R 336,00
18	10mm² x 4 core	No	60	59,00	R 3 540,00
19	16mm² x 4 core	No	40	69,00	R 2 760,00
20	16mm² x 3 core	No	1	60,00	Rate Only
21	25mm² x 4 core	No	1	84,00	Rate Only
22	35mm² x 4 core	No	20	134,00	R 2 680,00
23	50mm² x 4 core	No	2	137,00	R 274,00
24	75mm² x 4 core	No	1	251,00	Rate Only
25	95mm² x 4 core	No	1	258,00	Rate Only
26	120mm² x 4 core	No	6	265,00	R 1 590,00
27	150mm² x 4 core	No	1	491,00	Rate Only
28	185mm² x 4 core	No	6	540,00	R 3 240,00
	Cu/PVC Insulated/PVC Bedded/AWA/PVC Sheathed 600/1000V single core cable with stranded conductors.				
29	150mm² x 1 core	m	1	241,00	Rate Only
30	185mm² x 1 core	m	1	267,00	Rate Only
31	240mm² x 1 core	m	1	361,00	Rate Only
32	300mm² x 1 core	m	1	431,00	Rate Only
33	400mm² x 1 core	m	1	605,00	Rate Only
Carried forward / ...					R 1 220 921,00

ITEM	DESCRIPTION	UNIT	QTY	RATE R c	AMOUNT R c
Brought forward / ...					R 1 220 921,00
34	500mm² x 1 core	m	2700	641,00	R 1 730 700,00
35	630mm² x 1 core	m	1	879,00	Rate Only
	Cable terminations for Cu/PVC Insulated/PVC Bedded/AWA/PVC Sheathed 600/1000V single core cables, complete, including gland shroud, lugs, number tags, etc. and connection.				
36	150mm² x 1 core	No	1	215,00	Rate Only
37	185mm² x 1 core	No	1	261,00	Rate Only
38	240mm² x 1 core	No	1	310,00	Rate Only
39	300mm² x 1 core	No	1	352,00	Rate Only
40	400mm² x 1 core	No	1	411,00	Rate Only
41	500mm² x 1 core	No	72	532,00	R 38 304,00
42	630mm² x 1 core	No	1	780,00	Rate Only
	Bare Copper Earth cable with stranded conductors.				
43	4mm²	m	275	4,00	R 1 100,00
44	6mm²	m	1	6,00	Rate Only
45	10mm²	m	180	10,00	R 1 800,00
46	16mm²	m	400	15,00	R 6 000,00
47	25mm²	m	1	24	Rate Only
48	35mm²	m	1	35,00	Rate Only
49	50mm²	m	150	48,00	R 7 200,00
50	70mm²	m	250	62,00	R 15 500,00
51	95mm²	m	1	86,00	Rate Only
52	120mm²	m	630	116,00	R 73 080,00
Carried forward / ...					R 3 094 605,00

ITEM	DESCRIPTION	UNIT	QTY	RATE R c	AMOUNT R c
Brought forward / ...					R 3 094 605,00
53	150mm²	m	1	143,00	Rate Only
54	185mm²	m	1	182,00	Rate Only
55	240mm²	m	1	224,00	Rate Only
	Cable terminations for bare copper earth cables, complete, including gland shroud, lugs, number tags, etc. and connection.				
56	4mm²	No	10	3,00	R 30,00
57	6mm²	No	1	4,00	Rate Only
58	10mm²	No	10	7,00	R 70,00
59	16mm²	No	16	5,00	R 80,00
60	25mm²	No	1	6,00	Rate Only
61	35mm²	No	1	8,00	Rate Only
62	50mm²	No	8	10,00	R 80,00
63	70mm²	No	6	15,00	R 90,00
64	95mm²	No	1	21,00	Rate Only
65	120mm²	No	18	29,00	R 522,00
66	150mm²	No	1	41,00	Rate Only
67	185mm²	No	1	54,00	Rate Only
68	240mm²	No	1	84,00	Rate Only
	Control Cables - Supply				
	Cu/PVC Insulated/PVC Bedded/SWA/PVC Sheathed 600/1000V multicore control cables with stranded conductors.				
69	1.5mm² x 2 core	m	1	14,00	Rate Only
70	1.5mm² x 3 core	m	1	17,00	Rate Only
71	2.5mm² x 3 core	m	4000	20,00	R 80 000,00
Carried forward / ...					R 3 175 477,00

ITEM	DESCRIPTION	UNIT	QTY	RATE R c	AMOUNT R c
Brought forward / ...					R 3 175 477,00
72	1.5mm² x 4 core	m	1	19,00	Rate Only
73	1.5mm² x 7 core	m	15000	24,00	R 360 000,00
74	1.5mm² x 10core	m	1	47,00	Rate Only
75	1.5mm² x 19 core	m	1	67,00	Rate Only
76	1.5mm² x 24 core	m	1000	93,00	93 000,00
77	1.5mm² x 30 core	m	1	169,00	Rate Only
	Cable terminations for multicore control cable complete, including gland shroud, lugs, number tags, etc. and connection.				
78	1.5mm² x 2 core	No	1	30,00	Rate Only
79	1.5mm² x 3 core	No	1	30,00	Rate Only
80	2.5mm² x 3 core	No	160	30,00	R 4 800,00
81	1.5mm² x 4 core	No	1	30,00	Rate Only
82	1.5mm² x 7 core	No	400	34,00	R 13 600,00
83	1.5mm² x 10core	No	1	56,00	Rate Only
84	1.5mm² x 19 core	No	1	80,00	Rate Only
85	1.5mm² x 24 core	No	20	80,00	1 600,00
86	1.5mm² x 30 core	No	1	128,00	Rate Only
	Extra low voltage instrumentation cable.				
87	1 mm² 2-pair	m	1	17,00	Rate Only
88	1.5 mm² 1-pair	m	13000	13,00	R 169 000,00
89	1.5mm² 2-pair	m	1000	20,00	R 20 000,00
90	1.5mm² 3-pair	m	2000	28,00	R 56 000,00
91	1.5mm² 12-pair	m	1	107,00	Rate Only
92	1.5mm² 19-pair	m	1000	179,00	179 000,00
Carried forward / ...					R 4 072 477,00

ITEM	DESCRIPTION	UNIT	QTY	RATE R	RATE c	AMOUNT R	AMOUNT c
Brought forward / ...						R	4 072 477,00
93	1 x Triad	m	1	16,00			Rate Only
	Terminations for Extra low voltage instrumentation cable				-		
94	1 mm² 2-pair	No	1	21,00			Rate Only
95	1.5 mm² 1-pair	No	500	24,00		R	12 000,00
96	1.5mm² 2-pair	No	20	22,00		R	440,00
97	1.5mm² 3-pair	No	30	25,00		R	750,00
98	1.5mm² 12-pair	No	1	102,00			Rate Only
99	1.5mm² 19-pair	No	20	110,00			2 200,00
100	1 x Triad	No	1	22,00			Rate Only
	Instrumentation Power cable Cu/PVC Insulated/PVC Bedded/SWA/PVC Sheathed 600/1000V multicore with stranded conductors.				-		
101	2.5mm² x 3 core	m	9000	20,00		R	180 000,00
102	4mm² x 3 core	m	1	27,00			Rate Only
	Terminations for Instrumentation Power cable Cu/PVC Insulated/PVC Bedded/SWA/PVC Sheathed 600/1000V multicore with stranded conductors.				-		
103	2.5mm² x 3 core	No	250	32,00		R	8 000,00
104	4mm² x 3 core	No	1	36,00			Rate Only
105	All other items not included above but which are nevertheless necessary to meet the Scope of Work and/or are required for the proper, safe and effective operation of the plant (Specify):-	Item					-
TOTAL OF SCHEDULE E4a CARRIED TO SUMMARY							4 275 867,00

ITEM	DESCRIPTION	UNIT	QTY	RATE R	c	AMOUNT R	c
	SCHEDULE E5a						
	LV ELECTRICAL INSTALLATION						
	General						
1	Liaison with Civil Contractor for cable routes coordination	Sum	1	5 500,00	R	5 500,00	
	Allow for all the costs and expenses in connection with the design, manufacture, painting, supplying, delivery, offloading and storage of the following materials and equipment:						
	Heavy Duty Cable Ladder - Stainless Steel 316L						
	100 x 100mm (W x H)						
2	Straight length	m	200	836,00	R	167 200,00	
3	Extras: Tee piece or 90° deg Horizontal elbow or Internal Riser or Dropper	No	10	1 900,00	R	19 000,00	
4	4 Way cross over	No	3	2 550,00	R	7 650,00	
	200 x 100mm (W x H)						
5	Straight length	m	200	863,00	R	172 600,00	
6	Extras: Tee piece or 90° deg Horizontal elbow or Internal Riser or Dropper	No	10	2 000,00	R	20 000,00	
7	4 Way cross over	No	3	2 663,00	R	7 98	
	300 x 100mm (W x H)						
8	Straight length	m	200	925,00	R	185 000,00	
9	Extras: Tee piece or 90° deg Horizontal elbow or Internal Riser or Dropper	No	10	2 200,00	R	22 000,00	
10	4 Way cross over	No	3	2 900,00	R	8 700,00	
	600 x 100mm (W x H)						
11	Straight length	m	200	1 105,00	R	221 000,00	
12	Extras: Tee piece or 90° deg Horizontal elbow or Internal Riser or Dropper	No	10	2 813,00	R	28 130,00	
	Carried forward / ...				R	864 769,00	

ITEM	DESCRIPTION	UNIT	QTY	RATE R c	AMOUNT R c
Brought forward / ...					R 864 769,00
13	4 Way cross over	No	3	3 575,00	R 10 725,00
	800 x 100mm (W x H)				
14	Straight length	m	500	1 230,00	R 615 000,00
15	Extras: Tee piece or 90° deg Horizontal elbow or Internal Riser or Dropper	No	14	3 388,00	R 47 432,00
16	4 Way cross over	No	7	4 225,00	R 29 575,00
	1000 x 100mm (W x H)				
17	Straight length	m	350	1 350,00	R 472 500,00
18	Extras: Tee piece or 90° deg Horizontal elbow or Internal Riser or Dropper	No	14	3 800,00	R 53 200,00
19	4 Way cross over	No	11	4 725,00	R 51 975,00
	Welded Wire Mesh Cable Tray - Stainless Steel				
	100 x 50mm (W x H), Ø 4mm Wire				
20	Straight length	m	200	R 126,00	R 25 200,00
	200 x 50mm (W x H), Ø 4mm Wire				
21	Straight length	m	300	164,00	R 49 200,00
	300 x 50mm (W x H), Ø 4mm Wire				
22	Straight length	m	200	193,00	R 38 600,00
	400 x 50mm (W x H), Ø 4mm Wire				
23	Straight length	m	400	226,00	R 90 400,00
	Conduit - Supply				
	Supply the following conduit, including all mounting brackets, fastening materials, elbows, etc.				
24	PVC , 20mm	m	50	11,00	R 550,00
25	PVC, 25mm	m	50	15,00	R 750,00
Carried forward / ...					R 2 349 876,00

ITEM	DESCRIPTION	UNIT	QTY	RATE R c	AMOUNT R c
Brought forward / ...					R 2 349 876,00
26	PVC, 32mm	m	50	25,00	R 1 250,00
27	Galvanised Steel, 20mm	m	500	38,00	R 19 000,00
28	Stainless Steel, 20mm	m	300	38,00	R 11 400,00
29	Galvanised Steel, 25mm	m	300	48,00	R 14 400,00
30	Stainless Steel 316, 25mm	m	300	123,00	~~Rate Only~~ R 36,900.00
	Allow for all costs and expenses in connection with the Site installation in terms of in terms of FIDIC and Part C3: Scope of Work (excluding pre-commissioning) for the following:				
	LV Cables				
	Cu/PVC Insulated/PVC Bedded/SWA/PVC Sheathed 600/1000V multicore cable with stranded conductors. Cable fixed to cable tray, drawn into sleeves or laid into trenches.				
31	2.5mm² x 4 core	m	11000	8,00	R 88 000,00
32	4.0mm² x 4 core	m	1700	9,00	R 15 300,00
33	6mm² x 4 core	m	200	10,00	R 2 000,00
34	10mm² x 4 core	m	4000	12,00	R 48 000,00
35	16mm² x 4 core	m	900	15,00	R 13 50
36	16mm² x 3 core	m	400	14,00	R 5 600,00
37	25mm² x 4 core	m	200	24,00	R 4 800,00
38	35mm² x 4 core	m	400	31,00	R 12 400,00
39	50mm² x 4 core	m	200	40,00	R 8 000,00
40	75mm² x 4 core	m	1	53,00	R 53,00
41	95mm² x 4 core	m	1	70,00	R 70,00
42	120mm² x 4 core	m	250	93,00	R 23 250,00
Carried forward / ...					R 2 653 799,00

ITEM	DESCRIPTION	UNIT	QTY	RATE R c	AMOUNT R c
Brought forward / ...					R 2 653 799,00
43	150mm² x 4 core	m	1	119,00	Rate Only
44	185mm² x 4 core	m	1	160,00	Rate Only
	Cable terminations for Cu/PVC Insulated/PVC Bedded/SWA/PVC Sheathed 600/1000V multicore cables, complete, including gland shroud, lugs, number tags, etc. and connection.				
45	2.5mm² x 4 core	No	330	96,00	R 31 680,00
46	4.0mm² x 4 core	No	36	102,00	R 3 672,00
47	6mm² x 4 core	No	8	129,00	R 1 032,00
48	10mm² x 4 core	No	60	121,00	R 7 260,00
49	16mm² x 4 core	No	40	132,00	R 5 280,00
50	16mm² x 3 core	No	1	228,00	R 228,00
51	25mm² x 4 core	No	1	263,00	R 263,00
52	35mm² x 4 core	No	20	291,00	R 5 820,00
53	50mm² x 4 core	No	2	316,00	R 632,00
54	75mm² x 4 core	No	1	504,00	R 504,00
55	95mm² x 4 core	No	1	529,00	R 529,00
56	120mm² x 4 core	No	6	554,00	R 3 324,00
57	150mm² x 4 core	No	1	604,00	Rate Only
58	185mm² x 4 core	No	1	919,00	Rate Only
	Cu/PVC Insulated/PVC Bedded/AWA/PVC Sheathed 600/1000V single core cable with stranded conductors. Cable fixed to cable tray, drawn into sleeves or laid into trenches.				
59	150mm² x 1 core	m	1	34,00	Rate Only
60	185mm² x 1 core	m	1	40,00	Rate Only
61	240mm² x 1 core	m	1	47,00	Rate Only
Carried forward / ...					R 2 714 023,00

ITEM	DESCRIPTION	UNIT	QTY	RATE R c	AMOUNT R c
Brought forward / ...					R 2 714 023,00
62	300mm² x 1 core	m	1	56,00	Rate Only
63	400mm² x 1 core	m	1	64,00	Rate Only
64	500mm² x 1 core	m	2700	71,00	R 191 700,00
65	630mm² x 1 core	m	1	94,00	Rate Only
	Cable terminations for Cu/PVC Insulated/PVC Bedded/AWA/PVC Sheathed 600/1000V single core cables, complete, including gland shroud, lugs, number tags, etc. and connection.				
66	150mm² x 1 core	No	1	145,00	Rate
67	185mm² x 1 core	No	1	267,00	Rate Only
68	240mm² x 1 core	No	1	301,00	Rate Only
69	300mm² x 1 core	No	1	332,00	Rate Only
70	400mm² x 1 core	No	1	348,00	Rate Only
71	500mm² x 1 core	No	72	448,00	R 32 256,00
72	630mm² x 1 core	No	1	475,00	Rate Only
	Bare Copper Earth cable with stranded conductors.				
73	4mm²	m	275	5,00	R 1 375,00
74	6mm²	m	1	6,00	Rate Only
75	10mm²	m	180	7,00	R 1 260,00
76	16mm²	m	400	9,00	R 3 600,00
77	25mm²	m	1	16,00	Rate Only
78	35mm²	m	1	18,00	Rate Only
79	50mm²	m	150	20,00	R 3 000,00
80	70mm²	m	250	21,00	R 5 250,00
81	95mm²	m	1	25,00	Rate Only
Carried forward / ...					R 2 952 464,00

ITEM	DESCRIPTION	UNIT	QTY	RATE R c	AMOUNT R c
Brought forward / ...					R 2 952 464,00
82	120mm²	m	630	35,00	R 22 050,00
83	150mm²	m	1	40,00	Rate Only
84	185mm²	m	1	43,00	Rate Only
85	240mm²	m	1	47,00	Rate Only
	Cable terminations for bare copper earth cables, complete, including gland shroud, lugs, number tags, etc. and connection.				
86	4mm²	No	10	14,00	R 140,00
87	6mm²	No	1	15,00	Rate Only
88	10mm²	No	10	15,00	R 150,00
89	16mm²	No	16	16,00	R 256,00
90	25mm²	No	1	18,00	Rate Only
91	35mm²	No	1	24,00	Rate Only
92	50mm²	No	8	24,00	R 192,00
93	70mm²	No	6	25,00	R 150,00
94	95mm²	No	1	25,00	Rate Only
95	120mm²	No	18	30,00	R 540,00
96	150mm²	No	1	32,00	Rate Only
97	185mm²	No	1	35,00	Rate Only
98	240mm²	No	1	40,00	Rate Only
	Cu/PVC Insulated/PVC Bedded/SWA/PVC Sheathed 600/1000V multicore control cables with stranded conductors. Cable fixed to cable tray, drawn into sleeves or laid into trenches.				
99	1.5mm² x 2 core	m	1	11,00	Rate Only
100	1.5mm² x 3 core	m	1	11,00	Rate Only
101	2.5mm² x 3 core	m	4000	10,00	R 40 000,00
Carried forward / ...					R 3 015 942,00

ITEM	DESCRIPTION	UNIT	QTY	RATE R c	AMOUNT R c
Brought forward / ...					R 3 015 942,00
102	1.5mm² x 4 core	m	1	11,00	Rate Only
103	1.5mm² x 7 core	m	15000	10,00	R 150 000,00
104	1.5mm² x 10core	m	1	13,00	Rate Only
105	1.5mm² x 19 core	m	1	14,00	Rate Only
106	1.5mm² x 24 core	m	1000	15,00	15 000,00
107	1.5mm² x 30 core	m	1	34,00	Rate Only
	Cable terminations for multicore control cable complete, including gland shroud, lugs, number tags, etc. and connection.				
108	1.5mm² x 2 core	No	1	86,00	Rate Only
109	1.5mm² x 3 core	No	1	91,00	Rate Only
110	2.5mm² x 3 core	No	160	93,00	R 14 880,00
111	1.5mm² x 4 core	No	1	97,00	Rate Only
112	1.5mm² x 7 core	No	400	121,00	R 48 400,00
113	1.5mm² x 10core	No	1	202,00	Rate Only
114	1.5mm² x 19 core	No	1	230,00	Rate Only
115	1.5mm² x 24 core	No	20	280,00	5 60[illegible]
116	1.5mm² x 30 core	No	1	300,00	Rate Only
	Extra low voltage instrumentation cable fixed to cable tray, drawn into sleeves or power skirting.				
117	1 mm² 2-pair	m	1	9,00	Rate Only
118	1.5 mm² 1-pair	m	13000	9,00	R 117 000,00
119	1.5mm² 2-pair	m	1000	9,00	R 9 000,00
120	1.5mm² 3-pair	m	2000	11,00	R 22 000,00
121	1.5mm² 12-pair	m	1	23,00	Rate Only
Carried forward / ...					R 3 397 822,00

ITEM	DESCRIPTION	UNIT	QTY	RATE R c	AMOUNT R c
Brought forward / ...					R 3 397 822,00
122	1.5mm² 19-pair	m	1000	35,00	35 000,00
123	1 x Triad	m	1	12,00	Rate Only
	Terminations for Extra low voltage instrumentation cable				
124	1 mm² 2-pair	No	1	15,00	Rate Only
125	1.5 mm² 1-pair	No	500	15,00	R 7 500,00
126	1.5mm² 2-pair	No	20	15,00	R 300,00
127	1.5mm² 3-pair	No	30	15,00	R 450,00
128	1.5mm² 12-pair	No	1	411,00	Rate Only
129	1.5mm² 19-pair	No	20	790,00	15 800,00
130	1 x Triad	No	1	152,00	Rate Only
	Instrumentation Power cable Cu/PVC Insulated/PVC Bedded/SWA/PVC Sheathed 600/1000V multicore with stranded conductors. Cable fixed to cable tray, drawn into sleeves or laid into trenches.				
131	2.5mm² x 3 core	m	9000	10,00	R 90 000,00
132	4mm² x 3 core	m	1	15,00	R 15,00
	Terminations for Instrumentation Power cable Cu/PVC Insulated/PVC Bedded/SWA/PVC Sheathed 600/1000V multicore with stranded conductors.				
133	2.5mm² x 3 core	No	250	96,00	R 24 000,00
134	4mm² x 3 core	No	1	102,00	R 102,00
	Heavy Duty Cable Ladder - Stainless Steel 316L				
	100 x 100mm (W x H)				
135	Straight length	m	200	75,00	R 15 000,00
136	Extras: Tee piece or 90° deg Horizontal elbow or Internal Riser or Dropper	No	10	120,00	R 1 200,00
Carried forward / ...					R 3 587 189,00

ITEM	DESCRIPTION	UNIT	QTY	RATE R c	AMOUNT R c
Brought forward / ...					R 3 587 189,00
137	4 Way cross over	No	3	450,00	R 1 350,00
	200 x 100mm (W x H)				
138	Straight length	m	200	95,00	R 19 000,00
139	Extras: Tee piece or 90° deg Horizontal elbow or Internal Riser or Dropper	No	10	160,00	R 1 600,00
140	4 Way cross over	No	3	460,00	R 1 380,00
	300 x 100mm (W x H)				
141	Straight length	m	200	100,00	R 20 00
142	Extras: Tee piece or 90° deg Horizontal elbow or Internal Riser or Dropper	No	10	170,00	R 1 700,00
143	4 Way cross over	No	3	500,00	R 1 500,00
	600 x 100mm (W x H)				
144	Straight length	m	200	120,00	R 24 000,00
145	Extras: Tee piece or 90° deg Horizontal elbow or Internal Riser or Dropper	No	10	180,00	R 1 800,00
146	4 Way cross over	No	2	560,00	R 1 120,00
	800 x 100mm (W x H)				
147	Straight length	m	500	140,00	R 70 00
148	Extras: Tee piece or 90° deg Horizontal elbow or Internal Riser or Dropper	No	14	190,00	R 2 660,00
149	4 Way cross over	No	7	570,00	R 3 990,00
	1000 x 100mm (W x H)				
150	Straight length	m	350	180,00	R 63 000,00
151	Extras: Tee piece or 90° deg Horizontal elbow or Internal Riser or Dropper	No	14	200,00	R 2 800,00
152	4 Way cross over	No	11	600,00	R 6 600,00
Carried forward / ...					R 3 809 689,00

ITEM	DESCRIPTION	UNIT	QTY	RATE R c	AMOUNT R c
Brought forward / ...					R 3 809 689,00
	Welded Wire Mesh Cable Tray - Stainless Steel				
	100 x 50mm (W x H), Ø 4mm Wire				
153	Straight length	m	200	75,00	R 15 000,00
	200 x 50mm (W x H), Ø 4mm Wire				
154	Straight length	m	300	75,00	R 22 500,00
	300 x 50mm (W x H), Ø 4mm Wire				
155	Straight length	m	200	80,00	R 16 000,00
	400 x 50mm (W x H), Ø 4mm Wire				
156	Straight length	m	400	90,00	R 36 000,00
	Conduit - Install				
	Install the following conduit, including all mounting brackets, fastening materials, elbows, etc.				
157	PVC , 20mm	m	50	10,00	R 500,00
158	PVC, 25mm	m	50	10,00	R 500,00
159	PVC, 32mm	m	50	11,00	R 550,00
160	Galvanised Steel, 20mm	m	500	25,00	R 12 500,00
161	Stainless Steel 316, 20mm	m	300	60,00	R 18 000,00
162	Galvanised Steel, 25mm	m	300	29,00	R 8 700,00
163	Stainless Steel 316, 25mm	m	300	75,00	R 22 500,00
	Excavation				
	Excavate and set excavated material aside for re-use as filling for cable or sleeve trench not exceeding 1m deep				
164	In earth/sand	m	1000	175,00	R 175 000,00
165	In soft rock	m^3	50	225,00	R 11 250,00
Carried forward / ...					R 4 148 689,00

ITEM	DESCRIPTION	UNIT	QTY	RATE R c	AMOUNT R c
Brought forward / ...					R 4 148 689,00
166	In rock	m³	25	550,00	R 13 750,00
167	Selected and approved material for backfilling	m³	200	175,00	R 35 000,00
168	Danger tape - 400mm wide overlapping	m	1000	5,00	R 5 000,00
169	Cable marker with engraved steel plate	No	25	188,00	R 4 700,00
170	1000mm x 1000mm manhole with cast iron cover	No	5	5 000,00	R 25 000,00
	General				
171	Bonding of all extraneous conductive parts.	Sum	1	7 500,00	R 7 500
172	Labelling of Cables and Equipment	Sum	1	3 500,00	R 3 500,00
	Allow for all costs and expenses in connection with pre-commsissioning in terms of FIDIC and Part C3: Scope of Work for the following:				
173	For equipment scheduled above	Sum	1	15 000,00	R 15 000,00
174	All other items not included above but which are nevertheless necessary to meet the Scope of Work and/or are required for the proper, safe and effective operation of the plant (Specify):-	Item			
	Allow for all the costs and expenses in connection with the design, manufacture, painting, supplying, delivery, offloading and storage of the following materials and equipment:				
	Heavy Duty Cable Ladder - Hot Dipped Galvanised Steel				
	100 x 100mm (W x H)				
175	Straight length	m	100	311,00	R 31 100,00
176	Extras: Tee piece or 90° deg Horizontal elbow or Internal Riser or Dropper	No	5	810,00	R 4 050,00
177	4 Way cross over	No	1	1 129,00	R 1 129,00
Carried forward / ...					R 4 294 418,00

ITEM	DESCRIPTION	UNIT	QTY	RATE R c	AMOUNT R c
Brought forward / ...					R 4 294 418,00
	200 x 100mm (W x H)				
178	Straight length	m	100	332,00	R 33 200,00
179	Extras: Tee piece or 90° deg Horizontal elbow or Internal Riser or Dropper	No	5	926,00	R 4 630,00
180	4 Way cross over	No	1	1 214,00	R 1 214,00
	300 x 100mm (W x H)				
181	Straight length	m	100	348,00	R 34 800,00
182	Extras: Tee piece or 90° deg Horizontal elbow or Internal Riser or Dropper	No	5	1 004,00	R 5 020,00
183	4 Way cross over	No	1	1 374,00	R 1 374,00
	600 x 100mm (W x H)				
184	Straight length	m	100	421,00	R 42 100,00
185	Extras: Tee piece or 90° deg Horizontal elbow or Internal Riser or Dropper	No	5	1 121,00	R 5 605,00
186	4 Way cross over	No	1	1 622,00	R 1 622,00
	800 x 100mm (W x H)				
187	Straight length	m	200	468,00	R 93 600,00
188	Extras: Tee piece or 90° deg Horizontal elbow or Internal Riser or Dropper	No	10	1 296,00	R 12 960,00
189	4 Way cross over	No	2	1 854,00	R 3 708,00
	1000 x 100mm (W x H)				
190	Straight length	m	200	511,00	R 102 200,00
191	Extras: Tee piece or 90° deg Horizontal elbow or Internal Riser or Dropper	No	10	1 488,00	R 14 880,00
192	4 Way cross over	No	2	2 219,00	R 4 438,00
	Welded Wire Mesh Cable Tray - Hot Dipped Galvanised Steel				
Carried forward / ...					R 4 655 769,00

ITEM	DESCRIPTION	UNIT	QTY	RATE R c	AMOUNT R c
Brought forward / ...					R 4 655 769,00
	100 x 50mm (W x H), Ø 4mm Wire				
193	Straight length	m	100	R 126,00	R 12 600,00
	200 x 50mm (W x H), Ø 4mm Wire				
194	Straight length	m	100	164,00	R 16 400,00
	300 x 50mm (W x H), Ø 4mm Wire				
195	Straight length	m	50	193,00	R 9 650,00
	400 x 50mm (W x H), Ø 4mm Wire				
196	Straight length	m	100		R -
	Allow for all costs and expenses in connection with the Site installation in terms of in terms of FIDIC and Part C3: Scope of Work (excluding pre-commissioning) for the following:				
	Heavy Duty Cable Ladder - Hot Dipped Galvanised Steel				
	100 x 100mm (W x H)				
197	Straight length	m	100	311,00	R 31 100,00
198	Extras: Tee piece or 90° deg Horizontal elbow or Internal Riser or Dropper	No	5	810,00	R 4 050,00
199	4 Way cross over	No	1	1 129,00	R 1 12[illegible]
	200 x 100mm (W x H)				
200	Straight length	m	100	332,00	R 33 200,00
201	Extras: Tee piece or 90° deg Horizontal elbow or Internal Riser or Dropper	No	5	926,00	R 4 630,00
202	4 Way cross over	No	1	1 214,00	R 1 214,00
	300 x 100mm (W x H)				
203	Straight length	m	100	348,00	R 34 800,00
204	Extras: Tee piece or 90° deg Horizontal elbow or Internal Riser or Dropper	No	5	1 004,00	R 5 020,00
Carried forward / ...					R 4 809 562,00

ITEM	DESCRIPTION	UNIT	QTY	RATE R c	AMOUNT R c
Brought forward / ...					R 4 809 562,00
205	4 Way cross over	No	1	1 374,00	R 1 374,00
	600 x 100mm (W x H)				
206	Straight length	m	100	421,00	R 42 100,00
207	Extras: Tee piece or 90° deg Horizontal elbow or Internal Riser or Dropper	No	5	1 121,00	R 5 605,00
208	4 Way cross over	No	1	1 622,00	R 1 622,00
	800 x 100mm (W x H)				
209	Straight length	m	200	468,00	R 93 600,00
210	Extras: Tee piece or 90° deg Horizontal elbow or Internal Riser or Dropper	No	10	1 296,00	R 12 960,00
211	4 Way cross over	No	2	1 854,00	R 3 708,00
	1000 x 100mm (W x H)				
212	Straight length	m	200	511,00	R 102 200,00
213	Extras: Tee piece or 90° deg Horizontal elbow or Internal Riser or Dropper	No	10	1 488,00	R 14 880,00
214	4 Way cross over	No	2	2 219,00	R 4 438,00
	Welded Wire Mesh Cable Tray - Hot Dipped Galvanised Steel				
	100 x 50mm (W x H), Ø 4mm Wire				
215	Straight length	m	100	75,00	R 7 500,00
	200 x 50mm (W x H), Ø 4mm Wire				
216	Straight length	m	100	75,00	R 7 500,00
	300 x 50mm (W x H), Ø 4mm Wire				
217	Straight length	m	50	80,00	R 4 000,00
	400 x 50mm (W x H), Ø 4mm Wire				
218	Straight length	m	100	90,00	R 9 000,00
TOTAL OF SCHEDULE E5a CARRIED TO SUMMARY					5 120 049,00

ITEM	DESCRIPTION	UNIT	QTY	RATE R c	AMOUNT R c
	SCHEDULE E6				
	STANDBY POWER GENERATOR				
	Allow for all the costs and expenses in connection with the design, manufacture, painting, supplying, delivery, offloading and storage of the following materials and equipment:				
	New Diesel Generator Sets				
1	Diesel generator for MBR-B Biological Reactor	No	1	2 492 426,00	R 2 492 426,00
2	Diesel generator for MBR-B Air Scour	No	1	1 834 340,00	R 1 834 340,00
3	Diesel generator for MBR-B	No	1	2 492 426,00	R 2 492 426,00
4	Diesel generator - 2000 kVA Prime Power	No	1	4 173 109,00	Rate Only
5	Modified Exhaust System	No	3	198 432,00	R 595 296,00
6	Radiator Ducting	No	3	23 592,00	R 70 776,00
7	Sound Attenuated Louvres	No	6	243 685,00	R 1 462 110,00
8	Electrical fuel transfer pump	No	1	6 123,00	Rate Only
9	Fire extinguishers	No	6	1 438,00	R 8 628,00
10	Service and Maintenance Contract for installation	Months	12	2 691,00	R 32 292,00
	Diesel tank				
11	Free standing diesel storage tank complete with instrumentation (MBR-B Biological Reactor genset)	No	1	121 900,00	Rate Only
12	Fuel (enough for testing and commissioning and a full tank with handover) (MBR-B Biological Reactor genset)	Sum	1	151 841,00	151 841,00
13	Fuel transfer system (MBR-B Biological Reactor genset)	Sum	1	28 003,00	28 003,00
14	Free standing diesel storage tank complete with instrumentation (Air Scour genset)	No	1	121 900,00	Rate Only
15	Fuel (enough for testing and commissioning and a full tank with handover) (Air Scour genset)	Sum	1	156 860,00	156 860,00
	Carried forward / ...				R 9 324 998,00

ITEM	DESCRIPTION	UNIT	QTY	RATE R c	AMOUNT R c
Brought forward / ...					R 9 324 998,00
16	Fuel transfer system (Air Scour genset)	Sum	1	28 929,00	28 929,00
17	Free standing diesel storage tank complete with instrumentation (MBR-B tank)	No	1	121 900,00	Rate Only
18	Fuel (enough for testing and commissioning and a full tank with handover) (MBR-B tank)	Sum	1	156 860,00	156 860,00
19	Fuel transfer system (Air Scour genset)	Sum	1	28 003,00	28 003,00
20	Allow for separate return flights, car hire, accommodation and subsistence costs incurred in optional factory inspections or routine test witnessing, outside the Cape Metropolitan Area, by the City of Cape Town Engineer and his representative (two persons) for equipment in this schedule	Prov Sum			75 000,00
	Temporary Construction power				
21	Provision of temporary power during electrical changeovers as directed by the Engineer	Provisional Sum			175 400,00
22	Percentage adjustment on Item 15 for Contractor's costs, sourcing quotes, management, and for overheads and profit (state as percentage an extend as amount)	%	175 400	15,00%	R 26 310,00
	Allow for all costs and expenses in connection with the Site installation in terms of in terms of FIDIC and Part C3: Scope of Work (excluding pre-commissioning) for the following:				
23	For equipment scheduled above	Sum	1	180 716,00	R 180 716,00
24	Earthing and bonding of the installation	Sum	1	11 736,00	R 11 736,00
	Allow for all costs and expenses in connection with pre-commsissioning in terms of FIDIC and Part C3: Scope of Work for the following:				
25	For equipment scheduled above	Sum	1	2 990,00	R 2 990,00
Carried forward / ...					R 10 010 942,00

ITEM	DESCRIPTION	UNIT	QTY	RATE R c	AMOUNT R c
Brought forward / ...					R 10 010 942,00
26	All other items not included above but which are nevertheless necessary to meet the Scope of Work and/or are required for the proper, safe and effective operation of the plant (Specify):-	Item			-
TOTAL OF SCHEDULE E6 CARRIED TO SUMMARY					10 010 942,00

ITEM	DESCRIPTION	UNIT	QTY	RATE R	c	AMOUNT R	c
	SCHEDULE E7a						
	LV SWITCHGEAR AND CONTROLGEAR ASSEMBLIES						
	Allow for all the costs and expenses in connection with the design, manufacture, painting, supplying, delivery, offloading and storage of the following materials and equipment:						
	Refered to as "Supply" in this schedule						
	Allow for all costs and expenses in connection with the Site installation in terms of in terms of FIDIC and Part C3: Scope of Work (excluding pre-commissioning) for the following:						
	Refered to as "Install" in this schedule						
	Allow for all costs and expenses in connection with pre-commsissioning in terms of FIDIC and Part C3: Scope of Work for the following:						
	Refered to as "Pre-Commissioning" in this schedule						
	New Switchgear Assemblies						
	MCC BR-B1- complete						
1	Supply	Sum	1	505 700,00	R	505 700,00	
2	Install	Sum	1	5 000,00	R	5 000,00	
3	Pre-Commissioning	Sum	1	3 500,00	R	3 500,00	
	MCC BR-B2 complete						
4	Supply	Sum	1	505 700,00	R	505 700,00	
5	Install	Sum	1	5 000,00	R	5 000,00	
6	Pre-Commissioning	Sum	1	3 500,00	R	3 500,00	
	MCC BR-B3 complete						
7	Supply	Sum	1	505 700,00	R	505 700,00	
8	Install	Sum	1	5 000,00	R	5 000,00	
9	Pre-Commissioning	Sum	1	3 500,00	R	3 500,00	
	Carried forward / ...				R	1 542 600,00	

ITEM	DESCRIPTION	UNIT	QTY	RATE R c	AMOUNT R c
Brought forward / ...					R 1 542 600,00
	MCC FBDA complete				
10	Supply	Sum	1	1 284 540,00	R 1 284 540,00
11	Install	Sum	1	20 000,00	R 20 000,00
12	Pre-Commissioning	Sum	1	3 500,00	R 3 500,00
	FBDA Variable Frequency Converters complete				
13	Main offer: Supply AFE VFC	No	5	724 322,00	R 3 621 610,00
14	Alternative offer: Supply DFE VFC with passive or inline low pass broadband filter per drive	No	1	292 100,00	Rate Only
15	Install	No	5	4 000,00	R 20 000,00
16	Pre-Commissioning	No	5	800,00	R 4 000,00
	MCC MBR-B AIR SCOUR complete				
17	Supply	Sum	1	1 226 290,00	R 1 226 290,00
18	Install	Sum	1	20 000,00	R 20 000,00
19	Pre-Commissioning	Sum	1	3 500,00	R 3 500,00
	AIR SCOUR Variable Frequency Converters complete				
20	Main offer: Supply AFE VFC	No	6	598 142,00	R 3 588 852,00
21	Alternative offer: Supply DFE VFC with passive or inline low pass broadband filter per drive	No	1	245 200,00	Rate Only
22	Install	No	6	4 000,00	R 24 000,00
23	Pre-Commissioning	No	6	800,00	R 4 800,00
	MCC MBR-B complete				
24	Supply	Sum	1	3 996 600,00	R 3 996 600,00
25	Install	Sum	1	35 000,00	R 35 000,00
26	Pre-Commissioning	Sum	1	7 500,00	R 7 500,00
Carried forward / ...					R 15 402 792,00

ITEM	DESCRIPTION	UNIT	QTY	RATE R c	AMOUNT R c
Brought forward / ...					R 15 402 792,00
	MCC MBR-FS complete				
27	Supply	Sum	1	469 200,00	R 469 200,00
28	Install	Sum	1	5 000,00	R 5 000,00
29	Pre-Commissioning	Sum	1	2 500,00	R 2 500,00
	MCC MBR-B-CITRIC ACID complete				
30	Supply	Sum	1	216 520,00	R 216 520,00
31	Install	Sum	1	3 500,00	R 3 500,00
32	Pre-Commissioning	Sum	1	2 000,00	R 2 000,00
	MCC MBR-B-SOIDUM HYPOCHLORIDE complete				
33	Supply	Sum	1	311 290,00	R 311 290,00
34	Install	Sum	1	3 500,00	R 3 500,00
35	Pre-Commissioning	Sum	1	2 000,00	R 2 000,00
	MCC FERRIC CHLORIDE complete				
36	Supply	Sum	1	320 200,00	R 320 200,00
37	Install	Sum	1	3 500,00	R 3 500,00
38	Pre-Commissioning	Sum	1	2 000,00	R 2 000,00
	MCC SODIUM HYDROXIDE complete				
39	Supply	Sum	1	321 180,00	R 321 180,00
40	Install	Sum	1	3 500,00	R 3 500,00
41	Pre-Commissioning	Sum	1	2 000,00	R 2 000,00
Carried forward / ...					R 17 070 682,00

ITEM	DESCRIPTION	UNIT	QTY	RATE R c	AMOUNT R c
Brought forward / ...					R 17 070 682,00
	Field Control Stations				
	Local E-Stop/Stop/Start Control Station (including 3CR12 pedestal mount)				
42	Supply	No	110	2 210,00	R 243 100,00
43	Install	No	110	95,00	R 10 450,00
44	Pre-Commissioning	No	110	15,00	R 1 650,00
45	**Local Forward/Reverse Station (including 3CR12 pedestal mount)**	-	-	-	-
46	Supply	No	6	2 630,00	R 15 780,00
47	Install	No	6	95,00	R 570,00
48	Pre-Commissioning	No	6	15,00	R 90,00
	Local E-Stop/Stop/Start Control Station (including Stainless Steel 316 pedestal mount)				
49	Supply	No	32	2 640,00	R 84 480,00
50	Install	No	32	95,00	R 3 040,00
51	Pre-Commissioning	No	32	15,00	R 480,00
	Busbar trunking				
52	Busbar trunking for the MBR MCC as directed by the Engineer	Provisional Sum		-	175 400,00
53	Percentage adjustment on Item 52 for Contractor's design, sourcing quotes, superintendence, and for overheads and profit (state as percentage an extend as amount)	%	175 400	15,00%	R 26 310,00
54	Supply, install and Pre-Commission Cast Resin insulated busbar trunking (3200A, 50 kA, 3 phase + Neutral)	m²	1	21 975,00	Rate Only
Carried forward / ...					R 17 632 032,00

ITEM	DESCRIPTION	UNIT	QTY	RATE R c	AMOUNT R c
Brought forward / ...					R 17 632 032,00
	MCC busbar and controlgear				
55	MCC busbar and controlgear changes resultant from equipment changes during mechanical design	Prov Sum	1		R 150 000,00
56	Percentage adjustment on Item 55 for Contractor's design, sourcing quotes, superintendence, and for overheads and profit (state as percentage an extend as amount)	%	150 000	15,00%	R 22 500,00
	Cable Trench Covers				
	Meranti Wood slabs over cable trenches in MCC rooms				
57	Supply	m²	40	930,00	R 37 200,00
58	Install	m²	40	85,00	R 3 400,00
	Certificates of compliance for all switchgear panels included under Schedule E7.				
59	For equipment scheduled above	Sum	1	10 000,00	R 10 000,00
60	**All other items not included above but which are nevertheless necessary to meet the Scope of Work and/or are required for the proper, safe and effective operation of the plant (Specify):-**	Item			
TOTAL OF SCHEDULE E7a CARRIED TO SUMMARY					17 855 132,00

ITEM	DESCRIPTION	UNIT	QTY	RATE R c	AMOUNT R c
	SCHEDULE E8a				
	PROGRAMMABLE LOGIC CONTROLLERS				
	Allow for all the costs and expenses in connection with the design, manufacture, painting, supplying, delivery, offloading and storage of the following materials and equipment:				
	Refered to as "Supply" in this schedule				
	Allow for all costs and expenses in connection with the Site installation in terms of in terms of FIDIC and Part C3: Scope of Work (excluding pre-commissioning) for the following:				
	Refered to as "Install" in this schedule				
	Allow for all costs and expenses in connection with pre-commsissioning in terms of FIDIC and Part C3: Scope of Work for the following:				
	Refered to as "Pre-Commissioning" in this schedule				
	PLC - Fine Bubble Diffused Aeration Blowers (PLC-FBDA)				
	PLC Panel				
1	Supply	No	1	17 900,00	R 17 900,00
2	Install	No	1	7 500,00	R 7 500,00
	PLC hardware complete				
3	Supply	No	1	96 290,00	R 96 290,00
4	Install	No	1	13 270,00	R 13 270,00
5	Supply and Install PLC Software Complete	Sum	1	500,00	R 500,00
6	Programming of PLC	Sum	1	26 875,00	R 26 875,00
7	Simulation Testing of PLC Programming	Sum	1	4 200,00	R 4 200,00
8	Pre-Commissioning	Sum	1	12 000,00	R 12 000,00
	Carried forward / ...				R 178 535,00

ITEM	DESCRIPTION	UNIT	QTY	RATE R	c	AMOUNT R	c
Brought forward / ...						R	178 535,00
	PLC - Biological reactors (PLC-BR-B1, PLC-BR-B2, PLC-BR-B3)						
	PLC Panel						
9	Supply	No	3	16 550,00	-	R 49 650,00	-
10	Install	No	3	7 500,00	-	R 22 500,00	-
	PLC hardware complete				-		-
11	Supply	No	3	106 570,00	-	R 319 710,00	-
12	Install	No	3	10 600,00	-	R 31 800,00	-
13	Supply and Install PLC Software Complete	Sum	3	500,00	-	R 1 500,00	-
14	Programming of PLC	Sum	3	23 438,00	-	R 70 314,00	-
15	Simulation Testing of PLC Programming	Sum	3	2 500,00	-	R 7 500,00	-
16	Pre-Commissioning	Sum	3	9 000,00	-	R 27 000,00	-
	PLC - MBR B Air Scour Blowers (PLC-B-AIR SCOUR)				-		-
	PLC Panel				-		-
17	Supply	No	1	R 55 170,00	-	R 55 170,00	-
18	Install	No	1	9 500,00	-	R 9 500,00	-
	PLC hardware complete				-		-
19	Supply	No	1	84 980,00	-	R 84 980,00	-
20	Install	No	1	18 200,00	-	R 18 200,00	-
21	Supply and Install PLC Software Complete	Sum	1	500,00	-	R 500,00	-
22	Programming of PLC	Sum	1	23 438,00	-	R 23 438,00	-
23	Simulation Testing of PLC Programming	Sum	1	2 500,00	-	R 2 500,00	-
24	Pre-Commissioning	Sum	1	5 813,00	-	R 5 813,00	-
Carried forward / ...						R	908 610,00

ITEM	DESCRIPTION	UNIT	QTY	RATE R c	AMOUNT R c
Brought forward / ...					R 908 610,00
	PLC - Membrane Bioreactor (MBR) B (PLC-MBR-B)				
	PLC Panel				
25	Supply	No	1	26 200,00	R 26 200,00
26	Install	No	1	12 050,00	R 12 050,00
	PLC hardware complete				
27	Supply	No	1	193 440,00	R 193 440,00
28	Install	No	1	18 600,00	R 18 600,00
29	Supply and Install PLC Software Complete	Sum	1	500,00	R 500,00
30	Programming of PLC	Sum	1	138 125,00	R 138 125,00
31	Simulation Testing of PLC Programming	Sum	1	13 000,00	R 13 000,00
32	Pre-Commissioning	Sum	1	40 625,00	R 40 625,00
	PLC - MBR B Citric Acid (PLC-Citric Acid)				
	PLC Panel				
33	Supply	No	1	13 660,00	R 13 660,00
34	Install	No	1	8 500,00	R 8 500,00
	PLC hardware complete				
35	Supply	No	1	63 270,00	R 63 270,00
36	Install	No	1	12 600,00	R 12 600,00
37	Supply and Install PLC Software Complete	Sum	1	500,00	R 500,00
38	Programming of PLC	Sum	1	14 013,00	R 14 013,00
39	Simulation Testing of PLC Programming	Sum	1	2 940,00	R 2 940,00
40	Pre-Commissioning	Sum	1	5 588,00	R 5 588,00
Carried forward / ...					R 1 472 221,00

ITEM	DESCRIPTION	UNIT	QTY	RATE R c	AMOUNT R c
Brought forward / ...					R 1 472 221,00
	PLC - MBR B Sodium Hypochlorite (PLC-Sodium Hypochlorite)				
	PLC Panel				
41	Supply	No	1	13 660,00	R 13 660,00
42	Install	No	1	8 500,00	R 8 500,00
	PLC hardware complete				
43	Supply	No	1	63 270,00	R 63 270,00
44	Install	No	1	12 600,00	R 12 600,00
45	Supply and Install PLC Software Complete	Sum	1	500,00	R 500,00
46	Programming of PLC	Sum	1	14 013,00	R 14 013,00
47	Simulation Testing of PLC Programming	Sum	1	2 940,00	R 2 940,00
48	Pre-Commissioning	Sum	1	5 588,00	R 5 588,00
	PLC - Ferric Chloride (PLC Ferric Chloride)				
	PLC Panel				
49	Supply	No	1	17 610,00	R 17 610,00
50	Install	No	1	7 500,00	R 7 500,00
	PLC hardware complete				
51	Supply	No	1	67 810,00	R 67 810,00
52	Install	No	1	12 600,00	R 12 600,00
53	Supply and Install PLC Software Complete	Sum	1	500,00	R 500,00
54	Programming of PLC	Sum	1	14 013,00	R 14 013,00
55	Simulation Testing of PLC Programming	Sum	1	2 940,00	R 2 940,00
56	Pre-Commissioning	Sum	1	5 588,00	R 5 588,00
Carried forward / ...					R 1 721 853,00

ITEM	DESCRIPTION	UNIT	QTY	RATE R c	AMOUNT R c
Brought forward / ...					R 1 721 853,00
	PLC - Sodium Hydroxide (PLC-Sodium Hydroxide)				
	PLC Panel				
57	Supply	No	1	13 660,00	R 13 660,00
58	Install	No	1	8 500,00	R 8 500,00
	PLC hardware complete				
59	Supply	No	1	69 100,00	R 69 100,00
60	Install	No	1	12 600,00	R 12 60[illegible]
61	Supply and Install PLC Software Complete	Sum	1	500,00	R 500,00
62	Programming of PLC	Sum	1	14 013,00	R 14 013,00
63	Simulation Testing of PLC Programming	Sum	1	2 940,00	R 2 940,00
64	Pre-Commissioning	Sum	1	5 588,00	R 5 588,00
	PLC - MBR B Fine Screens (PLC-MBR-FS)				
	PLC Panel				
65	Supply	No	1	19 380,00	R 19 380,00
66	Install	No	1	8 500,00	R 8 500,00
	PLC hardware complete				
67	Supply	No	1	99 470,00	R 99 470,00
68	Install	No	1	14 700,00	R 14 700,00
69	Supply and Install PLC Software Complete	Sum	1	500,00	R 500,00
70	Programming of PLC	Sum	1	27 075,00	R 27 075,00
71	Simulation Testing of PLC Programming	Sum	1	4 520,00	R 4 520,00
72	Pre-Commissioning	Sum	1	11 438,00	R 11 438,00
Carried forward / ...					R 2 034 337,00

ITEM	DESCRIPTION	UNIT	QTY	RATE R c	AMOUNT R c
Brought forward / ...					R 2 034 337,00
	Supply and Install of General PLC Components as in the PLCs above				
73	CPU M580	No	1	32 216,00	Rate Only
74	CPU M340	No	1	19 660,00	Rate Only
75	Backplane	No	1	3 380,00	Rate Only
76	8 Analogue Inputs Card	No	1	8 593,00	Rate Only
77	8 Analogue Outputs Card	No	1	9 255,00	Rate Only
78	16 Digital Inputs Card	No	1	2 630,00	Rate Only
79	16 Digital Outputs Card	No	1	3 177,00	Rate Only
80	Modbus RTU Card	No	1	9 381,00	Rate Only
81	2 port Ethernet Card	No	1	14 440,00	Rate Only
	UPS for PLC, HMI and other control accessories				
	UPS Panel and LV assembly				
82	Supply	No	11	13 640,00	R 150 040,00
83	Install	No	11	900,00	R 9 900,00
84	Pre-Commissioning	Sum	1	1 500,00	R 1 500,00
	UPS complete				
85	Supply	No	11	19 450,00	R 213 950,00
86	Install	No	11	850,00	R 9 350,00
87	Pre-Commissioning	Sum	1	2 400,00	R 2 400,00
	HMI (Citric Acid Dosing)				
88	Supply	No	1	32 330,00	R 32 330,00
89	Install	No	1	600,00	R 600,00
90	Configuring Mimics	No	1	17 425,00	R 17 425,00
Carried forward / ...					R 2 471 832,00

ITEM	DESCRIPTION	UNIT	QTY	RATE R c	AMOUNT R c
Brought forward / ...					R 2 471 832,00
91	Simulation Testing of HMI	Sum	1	4 200,00	R 4 200,00
92	Pre-Commissioning	Sum	1	5 250,00	R 5 250,00
	HMI (Sodium Hypochlorite)				
93	Supply	No	1	32 330,00	R 32 330,00
94	Install	No	1	600,00	R 600,00
95	Configuring Mimics	No	1	22 625,00	R 22 625,00
96	Simulation Testing of HMI	Sum	1	4 500,00	R 4 50
97	Pre-Commissioning	Sum	1	5 625,00	R 5 625,00
	HMI (Fine Screens)				
98	Supply	No	1	32 330,00	R 32 330,00
99	Install	No	1	600,00	R 600,00
100	Configuring Mimics	No	1	29 000,00	R 29 000,00
101	Simulation Testing of HMI	Sum	1	5 470,00	R 5 470,00
102	Pre-Commissioning	Sum	1	8 875,00	R 8 875,00
	HMI (Ferric Chloride & Sodium Hydroxide				
103	Supply	No	1	32 330,00	R 32 33
104	Install	No	1	600,00	R 600,00
105	Configuring Mimics	No	1	17 100,00	R 17 100,00
106	Simulation Testing of HMI	Sum	1	4 900,00	R 4 900,00
107	Pre-Commissioning	Sum	1	9 625,00	R 9 625,00
	Industrial Network				
	Armoured 12 Core Multimode fibre optic cable				
108	Supply	m	5000	27,00	R 135 000,00
Carried forward / ...					R 2 822 792,00

ITEM	DESCRIPTION	UNIT	QTY	RATE R	RATE c	AMOUNT R	AMOUNT c
Brought forward / ...						R	2 822 792,00
109	Install	m	5000	9,00	-	R	45 000,00
110	Fibre Optic Splicing per core	No	24	300,00	-	R	7 200,00
	CAT5 Cables complete with industrial type terminations				-		-
111	Supply	m	2000	12,00	-	R	24 000,00
112	Install	m	2000	7,00	-	R	14 000,00
	Switches (including fibre optic media converters SFP, fibre terminations, fibre and CAT5 patch panel) complete				-		-
113	Supply	No	15	4 800,00	-	R	72 000,00
114	Install	No	15	450,00	-	R	6 750,00
	Miscellaneous Industrial Network hardware items (lugs, plugs, terminals and installation consumables)				-		-
115	Supply	Sum	1	4 800,00	-	R	4 800,00
116	Install	Sum	1	450,00	-	R	450,00
117	Pre-commissioning of complete industrial network system	Sum	1	3 125,00		R	3 125,00
118	Conversion of existing Modbus Plus network to Ethernet network	Provisional Sum			-		175 400,00
119	Percentage adjustment on Item 118 for Contractor's design, sourcing quotes, superintendence, and for overheads and profit (state as percentage an extend as amount)	%	175 400	15,00%		R	26 310,00
120	**All other items not included above but which are nevertheless necessary to meet the Scope of Work and/or are required for the proper, safe and effective operation of the plant (Specify):-**	Item					-
121	Integration of control systems in this schedule with the remainder of the WWTW across the plant wide fibre optic ring network	Sum	1	12 150,00			12 150,00
TOTAL OF SCHEDULE E8a CARRIED TO SUMMARY							3 213 977,00

ITEM	DESCRIPTION	UNIT	QTY	RATE R c	AMOUNT R c
	SCHEDULE E9a				
	SCADA				
	Allow for all the costs and expenses in connection with the following:				
	SCADA Software				
1	Upgrade of existing SCADA software for new master SCADA	Sum	1	435 000,00	R 435 000,00
2	Mimics Configuration at Zandvliet WWTW new Main Control Station (Main SCADA)	Sum	1	155 000,00	R 155 000,00
3	Integration/Configuration of Mimics for Hardekraaltjie Control Centre	Sum	1	5 500,00	R 5 500,00
4	Integration/Configuration of Mimics for Blackmac Screening Station	Sum	1	5 500,00	R 5 500,00
5	Integration/Configuration of Mimics for Dewatering Remote View SCADA	Sum	1	1 500,00	R 1 500,00
6	Integration/Configuration of Mimics for MBR-A Remote View SCADA	Sum	1	1 500,00	R 1 500,00
7	Alarms and Events Configuration	Sum	1	3 000,00	R 3 000,00
8	Report Configuration	Sum	1	32 500,00	R 32 500,00
9	Data logging and trends display configuration	Sum	1	2 000,00	R 2 000,00
10	SCADA security (firewall, intruder detection, and anti-virus)	Sum	1	3 000,00	R 3 000,00
11	Simulation Testing of SCADA Programming	Sum	1	15 000,00	R 15 000,00
12	SCADA software: remote view node at New MBR-B SCADA station	Sum	1	52 500,00	R 52 500,00
13	Mimics Configuration for remote view nodes	Sum	1	15 200,00	R 15 200,00
14	All other software programming and configuration required for complete and secure SCADA system with hot standby	Sum	1	25 000,00	R 25 000,00
Carried forward / ...					R 752 200,00

ITEM	DESCRIPTION	UNIT	QTY	RATE R c	AMOUNT R c
Brought forward / ...					R 752 200,00
	Allow for all the costs and expenses in connection with the design, manufacture, painting, supplying, delivery, offloading and storage of the following materials and equipment:				
	Refered to as "Supply" in this schedule				
	Allow for all costs and expenses in connection with the Site installation in terms of in terms of FIDIC and Part C3: Scope of Work (excluding pre-commissioning) for the following:				
	Refered to as "Install" in this schedule				
	Master SCADA Hardware				
	SCADA Operator all-in-one computer (workstation) complete with all accessories				
15	Supply	No	4	18 550,00	R 74 200,00
16	Install	No	4	750,00	R 3 000,00
	SCADA OPC Server, rack mounted hot standby configuration complete with all accessories				
17	Supply	No	2	98 970,00	R 197 940,00
18	Install	No	2	1 800,00	R 3 600,00
	Main Supervisory Network Switch complete				
19	Supply	No	2	6 875,00	R 13 750,00
20	Install	No	2	900,00	R 1 800,00
	Data Network Switch Complete				
21	Supply	No	2	6 875,00	R 13 750,00
22	Install	No	2	900,00	R 1 800,00
	SCADA Administrative rack-mounted computer (workstation) complete with all accessories				
23	Supply	No	1	98 970,00	R 98 970,00
Carried forward / ...					R 1 161 010,00

ITEM	DESCRIPTION	UNIT	QTY	RATE R c	AMOUNT R c
Brought forward / ...					R 1 161 010,00
24	Install	No	1	1 800,00	R 1 800,00
	42U, 19" rack cabinet for all network and computer equipment			-	-
25	Supply	No	4	29 670,00	R 118 680,00
26	Install	No	4	8 000,00	R 32 000,00
	50" LED Backlit LCD Display			-	-
27	Supply	No	4	10 000,00	R 40 000,00
28	Install	No	4	750,00	R 3 000
	SCADA Computer UPS			-	-
29	Supply	No	2	13 200,00	R 26 400,00
30	Install	No	2	500,00	R 1 000,00
	KVM media switch complete with all accessories			-	-
31	Supply	No	2	500,00	R 1 000,00
32	Install	No	2	100,00	R 200,00
	SCADA printer			-	-
33	Supply	No	1	2 500,00	R 2 500,00
34	Install	No	1	900,00	R 900,00
35	Workstation furniture	Sum	1	5 000,00	R 5 000,00
	Remote View SCADA Hardware at MBR-B			-	-
	Remote View SCADA operator all-in-one computer (workstation) complete with all accessories			-	-
36	Supply	No	2	18 550,00	R 37 100,00
37	Install	No	2	750,00	R 1 500,00
	Data Network Switch Complete			-	-
38	Supply	No	1	6 875,00	R 6 875,00
Carried forward / ...					R 1 438 965,00

ITEM	DESCRIPTION	UNIT	QTY	RATE R c	AMOUNT R c
Brought forward / ...					R 1 438 965,00
39	Install	No	1	900,00	R 900,00
	19" rack cabinet for all network and computer equipment - mounted under desk or wall mounted				
40	Supply	No	1	25 400,00	R 25 400,00
41	Install	No	1	7 500,00	R 7 500,00
	23" LED Backlit LCD Displays				
42	Supply	No	4	3 125,00	R 12 500,00
43	Install	No	4	600,00	R 2 400,00
	Remote View SCADA Computer UPS				
44	Supply	No	1	13 200,00	R 13 200,00
45	Install	No	1	500,00	R 500,00
	Remote View SCADA printer				
46	Supply	No	1	2 500,00	R 2 500,00
47	Install	No	1	900,00	R 900,00
48	Remote View SCADA Workstation furniture	Sum	1	37 500,00	R 37 500,00
49	Other network accessories, switches, routers etc. necessary for a complete SCADA system	Sum	1	4 350,00	R 4 350,00
	Allow for all costs and expenses in connection with pre-commsissioning in terms of FIDIC and Part C3: Scope of Work for the following:				
50	Complete SCADA System	Sum	1	118 000,00	R 118 000,00
51	Installation, Relocation, Congfiguration and Commissioning of the Temporary Master SCADA system	Provisional Sum			175 400,00
52	Percentage adjustment on Item 51 for Contractor's design, sourcing quotes, superintendence, and for overheads and profit (state as percentage an extend as amount)	%	175 400	15,00%	R 26 310,00
Carried forward / ...					R 1 866 325,00

ITEM	DESCRIPTION	UNIT	QTY	RATE R c	AMOUNT R c
Brought forward / ...					R 1 866 325,00
53	Decommissioning of the existing SCADA system	Provisional Sum			50 000,00
54	Percentage adjustment on Item 53 for Contractor's design, sourcing quotes, superintendence, and for overheads and profit (state as percentage an extend as amount)	%	50 000	15,00%	R 7 500,00
55	Decommissioning of the Temporary SCADA system	Provisional Sum			50 000,00
56	Percentage adjustment on Item 55 for Contractor's design, sourcing quotes, superintendence, and for overheads and profit (state as percentage an extend as amount)	%	50 000	15,00%	R 7 500,00
57	**All other items not included above but which are nevertheless necessary to meet the Scope of Work and/or are required for the proper, safe and effective operation of the plant (Specify):-**	Item			-
TOTAL OF SCHEDULE E9a CARRIED TO SUMMARY					1 981 325,00

ITEM	DESCRIPTION	UNIT	QTY	RATE R c	AMOUNT R c
	SCHEDULE E10				
	TELEMETRY				
	Allow for all the costs and expenses in connection with the following:				
	Telemetry				
1	Upgrade of Telemetry as directed by the Engineer	Provisional Sum			175 400,00
2	Percentage adjustment on Item 1 for Contractor's design, sourcing quotes, superintendence, and for overheads and profit (state as percentage an extend as amount)	%	175 400	15,00%	R 26 310,00
3	**All other items not included above but which are nevertheless necessary to meet the Scope of Work and/or are required for the proper, safe and effective operation of the plant (Specify):-**	Item			-
	TOTAL OF SCHEDULE E10 CARRIED TO SUMMARY				201 710,00

ITEM	DESCRIPTION	UNIT	QTY	PRICE R c		AMOUNT R c
	SCHEDULE E11					
	INSTRUMENTATION					
	Allow for all the costs and expenses in connection with the design, manufacture, painting, supplying, delivery, offloading and storage of the following materials and equipment:					
	Refered to as "Supply" in this schedule					
	Allow for all costs and expenses in connection with the Site installation in terms of in terms of FIDIC and Part C3: Scope of Work (excluding pre-commissioning) for the following:					
	Refered to as "Install" in this schedule					
	Biological Reactor Stream B1,2,&3					
	Analytical Dissolved Oxygen Optical Meter including sensor, temperature sensor built-in (PT 100), transmitter and mounting materials					
1	Supply	No	15	47 094,00	R	706 410,00
2	Install	No	15	5 175,00	R	77 625,00
	Analytical pH Meter including sensor, transmitter, temperature sensor built-in (PT 100), 3 relay output, and mounting materials.					
3	Supply	No	5	31 032,00	R	155 160,00
4	Install	No	5	5 175,00	R	25 875,00
	Area Velocity Flow meter including sensor, transmitter and mounting materials (Recycle Channel)					
5	Supply	No	3	42 294,00	R	126 882,00
6	Install	No	3	4 025,00	R	12 075,00
	Area Velocity Flow meter including sensor, transmitter, 3 channel outputs, and mounting materials (Aerobic Discharge Sump Channel)					
7	Supply	No	3	42 294,00	R	126 882,00
	Carried forward / ...				R	1 230 909,00

ITEM	DESCRIPTION	UNIT	QTY	PRICE R c	AMOUNT R c
Brought forward / ...					R 1 230 909,00
8	Install	No	3	1 438,00	R 4 314,00
	Ultrasonic Level Meter including sensor, transmitter, 3 channel outputs, and mounting materials (MBR Feed sump Level and Aerobic Discharge Sump)				
9	Supply	No	6	16 427,00	R 98 562,00
10	Install	No	6	1 438,00	R 8 628,00
	Hydrostatic Level Meter including sensor, transmitter, 3 channel outputs, and mounting materials (Aerobic Discharge Sump)				
11	Supply	No	3	17 900,00	R 53 700,00
12	Install	No	3	1 438,00	R 4 314,00
	Flow Diffirential Pressure Pitot Tube Meter including sensor, transmitter, and mounting materials (Aerobic Airflow Meter)				
13	Supply	No	9	44 193,00	R 397 737,00
14	Install	No	9	4 083,00	R 36 747,00
	Linear Variable Diffirential Position Transmitter (in conjunction with mechanical equipment) complete including sensor, transmitter, and mounting materials (Scum withdrawal Gate				
15	Supply	No	3	33 235,00	R 99 705,00
16	Install	No	3	788,00	R 2 364,00
	Proximity Sensor complete including mounting materials				
17	Supply	No	10	863,00	R 8 630,00
18	Install	No	10	317,00	R 3 170,00
Carried forward / ...					R 1 948 780,00

ITEM	DESCRIPTION	UNIT	QTY	PRICE R c	AMOUNT R c
Brought forward / ...					R 1 948 780,00
	Fine Bubble Diffused Aeration				
	Pressure Transmitter complete including mounting materials (FBDA Blower) - piezoelectric / capactive				
19	Supply	No	7	10 146,00	R 71 022,00
20	Install	No	7	788,00	R 5 516,00
	Differential Pressure Transmitter complete including mounting materials (FBDA Blower) - piezoelectric / capactive				
21	Supply	No	6	44 193,00	R 265 158,00
22	Install	No	6	4 083,00	R 24 498,00
	Vibration Transmitter (in conjunction with mechanical equipment) complete including sensor, transmitter, and mounting material- Piezoelectric Accelerometer				
23	Supply	No	6	6 657,00	R 39 942,00
24	Install	No	6	317,00	R 1 902,00
	Thermal Mass Flow Meter including sensor, transmitter, temperature sensor built-in (PT 100) and mounting materials				
25	Supply	No	5	45 589,00	R 227 945,00
26	Install	No	5	4 083,00	R 20 415,00
	Proximity Sensor (in conjunction with mechanical torque switch) complete including mounting materials				
27	Supply	No	10	1 034,00	R 10 340,00
28	Install	No	10	317,00	R 3 170,00
Carried forward / ...					R 2 618 688,00

ITEM	DESCRIPTION	UNIT	QTY	PRICE R c	AMOUNT R c
Brought forward / ...					R 2 618 688,00
	Air Scour Blowers				
	Thermal Mass Flow Meter including sensor, transmitter, temperature sensor built-in (PT 100) and mounting materials (Air Scour Train and common manifold)				
29	Supply	No	10	45 589,00	R 455 890,00
30	Install	No	10	4 083,00	R 40 830,00
	Pressure Transmitter complete including mounting materials (Air Scour Blower) - piezoelectric / capactive				
31	Supply	No	25	10 146,00	R 253 650,00
32	Install	No	25	788,00	R 19 700,00
	Pressure Switch complete including mounting materials (Air Scour Blower) - piezoelectric / capactive				
33	Supply	No	7	7 716,00	R 54 012,00
34	Install	No	7	788,00	R 5 516,00
	Membrane Biological Reactor				
	Analytical Turbidity Optical Meter including sensor, temperature sensor built-in (PT 100), transmitter and mounting materials (Mixed Liquor				
35	Supply	No	1	53 879,00	R 53 879,00
36	Install	No	1	10 350,00	R 10 350,00
	Analytical Turbidity Optical Meter including sensor, transmitter and mounting materials (Filtration Tank Filtrate)				
37	Supply	No	9	53 879,00	R 484 911,00
38	Install	No	9	10 350,00	R 93 150,00
Carried forward / ...					R 4 090 576,00

ITEM	DESCRIPTION	UNIT	QTY	PRICE R c	AMOUNT R c
Brought forward / ...					R 4 090 576,00
	Analytical Analyzer NHOX Panel complete, including sensor, transmitter and mounting materials (Permeate Line)				
39	Supply	No	1	153 836,00	R 153 836,00
40	Install	No	1	10 350,00	R 10 350,00
	Analytical Analyzer NH4 Panel complete, including sensor, transmitter and mounting materials (Permeate Line)				
41	Supply	No	1	153 836,00	R 153 836,00
42	Install	No	1	10 350,00	R 10 350,00
	Analytical Analyzer Phosphate Panel complete, including sensor, transmitter and mounting materials (Permeate Line)				
43	Supply	No	1	182 788,00	R 182 788,00
44	Install	No	1	17 250,00	R 17 250,00
	Analytical Dew Point Transmitter complete, including sensor, transmitter and mounting materials (Air Desicant Dryer)				
45	Supply	No	2	91 862,00	R 183 724,00
46	Install	No	2	6 325,00	R 12 650,00
	Electromagnetic Flow meter including sensor, transmitter, temperature sensor built-in (PT 100), and mounting materials (Permeate Flow)				
47	Supply	No	10	46 311,00	R 463 110,00
48	Install	No	10	4 083,00	R 40 830,00
	Electromagnetic Flow meter including sensor, transmitter, and mounting materials (Scum to was Sump)				
49	Supply	No	1	31 372,00	R 31 372,00
50	Install	No	1	4 083,00	R 4 083,00
Carried forward / ...					R 5 354 755,00

ITEM	DESCRIPTION	UNIT	QTY	PRICE R c	AMOUNT R c
Brought forward / ...					R 5 354 755,00
	Electromagnetic Flow meter including sensor, transmitter, and mounting materials (Service water Line)				
51	Supply	No	1	23 311,00	R 23 311,00
52	Install	No	1	4 083,00	R 4 083,00
	Area Velocity Flow meter including sensor, transmitter, and mounting materials (Mixed Liquor Channel)				
53	Supply	No	1	42 294,00	R 42 294,00
54	Install	No	1	4 025,00	R 4 025,00
	Thermal Flow Switch including sensor and mounting materials (Filtration Air Scour)				
55	Supply	No	9	17 762,00	R 159 858,00
56	Install	No	9	788,00	R 7 092,00
	Flow Switch (inductive proximity on NRV) including sensor and mounting materials (Drain Pump Delivery)				
57	Supply	No	3	5 252,00	R 15 756,00
58	Install	No	3	317,00	R 951,00
	Flow Switch (inductive proximity on NRV) including sensor and mounting materials (Scum				
59	Supply	No	3	5 252,00	R 15 756,00
60	Install	No	3	317,00	R 951,00
	Flow Switch (inductive proximity on NRV) including sensor and mounting materials (Service Water Pump)				
61	Supply	No	3	5 252,00	R 15 756,00
62	Install	No	3	317,00	R 951,00
Carried forward / ...					R 5 645 539,00

ITEM	DESCRIPTION	UNIT	QTY	PRICE R c	AMOUNT R c
Brought forward / ...					R 5 645 539,00
	Flow Switch (inductive proximity on NRV) including sensor and mounting materials (Service Water UV)				
63	Supply	No	2	5 252,00	R 10 504,00
64	Install	No	2	317,00	R 634,00
	Hydrostatic Level Meter including sensor, transmitter, 3 channel relay outputs, and mounting materials (Filtration Tanks)				
65	Supply	No	9	17 900,00	R 161 100,00
66	Install	No	9	1 438,00	R 12 942,00
	Hydrostatic Level Meter including sensor, transmitter, 3 channel relay outputs, and mounting materials (Membrane Tank Feed Sump)				
67	Supply	No	2	17 900,00	R 35 800,00
68	Install	No	2	1 438,00	R 2 876,00
	Hydrostatic Level Meter including sensor, transmitter, 3 channel relay outputs, and mounting materials (Mixed Liquor Channel)				
69	Supply	No	1	17 900,00	R 17 900,00
70	Install	No	1	1 438,00	R 1 438,00
	Hydrostatic Level Meter including sensor, transmitter, and mounting materials (Scum Was Membrane Tank)				
71	Supply	No	1	17 900,00	R 17 900,00
72	Install	No	1	1 438,00	R 1 438,00
	Ultrasonic Level Meter including sensor, transmitter, and mounting materials (Permeate Back Pulse Tank)				
73	Supply	No	1	16 427,00	R 16 427,00
74	Install	No	1	1 438,00	R 1 438,00
Carried forward / ...					R 5 925 936,00

ITEM	DESCRIPTION	UNIT	QTY	PRICE R c	AMOUNT R c
Brought forward / ...					R 5 925 936,00
	Ultrasonic Level Meter including sensor, transmitter, and mounting materials (Service Water Tank)				
75	Supply	No	1	16 427,00	R 16 427,00
76	Install	No	1	1 438,00	R 1 438,00
	Hydrostatic Level Switch including sensor, and mounting materials (Scum Was Membrane Tank)				
77	Supply	No	1	17 900,00	R 17 900,00
78	Install	No	1	1 438,00	R 1 438,00
	Conductive Probe Level Switch including sensor, high and low relay outputs, and mounting materials (Filtration Tanks)				
79	Supply	No	18	9 006,00	R 162 108,00
80	Install	No	18	788,00	R 14 184,00
	Float Level Switch including mounting materials (Permeate and service tank)				
81	Supply	No	3	3 884,00	R 11 652,00
82	Install	No	3	403,00	R 1 209,00
	Pressure Piezoelectric/Capacitive Transmitter complete, including sensor, transmitter, and mounting materials (Drain Pump)				
83	Supply	No	3	10 146,00	R 30 438,00
84	Install	No	3	788,00	R 2 364,00
	Pressure Piezoelectric/Capacitive Transmitter complete, including sensor, transmitter, and mounting materials (Scum Pump)				
85	Supply	No	3	10 146,00	R 30 438,00
86	Install	No	3	788,00	R 2 364,00
Carried forward / ...					R 6 217 896,00

ITEM	DESCRIPTION	UNIT	QTY	PRICE R	C	AMOUNT R	C
Brought forward / ...						R	6 217 896,00
	Pressure Piezoelectric/Capacitive Transmitter complete, including sensor, transmitter, and mounting materials (Back pulse pumps)						
87	Supply	No	18	10 146,00		R	182 628,00
88	Install	No	18	788,00		R	14 184,00
	Pressure Piezoelectric/Capacitive Transmitter complete, including sensor, transmitter, and mounting materials (Air Plant)						
89	Supply	No	5	10 146,00		R	50 730,00
90	Install	No	5	788,00		R	3 940,00
	Pressure Piezoelectric/Capacitive Transmitter complete, including sensor, transmitter, and mounting materials (Service Water / Wash Water)						
91	Supply	No	4	10 146,00		R	40 584,00
92	Install	No	4	788,00		R	3 152,00
	Hydrostatic Pressure Transmitter complete, including sensor, transmitter, and mounting materials(Service Water / Wash Water)						
93	Supply	No	9	32 709,00		R	294 381,00
94	Install	No	9	1 438,00		R	12 942,00
	Pressure Piezoelectric / Capactive Switch complete including mounting materials (Scum Spray Water)						
95	Supply	No	1	10 146,00		R	10 146,00
96	Install	No	1	788,00		R	788,00
	Pressure Piezoelectric / Capactive Switch complete including mounting materials (Vacum Ejector Priming)						
97	Supply	No	1	10 146,00		R	10 146,00
98	Install	No	1	788,00		R	788,00
Carried forward / ...						R	6 842 305,00

ITEM	DESCRIPTION	UNIT	QTY	PRICE R c	AMOUNT R c
Brought forward / ...					R 6 842 305,00
	Pressure Piezoelectric / Capactive Switch complete including mounting materials (Back pulse pumps)				
99	Supply	No	18	10 146,00	R 182 628,00
100	Install	No	18	788,00	R 14 184,00
	Pressure Piezoelectric / Capactive Switch complete including mounting materials (Air Plant)				
101	Supply	No	8	10 146,00	R 81 168,00
102	Install	No	8	788,00	R 6 304,00
	Temperature Meter including sensor, transmitter, and mounting materials (Permeate Line)				
103	Supply	No	1	11 356,00	R 11 356,00
104	Install	No	1	788,00	R 788,00
	Temperature Meter including sensor, transmitter, and mounting materials (Final Effluent)				
105	Supply	No	1	11 356,00	R 11 356,00
106	Install	No	1	788,00	R 788,00
	Inductive Proximity Sensor complete including mounting materials (Monitored Actuated Valves)				
107	Supply	No	150	863,00	R 129 450,00
108	Install	No	150	317,00	R 47 550,00
	Linear Variable Diffirential Position Transmitter (in conjunction with mechanical equipment) complete including sensor, transmitter, and mounting materials (MBR Tank Feed Sump Gate)				
109	Supply	No	1	20 125,00	R 20 125,00
110	Install	No	1	788,00	R 788,00
Carried forward / ...					R 7 348 790,00

ITEM	DESCRIPTION	UNIT	QTY	PRICE R c	AMOUNT R c
Brought forward / ...					R 7 348 790,00
	Linear Variable Diffirential Position Transmitter (in conjunction with mechanical equipment) complete including sensor, transmitter, and mounting materials (Mixed Liquor Recycle				
111	Supply	No	1	20 125,00	R 20 125,00
112	Install	No	1	788,00	R 788,00
	MBR - Citric Acid Dosing				
	Coriolis Mass Flow meters including sensor, transmitter and mounting materials (CIP Dosing)				
113	Supply	No	1	157 262,00	R 157 262,00
114	Install	No	1	10 350,00	R 10 350,00
	Electromagnetic Flow meter including sensor, transmitter and mounting materials (CIP Dosing)				
115	Supply	No	1	19 907,00	R 19 907,00
116	Install	No	1	4 083,00	R 4 083,00
	Ultrasonic Level Meter including sensor, transmitter, and mounting materials (Mixer Tank)				
117	Supply	No	1	16 427,00	R 16 427,00
118	Install	No	1	1 438,00	R 1 438,00
	Float Level Switch including mounting materials (Mixer Tank)				
119	Supply	No	3	3 884,00	R 11 652,00
120	Install	No	3	403,00	R 1 209,00
	MBR - Sodium Hypochrolite Dosing				
	Coriolis Mass Flow meters including sensor, transmitter and mounting materials (SH Dosing)				
121	Supply	No	2	157 262,00	R 314 524,00
122	Install	No	2	10 350,00	R 20 700,00
Carried forward / ...					R 7 927 255,00

ITEM	DESCRIPTION	UNIT	QTY	PRICE R	C	AMOUNT R	C
Brought forward / ...						R	7 927 255,00
	Ultrasonic Level Meter including sensor, transmitter, and mounting materials (Mixer Tank)						
123	Supply	No	1	16 427,00		R	16 427,00
124	Install	No	1	1 438,00		R	1 438,00
	Float Level Switch including mounting materials (Mixer Tank)						
125	Supply	No	1	3 884,00		R	3 884,00
126	Install	No	1	403,00		R	403,00
	Pressure Piezoelectric / Capactive Switch complete including mounting materials (Dosing Pressure)						
127	Supply	No	1	10 146,00		R	10 146,00
128	Install	No	1	788,00		R	788,00
	Ferric Chloride Dosing						
	Coriolis Mass Flow meters including sensor, transmitter and mounting materials (CAS A/B Dosing)						
129	Supply	No	2	157 262,00		R	314 524,00
130	Install	No	2	10 350,00		R	20 700,00
	Coriolis Mass Flow meters including sensor, transmitter and mounting materials (MBR-A/B Dosing)						
131	Supply	No	2	157 262,00		R	314 524,00
132	Install	No	2	10 350,00		R	20 700,00
	Coriolis Mass Flow meters including sensor, transmitter and mounting materials (PST Dosing)						
133	Supply	No	1	157 262,00		R	157 262,00
134	Install	No	1	10 350,00		R	10 350,00
Carried forward / ...						R	8 798 401,00

ITEM	DESCRIPTION	UNIT	QTY	PRICE R c	AMOUNT R c
Brought forward / ...					R 8 798 401,00
	Ultrasonic Level Meter including sensor, transmitter, and mounting materials (Mixer Tanks)				
135	Supply	No	2	16 427,00	R 32 854,00
136	Install	No	2	1 438,00	R 2 876,00
	Float Level Switch including mounting materials (Mixer Tanks)				
137	Supply	No	2	3 884,00	R 7 768,00
138	Install	No	2	403,00	R 806,00
	Sodium Hydroxide Dosing				
	Coriolis Mass Flow meters including sensor, transmitter and mounting materials (CAS A/B Dosing)				
139	Supply	No	2	157 262,00	R 314 524,00
140	Install	No	2	10 350,00	R 20 700,00
	Coriolis Mass Flow meters including sensor, transmitter and mounting materials (MBR A/B Dosing)				
141	Supply	No	2	157 262,00	R 314 524,00
142	Install	No	2	10 350,00	R 20 700,00
	Coriolis Mass Flow meters including sensor, transmitter and mounting materials (PST Dosing)				
143	Supply	No	1	157 262,00	R 157 262,00
144	Install	No	1	10 350,00	R 10 350,00
	Ultrasonic Level Meter including sensor, transmitter, and mounting materials (Mixer Tanks)				
145	Supply	No	2	16 427,00	R 32 854,00
146	Install	No	2	1 438,00	R 2 876,00
Carried forward / ...					R 9 716 495,00

ITEM	DESCRIPTION	UNIT	QTY	PRICE R c	AMOUNT R c
Brought forward / ...					R 9 716 495,00
	Float Level Switch including mounting materials (Mixer Tanks)				
147	Supply	No	2	3 884,00	R 7 768,00
148	Install	No	2	403,00	R 806,00
	Fine Screens				
	Electromagnetic Flow meter including sensor, transmitter and mounting materials (MBR A Flow)				
149	Supply	No	1	87 272,00	R 87 272,00
150	Install	No	1	4 083,00	R 4 083,00
	Electromagnetic Flow meter including sensor, transmitter and mounting materials (MBR B Flow)				
151	Supply	No	1	186 519,00	R 186 519,00
152	Install	No	1	4 083,00	R 4 083,00
	Thermal Mass Flow Switch including and mounting materials (Wash Water)				
153	Supply	No	1	45 589,00	R 45 589,00
154	Install	No	1	788,00	R 788,00
	Ultrasonic Level Meter including sensor, transmitter, and mounting materials (Wash Water Sump)				
155	Supply	No	1	16 427,00	R 16 427,00
156	Install	No	1	1 438,00	R 1 438,00
	Conductive Probe Level Switch including sensor, high and low relay outputs, and mounting materials (Fine Screens)				
157	Supply	No	6	9 006,00	R 54 036,00
158	Install	No	6	788,00	R 4 728,00
Carried forward / ...					R 10 130 032,00

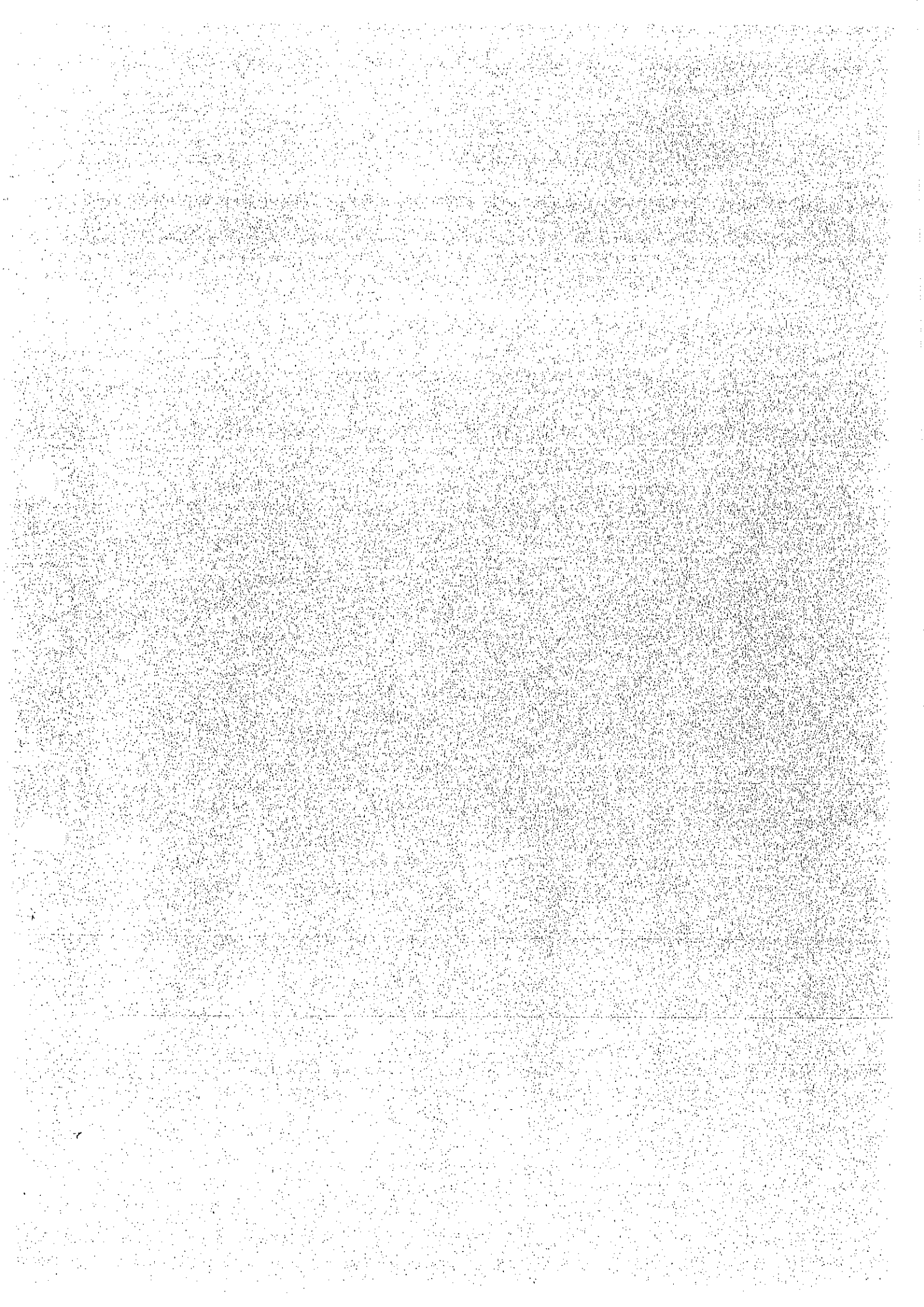
ITEM	DESCRIPTION	UNIT	QTY	PRICE R c	AMOUNT R c
Brought forward / ...					R 10 130 032,00
	Pressure Piezoelectric/Capacitive Transmitter complete, including sensor, transmitter, and mounting materials (Wash Water)				
159	Supply	No	1	10 146,00	R 10 146,00
160	Install	No	1	788,00	R 788,00
	Pressure Piezoelectric/Capacitive Transmitter complete, including sensor, transmitter, and mounting materials (Screenings Compactor)				
161	Supply	No	2	10 146,00	R 20 292,00
162	Install	No	2	788,00	R 1 576,00
	Pressure Switch complete including mounting materials (Wash Water Line)				
163	Supply	No	1	7 716,00	R 7 716,00
164	Install	No	1	788,00	R 788,00
	Proximity Sensor (in conjunction with mechanical torque switch) complete including mounting materials (Screenings Conveyor overtorque)				
165	Supply	No	6	863,00	R 5 178,00
166	Install	No	6	317,00	R 1 902,00
	Proximity Sensor (in conjunction with mechanical torque switch) complete including mounting materials (Screw Conveyor overtorque)				
167	Supply	No	6	863,00	R 5 178,00
168	Install	No	6	317,00	R 1 902,00
	Proximity Sensor (in conjunction with mechanical torque switch) complete including mounting materials (MBR Fine Screw Press Overtorque)				
169	Supply	No	2	3,00	R 6,00
170	Install	No	2	317,00	R 634,00
Carried forward / ...					R 10 186 138,00

ITEM	DESCRIPTION	UNIT	QTY	PRICE R c	AMOUNT R c
Brought forward / ...					R 10 186 138,00
	Proximity Sensor (in conjunction with mechanical torque switch) complete including mounting materials (MBR Fine Screen Press Overtorque)				
171	Supply	No	2	863,00	R 1 726,00
172	Install	No	2	317,00	R 634,00
	Proximity Sensor complete including mounting materials (Skip Dollies)				
173	Supply	No	4	863,00	R 3 452,00
174	Install	No	4	317,00	R 1 268,00
	Proximity Sensor (in conjunction with mechanical torque switch) complete including mounting materials (Skip Dollies)				
175	Supply	No	2	863,00	R 1 726,00
176	Install	No	2	317,00	R 634,00
	Linear Variable Diffirential Position Transmitter (in conjunction with mechanical equipment) complete including sensor, transmitter, and mounting materials (Screened Waste Water Sluice				
177	Supply	No	3	20 125,00	R 60 375,00
178	Install	No	3	788,00	R 2 364,00
	<u>General</u>				
	Room Temperature sensor for MCC Rooms				
179	Supply	No	2	11 356,00	R 22 712,00
180	Install	No	2	788,00	R 1 576,00
	Instrumentation and Control junction box for Solenoid Valve Station complete with terminations and accessories etc.				
181	Supply	No	20	14 375,00	R 287 500,00
182	Install	No	20	432,00	R 8 640,00
Carried forward / ...					R 10 578 745,00

ITEM	DESCRIPTION	UNIT	QTY	PRICE R c	AMOUNT R c
Brought forward / ...					R 10 578 745,00
	Instrumentation and Control junction box complete with terminations and accessories etc.				
183	Supply	No	50	478,00	R 23 900,00
184	Install	No	50	156,00	R 7 800,00
	Instrumentation Transmitter outdoor housing complete with terminations and accessories etc.				
185	Supply	No	50	18 515,00	R 925 750,00
186	Install	No	50	2 036,00	R 101 800,00
	Allow for all costs and expenses in connection with pre-commsissioning in terms of FIDIC and Part C3: Scope of Work for the following:				
187	For instrumentation scheduled above	Sum	1	135 700,00	R 135 700,00
188	Additional instrumentation as directed by the Engineer	Provisional Sum		-	R 175 000,00
189	Percentage adjustment on Item 188 for Contractor's design, sourcing quotes, superintendence, and for overheads and profit (state as percentage an extend as amount)	%	175 000	15,00%	R 26 250,00
190	**All other items not included above but which are nevertheless necessary to meet the Scope of Work and/or are required for the proper, safe and effective operation of the plant (Specify):-**	Item			R -
TOTAL OF SCHEDULE E11 CARRIED TO SUMMARY					R 11 974 945,00

ITEM	DESCRIPTION	UNIT	QTY	RATE R	RATE C	AMOUNT R	AMOUNT C
	SCHEDULE E12a						
	AREA LIGHTING						
	Allow for all the costs and expenses in connection with the following:						
1	Removal and decommisioning of existing streetlight and concrete pole	No	5	R	1 350,00	R	6 750,00
2	Refurbishment of existing streetlights	No	30	R	1 600,00	R	48 000,00
3	Refurbishment of existing high mast lights	No	6	R	2 950,00	R	17 700,00
3b	Decommissioning, moving, reinstallation and recommissioning of existing high mast lights in new location	No	1	R	61 200,00	R	61 200,00
	Allow for all the costs and expenses in connection with the design, manufacture, painting, supplying, delivery, offloading and storage of the following materials and equipment:						
	Refered to as "Supply" in this schedule						
	Allow for all costs and expenses in connection with the Site installation in terms of in terms of FIDIC and Part C3: Scope of Work (excluding pre-commissioning) for the following:						
	Refered to as "Install" in this schedule						
	Street and Area Lighting						
	70W HPS streetlight						
4	Supply	No	90	R	1 910,00	R	171 900,00
5	Install	No	90	R	250,00	R	22 500,00
	100W HPS streetlight						
6	Supply	No	1	R	1 917,00		Rate Only
7	Install	No	1	R	420,00		Rate Only
	7m high GRP pole complete						
8	Supply	No	90	R	5 950,00	R	535 500,00
9	Install	No	90	R	1 200,00	R	108 000,00
	Wall mounted Photocell (Day/night switch)						
10	Supply	No	4	R	570,00	R	2 280,00
Carried forward / ...						R	973 830,00

ITEM	DESCRIPTION	UNIT	QTY	RATE R c	AMOUNT R c
Brought forward / ...					R 973 830,00
11	Install	No	4	R 250,00	R 1 000,00
12	Upgrading of existing area lighting as directed by the Engineer	Prov	1		175 400,00
13	Percentage adjustment on Item 12 for Contractor's design, sourcing quotes, superintendence, and for overheads and profit (state as percentage an extend as amount)	%	175 400	15,00%	R 26 310,00
	Kiosks				
	Area lighting Distribution Kiosk (Kiosk DP)				
14	Supply	No	1	R 3 880,00	R 3 880,00
15	Install	No	1	R 900,00	R 900,00
	Area lighting Distribution Kiosk (Kiosk CR)				
16	Supply	No	1	R 3 880,00	R 3 880,00
17	Install	No	1	R 900,00	R 900,00
	Allow for all costs and expenses in connection with pre-commsissioning in terms of FIDIC and Part C3: Scope of Work for the following:				
18	For equipment scheduled above	Sum	1	25 000,00	R 25 000,00
19	Certificates of compliance	Sum	1	R 7 800,00	R 7 800,00
20	**All other items not included above but which are nevertheless necessary to meet the Scope of Work and/or are required for the proper, safe and effective operation of the plant (Specify):-**	Item			R -
TOTAL OF SCHEDULE E12a CARRIED TO SUMMARY					1 218 900,00



SECTION B OF THE WORKS: CAS A & B PLANTS ELECTRICAL AND ELECTRONIC EQUIPMENT

Continued Overleaf

ITEM	DESCRIPTION	UNIT	QTY	RATE R c	AMOUNT R c
	SCHEDULE E13				
	REFURBISHMENT AND UPGRADES				
	Allow for all the costs and expenses in connection with the design, manufacture, painting, supplying, delivery, offloading and storage of the following materials and equipment:				
	Refered to as "Supply" in this schedule				
	Allow for all costs and expenses in connection with the Site installation in terms of in terms of FIDIC and Part C3: Scope of Work (excluding pre-commissioning) for the following:				
	Refered to as "Install" in this schedule				
	Allow for all costs and expenses in connection with pre-commsissioning in terms of FIDIC and Part C3: Scope of Work for the following:				
	Refered to as "Pre-Commissioning" in this schedule				
	LV ELECTRICAL INSTALLATION				
	Submersible Mixers replacement				
1	MCC starter cubicle changes or upgrades to incorporate pump changes, as directed by the Engineer	Prov Sum			80 000,00
2	Percentage adjustment on Item 1 for Contractor's design, sourcing quotes, superintendence, and for overheads and profit (state as percentage an extend as amount)	%	80 000	15,00%	R 12 000,00
3	Disconnecting cable at motor, reconnection to new motor and re-commissioning	Sum	16	410,00	R 6 560,00
	CAS reactor aerators replacement			-	-
	55kW IP54/55 VFC (including load side harmonic filter) for Aerator			-	-
4	Supply	Sum	8	99 300,00	R 794 400,00
5	Install	Sum	8	1 650,00	R 13 200,00
6	Pre-commissioning	Sum	8	350,00	R 2 800,00
Carried forward / ...					R 908 960,00

ITEM	DESCRIPTION	UNIT	QTY	RATE R	C	AMOUNT R	C
Brought forward / ...						R	908 960,00
7	Refurbishment and reconfiguration to existing MCC DOL cubicle and starter to incorporate new VFC	Sum	8	5 990,00		R	47 920,00
8	Disconnecting cable at motor, reconnection to new motor and re-commissioning	Sum	8	410,00		R	3 280,00
	75kW IP54/55 VFC (including load side harmonic filter) for Aerator						
9	Supply	Sum	6	130 725,00		R	784 350,00
10	Install	Sum	6	1 850,00		R	11 100,00
11	Pre-commissioning	Sum	6	350,00		R	2 100
12	Refurbishment and reconfiguration to existing MCC DOL cubicle and starter to incorporate new VFC	Sum	6	7 540,00		R	45 240,00
13	Disconnecting cable at motor, reconnection to new motor and re-commissioning	Sum	6	440,00		R	2 640,00
	90kW IP54/55 VFC (including load side harmonic filter) for Aerator						
14	Supply	Sum	6	143 363,00		R	860 178,00
15	Install	Sum	6	2 080,00		R	12 480,00
16	Pre-commissioning	Sum	6	350,00		R	2 100,00
17	Refurbishment and reconfiguration to existing MCC DOL cubicle and starter to incorporate new VFC	Sum	6	7 540,00		R	45 240
18	Disconnecting cable at motor, reconnection to new motor and re-commissioning	Sum	6	530,00		R	3 180,00
	A-Recycle Pumps replacement						
19	MCC starter cubicle changes or upgrades to incorporate pump changes, as directed by the Engineer	Prov Sum					100 000,00
20	Percentage adjustment on Item 19 for Contractor's design, sourcing quotes, superintendence, and for overheads and profit (state as percentage an extend as amount)	%	100 000	15,00%		R	15 000,00
Carried forward / ...						R	2 843 768,00

ITEM	DESCRIPTION	UNIT	QTY	RATE R c	AMOUNT R c
Brought forward / ...					R 2 843 768,00
21	Disconnecting cable at motor, reconnection to new motor and re-commissioning	Sum	16	110,00	R 1 760,00
	New A-Recycle pumps				-
	Population of existing MCC spare cubicle for new A-Recycle pump starter (18.5 kW DOL)				-
22	Supply	Sum	2	17 470,00	R 34 940,00
23	Install	Sum	2	750,00	R 1 500,00
24	Pre-commissioning	Sum	2	500,00	R 1 000,00
	(Cabling and cabling support systems for new A-recycle pumps are included under Schedules E3 and E4)				-
	Secondary Settling Tanks				-
	Replacement of existing SST bridges				-
25	Replacement of power cabling, control cabling, bridge slip rings and cable support systems for each SST bridge and associated bridge motor replacement	Sum	8	9 860,00	R 78 880,00
	Population of existing MCC spare cubicle for new SST motor drive				-
26	Supply	Sum	4	16 580,00	R 66 320,00
27	Install	Sum	4	900,00	R 3 600,00
28	Pre-commissioning	Sum	4	300,00	R 1 200,00
	(Cabling and cabling support systems for new SSTs are included under Schedules E3 and E4)				
Carried forward / ...					R 3 032 968,00

ITEM	DESCRIPTION	UNIT	QTY	RATE R c	AMOUNT R c
Brought forward / ...					R 3 032 968,00
	RAS Pumps replacement				
29	MCC starter cubicle changes or upgrades to incorporate pump changes, as directed by the Engineer	Prov Sum			100 000,00
30	Percentage adjustment on Item 29 for Contractor's design, sourcing quotes, superintendence, and for overheads and profit (state as percentage an extend as amount)	%	100 000	15,00%	R 15 000,00
31	Disconnecting cable at motor, reconnection to new motor and re-commissioning	Sum	4	110,00	R 440,00
	WAS Pumps replacement				
32	MCC starter cubicle changes or upgrades to incorporate pump changes, as directed by the Engineer	Prov Sum			80 000,00
33	Percentage adjustment on Item 32 for Contractor's design, sourcing quotes, superintendence, and for overheads and profit (state as percentage an extend as amount)	%	80 000	15,00%	R 12 000,00
34	Disconnecting cable at motor, reconnection to new motor and re-commissioning	Sum	4	110,00	R 440,00
	Scum Pumps replacement				
35	MCC starter cubicle changes or upgrades to incorporate pump changes, as directed by the Engineer	Prov Sum			30 000
36	Percentage adjustment on Item 35 for Contractor's design, sourcing quotes, superintendence, and for overheads and profit (state as percentage an extend as amount)	%	30 000	15,00%	R 4 500,00
37	Disconnecting cable at motor, reconnection to new motor and re-commissioning	Sum	2	110,00	R 220,00
	Population of existing MCC spare cubicle for new Scum removal pump (1.5kW DOL)				
38	Supply	Sum	4	13 200,00	R 52 800,00
Carried forward / ...					R 3 328 368,00

ITEM	DESCRIPTION	UNIT	QTY	RATE R	c	AMOUNT R	c
Brought forward / ...						R	3 328 368,00
39	Install	Sum	4	750,00		R	3 000,00
40	Pre-commissioning	Sum	4	500,00		R	2 000,00
	(Cabling and cabling support systems for new SSTs are included under Schedules E3 and E4)						
	Electrical Actuators and Telescopic modulating valves						
41	MCC starter cubicle changes or upgrades to incorporate pump changes, as directed by the Engineer	Prov Sum					40 000,00
42	Percentage adjustment on Item 41 for Contractor's design, sourcing quotes, superintendence, and for overheads and profit (state as percentage an extend as amount)	%	40 000	15,00%		R	6 000,00
43	Disconnecting cable at motor, reconnection to new motor and re-commissioning	Sum	12	110,00		R	1 320,00
	Field Control Stations						
44	Supply and install Local E-Stop/Stop/Start Control Station (excluding pedestal mount)	No	68	510,00		R	34 680,00
45	Supply and install Local E-Stop/Stop/Start Control Station (mounted against handrailing of SST bridge)	No	12	670,00		R	8 040,00
46	Supply and install Local Forward/Reverse Station (excluding pedestal mount)	No	1	490,00			Rate Only
	GENERAL LV ELECTRICAL INSTALLATION						
47	Refurbishment of general items of the CAS plant LV electrical installation as directed by the Engineer	Prov Sum					175 000,00
48	Percentage adjustment on Item 47 for Contractor's design, sourcing quotes, superintendence, and for overheads and profit (state as percentage an extend as amount)	%	175 000	15,00%		R	26 250,00
49	Certificates of compliance for all new and modified switchgear panels included this Section B of the works	Sum	1	3 600,00		R	3 600,00
Carried forward / ...						R	3 628 258,00

ITEM	DESCRIPTION	UNIT	QTY	RATE R c	AMOUNT R c
Brought forward / ...					R 3 628 258,00
	ELECTRONIC INSTALLATION				
	PLC - CAS PLANT A and B				
	Replacement of PLC complete (including allowance for additional equipment added under this Section B of the Works, in order to achieve the intended control philosophy of this plant)				
50	Supply	No	2	162 100,00	R 324 200,00
51	Install	No	2	21 400,00	R 42 800,00
52	Supply and Install PLC Software	Sum	2	500,00	R 1 000
53	Programming of PLC	Sum	2	52 000,00	R 104 000,00
54	Simulation Testing of PLC Programming	Sum	2	3 900,00	R 7 800,00
55	Pre-commissioning	Sum	2	13 000,00	R 26 000,00
	SCADA Software				
56	Mimics Configuration at Zandvliet WWTW Main Control Station (Main SCADA) upgrade to include additional equipment added under this Section B of the Works	Sum	1	43 750,00	R 43 750,00
	INDUSTRIAL NETWORK INSTALLATION				
57	Refurbishment of CAS plant network cabling and switches installation as directed by the Engineer	Prov Sum			175 000,00
58	Percentage adjustment on item 57 for Contractor's design, sourcing quotes, superintendence, and for overheads and profit (state as percentage an extend as amount)	%	175 000	15,00%	R 26 250,00
	GENERAL ELECTRONIC INSTALLATION				
59	Refurbishment of general items of the CAS plant Electronic installation as directed by the Engineer	Prov Sum			175 000,00
60	Percentage adjustment on item 59 for Contractor's design, sourcing quotes, superintendence, and for overheads and profit (state as percentage an extend as amount)	%	175 000	15,00%	R 26 250,00
Carried forward / ...					R 4 580 308,00

ITEM	DESCRIPTION	UNIT	QTY	RATE R c	AMOUNT R c
Brought forward / ...					R 4 580 308,00
	INSTRUMENTATION				
61	Refurbishment of instrumenation of the CAS plant installation as directed by the Engineer	Prov Sum			175 000,00
62	Percentage adjustment on item 61 for Contractor's design, sourcing quotes, superintendence, and for overheads and profit (state as percentage an extend as amount)	%	175 000	15,00%	R 26 250,00
	Ultrasonic Level Meter including sensor, transmitter and mounting materials (RAS / WAS Pump Station)				
63	Supply	No	4	16 427,00	R 65 708,00
64	Install	No	4	1 438,00	R 5 752,00
	Level Switch complete including mounting materials (RAS / WAS Pump Station)				
65	Supply	No	4	12 944,00	R 51 776,00
66	Install	No	4	403,00	R 1 612,00
	Flow Switch complete including mounting materials (WAS Pump Station)				
67	Supply	No	3	5 252,00	R 15 756,00
68	Install	No	3	317,00	R 951,00
	Pressure Switch complete including mounting materials (WAS Pump Station)				
69	Supply	No	3	7 716,00	R 23 148,00
70	Install	No	3	788,00	R 2 364,00
	Pressure Transmitter complete including mounting materials (WAS Pump Station)				
71	Supply	No	3	22 356,00	R 67 068,00
72	Install	No	3	788,00	R 2 364,00
Carried forward / ...					R 5 018 057,00

ITEM	DESCRIPTION	UNIT	QTY	RATE R c	AMOUNT R c
Brought forward / ...					R 5 018 057,00
	Electromagnetic Flow Meter including sensor, transmitter and mounting materials (WAS common delivery)				
73	Supply	No	1	31 372,00	R 31 372,00
74	Install	No	1	4 083,00	R 4 083,00
	Analytical TSS Meter including sensor, transmitter and mounting materials (WAS common delivery)				
75	Supply	No	1	137 759,00	R 137 759,00
76	Install	No	1	17 250,00	R 17 250
	Area Velocity Flow Meter including sensor, transmitter and mounting materials (Settled Sewage Channel to CAS Reactor Anoxic zone)				
77	Supply	No	2	42 294,00	R 84 588,00
78	Install	No	2	4 025,00	R 8 050,00
	Analytical Turbidity Optical Meter including sensor, transmitter and mounting materials (CAS Reactor Anoxic Basin, Aeration Basin)				
79	Supply	No	8	53 879,00	R 431 032,00
80	Install	No	8	10 350,00	R 82 800,00
	Sludge Blanket Level meter including sensor, transmitter and mounting materials (Secondary Settling tanks)				
81	Supply	No	12	81 880,00	R 982 560,00
82	Install	No	12	10 350,00	R 124 200,00
	Proximity Sensor (in conjunction with mechanical torque switch on SST bridge) complete including mounting materials				
83	Supply	No	12	7 705,00	R 92 460,00
84	Install	No	12	317,00	R 3 804,00
Carried forward / ...					R 7 018 015,00

ITEM	DESCRIPTION	UNIT	QTY	RATE R c	AMOUNT R c
Brought forward / ...					R 7 018 015,00
	CHLORINATION				
	MCC CHLORINATION complete				
85	Supply	Sum	1	252 140,00	R 252 140,00
86	Install	Sum	1	4 000,00	R 4 000,00
87	Pre-commissioning	Sum	1	3 000,00	R 3 000,00
	Temporary Chlorination Facility				
88	Provision of temporary chlorination facility control during the construction of new chlorination facility	Prov Sum	1		175 000,00
89	Percentage adjustment on item 88 for Contractor's design, sourcing quotes, superintendence, and for overheads and profit (state as percentage an extend as amount)	%	175 000	15,00%	R 26 250,00
	REMOTE IO - CHLORINATION				
	New remote IO complete (to be connected to CAS A PLC)				
90	Remote IO panel (integrated into Chlorination MCC) - Supply	No	1	16 880,00	R 16 880,00
91	Remote IO panel (integrated into Chlorination MCC) - Install	No	1	5 500,00	R 5 500,00
92	Remote IO Hardware (integrated into Chlorination MCC) - Supply	No	1	87 600,00	R 87 600,00
93	Remote IO hardware (integrated into Chlorination MCC) - Install	No	1	10 300,00	R 10 300,00
94	Supply and Install Remote I/O Software	Sum	1	1 500,00	R 1 500,00
95	Programming of Remote I/O	Sum	1	20 740,00	R 20 740,00
96	Simulation Testing of Programming	Sum	1	3 690,00	R 3 690,00
97	Pre-commissioning	Sum	1	7 850,00	R 7 850,00
Carried forward / ...					R 7 632 465,00

ITEM	DESCRIPTION	UNIT	QTY	RATE R c	AMOUNT R c
Brought forward / ...					R 7 632 465,00
	Chlorination network switch (including fibre optic media converters, fibre terminations, panel) complete				
98	Supply	No	1	15 210,00	R 15 210,00
99	Install	No	1	1 500,00	R 1 500,00
	Pressure Transmitter complete including mounting materials (Chlorination)				
100	Supply	No	8	10 146,00	R 81 168,00
101	Install	No	8	788,00	R 6 30
	Proximity Sensor complete including mounting materials (Chlorination)				
102	Supply	No	2	5 175,00	R 10 350,00
103	Install	No	2	317,00	R 634,00
	Analytical Cl2 Meter including sensor, transmitter and mounting materials (Chlorination and Final Effluent)				
104	Supply	No	3	37 699,00	R 113 097,00
105	Install	No	3	10 350,00	R 31 050,00
	Analytical Turbidity Optical Meter including sensor, transmitter and mounting materials (Final				
106	Supply	No	1	53 879,00	R 53 879,00
107	Install	No	1	10 350,00	R 10 350,00
	Flow Switch complete including mounting materials (Chlorination)				
108	Supply	No	2	5 252,00	R 10 504,00
109	Install	No	2	788,00	R 1 576,00
Carried forward / ...					R 7 968 087,00

ITEM	DESCRIPTION	UNIT	QTY	RATE R c	AMOUNT R c
Brought forward / ...					R 7 968 087,00
	Pressure Transmitter complete including mounting materials (Chlorination and Instrument Air Supply)				
110	Supply	No	3	10 146,00	R 30 438,00
111	Install	No	3	788,00	R 2 364,00
	Pressure Transmitter complete including mounting materials (Instrument Air Supply)				
112	Supply	No	1	10 146,00	R 10 146,00
113	Install	No	1	788,00	R 788,00
	Ultrasonic Level Meter including sensor, transmitter and mounting materials (Final Effluent Flow meter)				
114	Supply	No	2	16 427,00	R 32 854,00
115	Install	No	2	1 438,00	R 2 876,00
	Allow for all costs and expenses in connection with pre-commsissioning in terms of FIDIC and Part C3: Scope of Work for the following:				
116	For equipment scheduled above and not billed seperately	Sum	1	106 500,00	R 106 500,00
117	**All other items not included above but which are nevertheless necessary to meet the Scope of Work and/or are required for the proper, safe and effective operation of the plant (Specify):-**	Item			R - R -
TOTAL OF SCHEDULE E13 CARRIED TO SUMMARY					8 154 053,00

Section C OF THE WORKS: MODULE A ELECTRICAL AND ELECTRONIC EQUIPMENT

Continued Overleaf

ITEM	DESCRIPTION	UNIT	QTY	RATE R c	AMOUNT R c
	SCHEDULE E14				
	REFURBISHMENT AND UPGRADES				
	Allow for all the costs and expenses in connection with the design, manufacture, painting, supplying, delivery, offloading and storage of the following materials and equipment:				
	Refered to as "Supply" in this schedule				
	Allow for all costs and expenses in connection with the Site installation in terms of in terms of FIDIC and Part C3: Scope of Work (excluding pre-commissioning) for the following:				
	Refered to as "Install" in this schedule				
	Allow for all costs and expenses in connection with pre-commsissioning in terms of FIDIC and Part C3: Scope of Work for the following:				
	Refered to as "Pre-Commissioning" in this schedule				
	LV ELECTRICAL INSTALLATION				
	Surface Mounted Mixers replacement				
1	Replacement of motor starter cubicle and associated panel conductors, from 4kW DOL to 7.5kW DOL	Sum	12	14 100,00	R 169 200,00
2	Disconnecting cable at motor, reconnection to new motor and re-commissioning (LV Cabling and cabling support systems are included under Schedules E3 and E4)	Sum	12	110,00	R 1 320 00
	A-Recycle Pumps replacement				
3	MCC starter cubicle changes or upgrades to incorporate pump changes, as directed by the Engineer	Prov Sum			30 000,00
4	Percentage adjustment on Item 3 for Contractor's design, sourcing quotes, superintendence, and for overheads and profit (state as percentage an extend as amount)	%	30 000	15,00%	R 4 500,00
5	Disconnecting cable at motor, reconnection to new motor and re-commissioning	Sum	2	130,00	R 260,00
					R 205 280,0

Carried forward / ...

ITEM	DESCRIPTION	UNIT	QTY	RATE R c	AMOUNT R c
Brought forward / ...					R 205 280,00
	WAS Pumps replacement				
6	MCC starter cubicle changes or upgrades to incorporate pump changes, as directed by the Engineer	Prov Sum			30 000,00
7	Percentage adjustment on Item 6 for Contractor's design, sourcing quotes, superintendence, and for overheads and profit (state as percentage an extend as amount)	%	30 000	15,00%	R 4 500,00
8	Disconnecting cable at motor, reconnection to new motor and re-commissioning	Sum	2	110,00	R 220,00
	FBDA Blowers replacement				
9	MCC starter cubicle changes or upgrades to incorporate pump changes, as directed by the Engineer	Prov Sum			120 000,00
10	Percentage adjustment on Item 9 for Contractor's design, sourcing quotes, superintendence, and for overheads and profit (state as percentage an extend as amount)	%	120 000	15,00%	R 18 000,00
	Membrane Tank Feed Pumps replacement				
11	Replacement of motor starter cubicle and associated panel conductors, from 37kW VFC to 55kW VFC (with line side reactor)	Sum	3	89 660,00	R 268 980,00
12	Disconnecting cable at motor, reconnection to new motor and re-commissioning	Sum	3	210,00	R 630,00
	(LV Cabling and cabling support systems are included under Schedules E3 and E4)				
	Air Scour Blowers replacement				
13	MCC starter cubicle changes or upgrades to incorporate pump changes, as directed by the Engineer	Prov Sum			120 000,00
14	Percentage adjustment on Item 13 for Contractor's design, sourcing quotes, superintendence, and for overheads and profit (state as percentage an extend as amount)	%	120 000	15,00%	R 18 000,00
Carried forward / ...					R 785 610,00

ITEM	DESCRIPTION	UNIT	QTY	RATE R c	AMOUNT R c
Brought forward / ...					R 785 610,00
	Membrane Tank Drain Pumps replacement				
15	MCC starter cubicle changes or upgrades to incorporate pump changes, as directed by the Engineer	Prov Sum			50 000,00
16	Percentage adjustment on Item 15 for Contractor's design, sourcing quotes, superintendence, and for overheads and profit (state as percentage an extend as amount)	%	50 000	15,00%	R 7 500,00
17	Disconnecting cable at motor, reconnection to new motor and re-commissioning	Sum	2	110,00	R 220,00
	MBR Permeate/Backpulse pumps replacement				
18	Replacement of motor starter cubicle and associated panel conductors, from 30kW VFC to 45kW VFC (with line side reactor)	Sum	6	72 570,00	R 435 420,00
19	Disconnecting cable at motor, reconnection to new motor and re-commissioning	Sum	6	180,00	R 1 080,00
	(LV Cabling and cabling support systems are included under Schedules E3 and E4)				
	Service Water / Ground Water Pumps replacement				
20	MCC starter cubicle changes or upgrades to incorporate pump changes, as directed by the Engineer	Prov Sum			75 000,00
21	Percentage adjustment on Item 20 for Contractor's design, sourcing quotes, superintendence, and for overheads and profit (state as percentage an extend as amount)	%	75 000	15,00%	R 11 250,00
	CIP Equipment replacement				
22	MCC starter cubicle changes or upgrades to incorporate pump changes, as directed by the Engineer	Prov Sum			150 000,00
23	Percentage adjustment on Item 22 for Contractor's design, sourcing quotes, superintendence, and for overheads and profit (state as percentage an extend as amount)	%	150 000	15,00%	R 22 500,00
Carried forward / ...					R 1 538 580,00

ITEM	DESCRIPTION	UNIT	QTY	RATE R c	AMOUNT R c
Brought forward / ...					R 1 538 580,00
	Compressed Air Equipment replacement				
24	MCC starter cubicle changes or upgrades to incorporate pump changes, as directed by the Engineer	Prov Sum			50 000,00
25	Percentage adjustment on Item 24 for Contractor's design, sourcing quotes, superintendence, and for overheads and profit (state as percentage an extend as amount)	%	50 000	15,00%	R 7 500,00
26	Disconnecting cable at motor, reconnection to new motor and re-commissioning	Sum	2	110,00	R 220,00
	Electrical Actuators				
27	MCC starter cubicle changes or upgrades to incorporate pump changes, as directed by the Engineer	Prov Sum			100 000,00
28	Percentage adjustment on Item 27 for Contractor's design, sourcing quotes, superintendence, and for overheads and profit (state as percentage an extend as amount)	%	100 000	15,00%	R 15 000,00
29	Disconnecting cable at motor, reconnection to new motor and re-commissioning	Sum	9	110,00	R 990,00
	Field Control Stations				
30	Supply and install Local E-Stop/Stop/Start Control Station (excluding pedestal mount)	No	35	610,00	R 21 350,00
31	Supply and install Local Forward/Reverse Station (excluding pedestal mount)	No	6	540,00	R 3 240,00
	GENERAL LV ELECTRICAL INSTALLATION				
32	Refurbishment of general items of the MBR-A plant LV electrical installation as directed by the Engineer	Prov Sum			175 000,00
33	Percentage adjustment on Item 32 for Contractor's design, sourcing quotes, superintendence, and for overheads and profit (state as percentage an extend as amount)	%	175 000	15,00%	R 26 250,00
Carried forward / ...					R 1 938 130,00

ITEM	DESCRIPTION	UNIT	QTY	RATE R c	AMOUNT R c
Brought forward / ...					R 1 938 130,00
	ELECTRONIC INSTALLATION				
	PLC - MBR-A				
	Replacement of PLC complete (including allowance for additional equipment added under this Section C of the Works, in order to achieve the intended control philosophy of this plant)				
34	Supply	No	1	224 100,00	R 224 100,00
35	Install	No	1	16 200,00	R 16 200,00
36	Supply and Install PLC Software	Sum	1	500,00	R 500,
37	Programming of PLC	Sum	1	6 370,00	R 6 370,00
38	Simulation Testing of PLC Programming	Sum	1	3 900,00	R 3 900,00
39	Pre-commissioning	Sum	1	3 900,00	R 3 900,00
	SCADA Hardware - MBR-A remote view				
40	Upgrade of SCADA hardware installation as directed by the Engineer	Prov Sum			175 000,00
41	Percentage adjustment on Item 40 for Contractor's design, sourcing quotes, superintendence, and for overheads and profit (state as percentage an extend as amount)	%	175 000	15,00%	R 26 250,00
	SCADA Software - MBR-A remote view				
42	License upgrade to Adroit 8	Sum	1	57 470,00	R 57 470,00
43	Mimics Re-Configuration at MBR-A control room	Sum	1	6 890,00	R 6 890,00
44	Alarms and Events Configuration	Sum	1	30 440,00	R 30 440,00
45	Report Configuration	Sum	1	30 900,00	R 30 900,00
46	Data logging and trends display configuration	Sum	1	3 310,00	R 3 310,00
47	SCADA security (firewall, intruder detection and anti-virus)	Sum	1	6 170,00	R 6 170,00
48	Simulation Testing of SCADA Programming	Sum	1	18 110,00	R 18 110,00
Carried forward / ...					R 2 547 640,00

ITEM	DESCRIPTION	UNIT	QTY	RATE R c	AMOUNT R c
Brought forward / ...					R 2 547 640,00
49	All other software programming and configuration required for complete and secure SCADA system	Sum	1	2 000,00	R 2 000,00
	INDUSTRIAL NETWORK INSTALLATION				
50	Refurbishment of MBR-A plant network cabling and switches installation as directed by the Engineer	Prov Sum			175 000,00
51	Percentage adjustment on Item 50 for Contractor's design, sourcing quotes, superintendence, and for overheads and profit (state as percentage an extend as amount)	%	175 000	15,00%	R 26 250,00
	GENERAL ELECTRONIC INSTALLATION				
52	Refurbishment of general items of the MBR-A plant Electronic installation as directed by the Engineer	Prov Sum			175 000,00
53	Percentage adjustment on Item 52 for Contractor's design, sourcing quotes, superintendence, and for overheads and profit (state as percentage an extend as amount)	%	175 000	15,00%	R 26 250,00
54	Technical inputs and software development overview of MBR-A control system upgrade by MBR screen provider control engineer	Sum	1		75 000,00
	INSTRUMENTATION				
55	Refurbishment of instrumenation of the MBR-A plant installation as directed by the Engineer	Prov Sum			175 000,00
56	Percentage adjustment on Item 55 for Contractor's design, sourcing quotes, superintendence, and for overheads and profit (state as percentage an extend as amount)	%	175 000	15,00%	R 26 250,00
	Analytical Turbidity Optical Meter including sensor, transmitter and mounting materials (Anaerobic Basin)				
57	Supply	No	1	53 879,00	R 53 879,00
58	Install	No	1	10 350,00	R 10 350,00
Carried forward / ...					R 3 292 619,00

ITEM	DESCRIPTION	UNIT	QTY	RATE R c	AMOUNT R c
Brought forward / ...					R 3 292 619,00
	Analytical Turbidity Optical Meter including sensor, temperature sensor built-in (PT 100), transmitter and mounting materials (Aerobic Zone)				
59	Supply	No	3	53 879,00	R 161 637,00
60	Install	No	3	10 350,00	R 31 050,00
	Pressure Switch for Scum delivery line complete including mounting materials - piezoelectric / capactive				
61	Supply	No	2	7 716,00	R 15 432,00
62	Install	No	2	788,00	R 1 576,00
	Electromagnetic Flow Meter for Scum pipeline, complete including mounting materials (45-FT-111,112)				
63	Supply	No	2	26 807,00	R 53 614,00
64	Install	No	2	4 083,00	R 8 166,00
	Mass Flow Meter for FBDA Blowers common delivery, including sensor, transmitter and mounting materials				
65	Supply	No	3	282 554,00	R 847 662,00
66	Install	No	3	10 350,00	R 31 050,00
	Flow Switch on Air Scour main, complete with mounting materials (Filtration Tank Supply)				
67	Supply	No	6	5 252,00	R 31 512,00
68	Install	No	6	788,00	R 4 728,00
	Analytical Turbidity Optical Meter including sensor, transmitter and mounting materials (Filtration Tank Filtrate)				
69	Supply	No	6	53 879,00	R 323 274,00
70	Install	No	6	10 350,00	R 62 100,00
Carried forward /...					R 4 864 420,00

ITEM	DESCRIPTION	UNIT	QTY	RATE R c	AMOUNT R c
Brought forward / ...					R 4 864 420,00
	Hydrostatic Level Switch including sensor, and mounting materials (Filtration Tanks)				
71	Supply	No	6	17 900,00	R 107 400,00
72	Install	No	6	1 438,00	R 8 628,00
	Conductive Probe Level Switch including sensor, high and low relay outputs, and mounting materials (Filtration Tanks)				
73	Supply	No	6	9 006,00	R 54 036,00
74	Install	No	6	788,00	R 4 728,00
	Pressure Switch on Compressed Air line, complete with mounting materials				
75	Supply	No	1	7 716,00	R 7 716,00
76	Install	No	1	788,00	R 788,00
	Conductive Probe Level Switch including sensor, high and low relay outputs, and mounting materials				
77	Supply	No	6	9 006,00	R 54 036,00
78	Install	No	6	788,00	R 4 728,00
	Bi-directional Electromagnetic Flow meter, including sensor, and mounting materials (Permeate Pumps)				
79	Supply	No	6	44 011,00	R 264 066,00
80	Install	No	6	4 083,00	R 24 498,00
	Pressure Transmitter, including sensor, and mounting materials (Permeate Pumps)				
81	Supply	No	6	10 146,00	R 60 876,00
82	Install	No	6	788,00	R 4 728,00
Carried forward / ...					R 5 460 648,00

ITEM	DESCRIPTION	UNIT	QTY	RATE R c	AMOUNT R c
Brought forward / ...					R 5 460 648,00
	Pressure Switch, including sensor, and mounting materials (Permeate Pumps)				
83	Supply	No	12	7 716,00	R 92 592,00
84	Install	No	12	788,00	R 9 456,00
	Temperature Transmitter, including sensor, and mounting materials (Permeate Pumps)				
85	Supply	No	6	11 356,00	R 68 136,00
86	Install	No	6	788,00	R 4 728,00
	Ultrasonic Level Transmitter, including sensor, and mounting materials (BP/MC Tank)				
87	Supply	No	1	16 427,00	R 16 427,00
88	Install	No	1	1 438,00	R 1 438,00
	Pressure Transmitter, including sensor, and mounting materials (Drain Pumps)				
89	Supply	No	2	10 146,00	R 20 292,00
90	Install	No	2	788,00	R 1 576,00
	Flow Switch, including sensor, and mounting materials (Drain Pumps)				
91	Supply	No	2	5 252,00	R 10 504
92	Install	No	2	788,00	R 1 576,00
	Pressure Switch, including sensor, and mounting materials (WAS Pumps)				
93	Supply	No	4	7 716,00	R 30 864,00
94	Install	No	4	788,00	R 3 152,00
	TSS meter including sensor, transmitter, temperature sensor built-in (PT 100), and mounting materials (WAS Pumps)				
95	Supply	No	1	137 759,00	R 137 759,00
Carried forward / ...					R 5 859 148,00

ITEM	DESCRIPTION	UNIT	QTY	RATE R c	AMOUNT R c
Brought forward / ...					R 5 859 148,00
96	Install	No	1	17 250,00	R 17 250,00
	Pressure Transmitter, including sensor, and mounting materials (Air Scour Blowers)				
97	Supply	No	4	10 146,00	R 40 584,00
98	Install	No	4	788,00	R 3 152,00
	Pressure Switch, including sensor, and mounting materials (Air Scour Blowers)				
99	Supply	No	3	7 716,00	R 23 148,00
100	Install	No	3	788,00	R 2 364,00
	Temperature Switch, including sensor, and mounting materials (Air Scour Blowers)				
101	Supply	No	1	7 010,00	R 7 010,00
102	Install	No	1	788,00	R 788,00
	Thermal Mass Flow Meter including sensor, transmitter, temperature sensor built-in (PT 100) and mounting materials (Air Scour Train and common manifold)				
103	Supply	No	4	45 589,00	R 182 356,00
104	Install	No	4	4 083,00	R 16 332,00
	Pressure Transmitter, including sensor, and mounting materials (FBDA Blowers)				
105	Supply	No	1	10 146,00	R 10 146,00
106	Install	No	1	788,00	R 788,00
	Pressure Switch, including sensor, and mounting materials (FBDA Blowers)				
107	Supply	No	1	7 716,00	R 7 716,00
108	Install	No	1	788,00	R 788,00
Carried forward / ...					R 6 171 570,00

ITEM	DESCRIPTION	UNIT	QTY	RATE R c	AMOUNT R c
Brought forward / ...					R 6 171 570,00
	Thermal Mass Flow Meter including sensor, transmitter and mounting materials (FBDA Blowers)				
109	Supply	No	1	45 589,00	R 45 589,00
110	Install	No	1	4 083,00	R 4 083,00
	Allow for all costs and expenses in connection with pre-commsissioning in terms of FIDIC and Part C3: Scope of Work for the following:				
111	For equipment scheduled above and not billed seperately	Sum	1	155 250,00	R 155 250,
					R -
112	**All other items not included above but which are nevertheless necessary to meet the Scope of Work and/or are required for the proper, safe and effective operation of the plant (Specify):-**	Item			R -
TOTAL OF SCHEDULE E14 CARRIED TO SUMMARY					6 376 492,00

ITEM	DESCRIPTION				AMOUNT R c
	Brought forward / ...				R474 772 458,31
#REF!	Allowance for all costs and expenses in connection with Suspention and Resumption of Work (in terms of Sub-Clauses 8.8 and 8.12 of the Conditions of Contract) and associated re-mobilisation of the Contractor's team after placing of Goods in storage as ordered by the Engineer (i.e. leaving Site and returning at a later date due to causes not attributable to the Contractor)	Day	45		No cost for 45 days
#REF!	Allowance for any additional cost and profit required in the event of a delay in the testing and commissioning at Site and the resultant delay in the commencement of the Defects Notification Period from causes not attributable to the Contractor in terms of Sub-Clause 10.3 (b) of the Conditions of Contract.	Day	30		No cost for 30 days
	NET TOTAL OF TENDER (EXCLUDING VAT)				474 772 458,31 ✓
	ADD 14% FOR VALUE ADDED TAX				66 468 144,16 ✓
	GROSS TOTAL OF TENDER CARRIED TO PART C1.1 FORM OF OFFER AND ACCEPTANCE				541 240 602,47 ✓

SIGNED ON BEHALF OF TENDERER : ....

DATE : 09 - 03 - 2017 .....

ITEM	DESCRIPTION				AMOUNT R c
	Brought forward / ...				R417 080 780,73
	SECTION B OF THE WORKS: CAS A & B PLANTS - ELECTRICAL AND ELECTRONIC EQUIPMENT				
#REF!	REFURBISHMENT AND UPGRADES				8 154 053,00
	SECTION C OF THE WORKS: MODULE A - ELECTRICAL AND ELECTRONIC EQUIPMENT				
#REF!	REFURBISHMENT AND UPGRADES				6 376 492,00
	Total Sum of all Priced Items				**R431 611 325,73**
	CONTINGENCIES:				
#REF!	Allow the sum of ten percent (10%) of the above total for contingenciesto be expended as directed by the Engineer and to be deducted in whole or in part if not required	Sum	-		43 161 132,57
	Delay, Suspension and Resumption of Work as ordered by the Engineer in terms of FIDIC and Part C3: Scope of Work				
#REF!	Allowance for any additional cost and profit required in the event of the Right of Access to the Site not being available as per Sub-Clause 2.1(b) of the Conditions of Contract.	Day	90		No cost for 90 days
#REF!	Allowance for Insurance in terms of Clause 18 of the Conditions of Contract in the event of the Right of Access to the Site not being available as per Sub-Clause 2.1(b) of the Conditions of Contract.	Day	90		No cost for 90 days
	Carried forward / ...				R474 772 458,31

ITEM	DESCRIPTION	AMOUNT R c
	Brought forward / ...	R291 334 376,73
	SECTION C OF THE WORKS: MODULE A - MECHANICAL EQUIPMENT	
SCHEDULE M21a	BIOREACTOR MIXING EQUIPMENT	1 598 153,00
SCHEDULE M22a	FINE BUBBLE DIFFUSED AERATION (FBDA) EQUIPMENT	14 234 206,00
SCHEDULE M23	MIXED LIQUOR RECYCLE (MLR) PUMP EQUIPMENT	471 582,00
SCHEDULE M24a	EXISTING ULTRA-FILTRATION (UF) MEMBRANE BIOREACTOR PLANT (MBR) EQUIPMENT	43 990 474,00
SCHEDULE M25a	INSTRUMENT AIR EQUIPMENT	1 928 868,00
SCHEDULE M26	SERVICE WATER EQUIPMENT	1 086 634
SCHEDULE M27	SCUM REMOVAL EQUIPMENT	987 054,00
	SECTION A OF THE WORKS: MODULE B - ELECTRICAL AND ELECTRONIC EQUIPMENT	
SCHEDULE E1	MINIATURE SUBSTATIONS	3 944 540,00
SCHEDULE E2	MV RETICULATION	1 053 200,00
SCHEDULE E3	MV RETICULATION INSTALLATION	598 846,00
SCHEDULE E4a	LV ELECTRICAL AND CONTROL CABLES	4 275 867,00
SCHEDULE E5a	LV ELECTRICAL INSTALLATION	5 120 049,00
SCHEDULE E6	STANDBY POWER GENERATOR	10 010 942,00
SCHEDULE E7a	LV SWITCHGEAR AND CONTROLGEAR ASSEMBLIES	17 855 132,--
SCHEDULE E8a	PROGRAMMABLE LOGIC CONTROLLERS	3 213 977,00
SCHEDULE E9a	SCADA	1 981 325,00
SCHEDULE E10	TELEMETRY	201 710,00
SCHEDULE E11	INSTRUMENTATION	11 974 945,00
SCHEDULE E12a	AREA LIGHTING	1 218 900,00
	Carried forward / ...	R417 080 780,73

ITEM	DESCRIPTION	AMOUNT R c	
SCHEDULE A	PRELIMINARY AND GENERAL	47 140 724,60	✓
SCHEDULE Ba	SUNDRIES	3 511 862,00	✓
SCHEDULE M1a	LIFTING EQUIPMENT	5 332 605,54	✓
SCHEDULE M2	VALVES AND SLUICE GATES EQUIPMENT	32 988 140,20	✓
SCHEDULE M3a	SPARES	14 861 127,62	✓
	SECTION A OF THE WORKS: MODULE B - MECHANICAL EQUIPMENT		
SCHEDULE M4a	MBR FINE SCREENING FACILITY	12 539 487,37	✓
SCHEDULE M5	BIOREACTOR MIXING EQUIPMENT	3 008 992,80	✓
SCHEDULE M6a	FINE BUBBLE DIFFUSED AERATION (FBDA) EQUIPMENT	19 150 782,62	✓
SCHEDULE M7	MIXED LIQUOR RECYCLE (MLR) PUMP EQUIPMENT	3 604 894,70	✓
SCHEDULE M8a	NEW ULTRA-FILTRATION (UF) MEMBRANE BIOREACTOR (MBR) PLANT EQUIPMENT	77 051 091,40	✓
SCHEDULE M9a	INSTRUMENT AIR EQUIPMENT	1 077 828,40	✓
SCHEDULE M10a	SERVICE WATER EQUIPMENT	1 574 259,32	✓
SCHEDULE M11	HEATING VENTILATION AND AIR-CONDITIONING (HVAC) EQUIPMENT	5 799 866,00	✓
SCHEDULE M12a	MBR FINE SCREENING ODOUR CONTROL	3 144 506,20	✓
SCHEDULE M13	SCUM REMOVAL EQUIPMENT	226 097,96	✓
	SECTION B OF THE WORKS: CAS A & B PLANTS - MECHANICAL EQUIPMENT		
SCHEDULE M14a	EXISTING CAS REACTOR EQUIPMENT	17 548 290,00	✓
SCHEDULE M15	EXISTING RAS AND WAS PUMPSTATIONS EQUIPMENT	3 014 716,00	✓
SCHEDULE M16a	EXISTING SECONDARY SETTLING TANK EQUIPMENT	16 233 503,00	✓
SCHEDULE M17a	NEW SECONDARY SETTLING TANK EQUIPMENT	10 151 541,00	✓
SCHEDULE M18a	CHLORINE DISINFECTION EQUIPMENT	7 673 635,00	✓
SCHEDULE M19a	CLARIFIERS SCUM PUMP STATION EQUIPMENT	940 930,00	✓
SCHEDULE M20a	CHEMICAL DOSING EQUIPMENT	4 759 495,00	✓
	Carried forward / ...	**R291 334 376,73**	

ITEM	DESCRIPTION	AMOUNT R c
SCHEDULE A	PRELIMINARY AND GENERAL	47,140,724.60
SCHEDULE B	SUNDRIES	3,511,862.00
SCHEDULE M1	LIFTING EQUIPMENT	5,332,605.54
SCHEDULE M2	VALVES AND SLUICE GATES EQUIPMENT	32,988,140.20
SCHEDULE M3	SPARES	14,861,127.62
	SECTION A OF THE WORKS: MODULE B - MECHANICAL EQUIPMENT	
SCHEDULE M4	MBR FINE SCREENING FACILITY	12,539,487.37
SCHEDULE M5	BIOREACTOR MIXING EQUIPMENT	3,008,992.80
SCHEDULE M6	FINE BUBBLE DIFFUSED AERATION (FBDA) EQUIPMENT	19,150,782.62
SCHEDULE M7	MIXED LIQUOR RECYCLE (MLR) PUMP EQUIPMENT	3,604,894.70
SCHEDULE M8	NEW ULTRA-FILTRATION (UF) MEMBRANE BIOREACTOR (MBR) PLANT EQUIPMENT	77,051,091.40
SCHEDULE M9	INSTRUMENT AIR EQUIPMENT	1,077,828.40
SCHEDULE M10	SERVICE WATER EQUIPMENT	1,574,259.32
SCHEDULE M11	HEATING VENTILATION AND AIR-CONDITIONING (HVAC) EQUIPMENT	5,799,866.00
SCHEDULE M12	MBR FINE SCREENING ODOUR CONTROL	3,144,506.20
SCHEDULE M13	SCUM REMOVAL EQUIPMENT	226,097.96
	SECTION B OF THE WORKS: CAS A & B PLANTS - MECHANICAL EQUIPMENT	
SCHEDULE M14	EXISTING CAS REACTOR EQUIPMENT	17,548,290.00
SCHEDULE M15	EXISTING RAS AND WAS PUMPSTATIONS EQUIPMENT	3,014,716.00
SCHEDULE M16	EXISTING SECONDARY SETTLING TANK EQUIPMENT	16,233,503.00
SCHEDULE M17	NEW SECONDARY SETTLING TANK EQUIPMENT	10,151,541.00
SCHEDULE M18	CHLORINE DISINFECTION EQUIPMENT	7,673,635.00
SCHEDULE ~~M18~~ 19a	CLARIFIERS SCUM PUMPSTATION EQUIPMENT ~~CHLORINE DISINFECTION EQUIPMENT~~	940,930.00
SCHEDULE M20	CHEMICAL DOSING EQUIPMENT	4,759,495.00
Carried forward / ...		291,334,376.73

ITEM	DESCRIPTION	AMOUNT R c
	Brought forward / ...	291,334,376.73
	SECTION C OF THE WORKS: MODULE A - MECHANICAL EQUIPMENT	
SCHEDULE M21	BIOREACTOR MIXING EQUIPMENT	1,598,153.00
SCHEDULE M22	FINE BUBBLE DIFFUSED AERATION (FBDA) EQUIPMENT	14,234,206.00
SCHEDULE M23	MIXED LIQUOR RECYCLE (MLR) PUMP EQUIPMENT	471,582.00
SCHEDULE M24	EXISTING ULTRA-FILTRATION (UF) MEMBRANE BIOREACTOR PLANT (MBR) EQUIPMENT	43,990,474.00
SCHEDULE M25	INSTRUMENT AIR EQUIPMENT	1,928,868.00
SCHEDULE M26	SERVICE WATER EQUIPMENT	1,086,634.00
SCHEDULE M27	SCUM REMOVAL EQUIPMENT	987,054.00
	SECTION A OF THE WORKS: MODULE B - ELECTRICAL AND ELECTRONIC EQUIPMENT	
SCHEDULE E1	MINIATURE SUBSTATIONS	3,944,540.00
SCHEDULE E2	MV RETICULATION	1,053,200.00
SCHEDULE E3	MV RETICULATION INSTALLATION	598,846.00
SCHEDULE E4	LV ELECTRICAL AND CONTROL CABLES	4,275,867.00
SCHEDULE E5	LV ELECTRICAL INSTALLATION	5,120,049.00
SCHEDULE E6	STANDBY POWER GENERATOR	10,010,942.00
SCHEDULE E7	LV SWITCHGEAR AND CONTROLGEAR ASSEMBLIES	17,855,132.00
SCHEDULE E8	PROGRAMMABLE LOGIC CONTROLLERS	3,213,977.00
SCHEDULE E9	SCADA	1,981,325.00
SCHEDULE E10	TELEMETRY	201,710.00
SCHEDULE E11	INSTRUMENTATION	11,974,945.00
SCHEDULE E12	AREA LIGHTING	1,218,900.00
	Carried forward / ...	417,080,780.73

ITEM	DESCRIPTION				AMOUNT R c
	Brought forward / ...				417,080,780.73
	SECTION B OF THE WORKS: CAS A & B PLANTS - ELECTRICAL AND ELECTRONIC EQUIPMENT				
SCHEDULE E13	REFURBISHMENT AND UPGRADES				8,154,053.00
	SECTION C OF THE WORKS: MODULE A - ELECTRICAL AND ELECTRONIC EQUIPMENT				
SCHEDULE E14	REFURBISHMENT AND UPGRADES				6,376,492.00
	Total Sum of all Priced Items				431,611,325.73
	CONTINGENCIES:				
1	Allow the sum of ten percent (10%) of the above total for contingenciesto be expended as directed by the Engineer and to be deducted in whole or in part if not required	Sum	-		43,161,132.57
	Delay, Suspension and Resumption of Work as ordered by the Engineer in terms of FIDIC and Part C3: Scope of Work				
2	Allowance for any additional cost and profit required in the event of the Right of Access to the Site not being available as per Sub-Clause 2.1(b) of the Conditions of Contract.	Day	90		NO COST FOR 90 DAYS
3	Allowance for Insurance in terms of Clause 18 of the Conditions of Contract in the event of the Right of Access to the Site not being available as per Sub-Clause 2.1(b) of the Conditions of Contract.	Day	90		NO COST FOR 90 DAYS
	Carried forward / ...				474,772,458.31

ITEM	DESCRIPTION				AMOUNT R c
	Brought forward / ...				474,772,458.31
4	Allowance for all costs and expenses in connection with Suspention and Resumption of Work (in terms of Sub-Clauses 8.8 and 8.12 of the Conditions of Contract) and associated re-mobilisation of the Contractor's team after placing of Goods in storage as ordered by the Engineer (i.e. leaving Site and returning at a later date due to causes not attributable to the Contractor)	Day	45		NO COST FOR 45 DAYS
5	Allowance for any additional cost and profit required in the event of a delay in the testing and commissioning at Site and the resultant delay in the commencement of the Defects Notification Period from causes not attributable to the Contractor in terms of Sub-Clause 10.3 (b) of the Conditions of Contract.	Day	30		NO COST FOR 30 DAYS
	NET TOTAL OF TENDER (EXCLUDING VAT)				474,772,458.31
	ADD 14% FOR VALUE ADDED TAX				66,468,144.16
	GROSS TOTAL OF TENDER CARRIED TO PART C1.1 FORM OF OFFER AND ACCEPTANCE				541,240,602.47

SIGNED ON BEHALF OF TENDERER : ....

DATE : ...13/02/2017.....

C2.3 Schedule of Rates for Electrical Variations

Not used.

SCHEDULE OF QUANTITIES

(For record purposes, and does not form part of the Agreement)

The following Schedule of Quantities, are superseded by the previous Section of Quantities, and therefore, do not form part of the Agreement as per Addenda to Tender Documents. These Schedule of Quantities are included in this document for record purposes.

CITY OF CAPE TOWN
ISIXEKO SASEKAPA
STAD KAAPSTAD

SUPPLY CHAIN MANAGEMENT

Supply Chain Management

31 January 2017

TO ALL TENDERERS

Dear Sirs,

ADDENDUM TO TENDER DOCUMENTS No 1
(25 Pages)

CITY OF CAPE TOWN

BOX NUMBER: 169

for

TENDER NUMBER: 178Q/2016/17

DESCRIPTION: **DESIGN-BUILD OF MECHANICAL AND ELECTRICAL WORKS FOR THE CONSTRUCTION OF AN MBR PLANT AND BOTTLENECK ALLEVIATION AT ZANDVLIET WASTEWATER TREATMENT WORKS**

CLOSING DATE OF TENDER: **27 FEBRUARY 2017**

Dear Sir/Madam

Your attention is specifically drawn to the following amendments which are to be made to the Contract Document for the above in terms of Clause F.3.2 of the Standard Conditions of Tender and you will be deemed to have made allowance necessary to provide for these amendments in your Tender offer.

This "Addendum to Tender Documents (ATD)" is an addition to the Tender Documents listed in the Tender Data. Any tender submitted will be deemed to be in accordance with those Documents amended in accordance with the following instructions:

Tenderers should take note of the following:

ATD1 - 1 **Part T1: T1.2: Tender Data (Volume 2)**

ATD1 - 1.1 *Delete the entire* "Table 2: Functionality Score for Key Personnel Assigned to the Work", *and replace with the following:*

Table 2-A: Functionality Score for Key Personnel Assigned to the Work

Key Personnel Role	Qualification[4]		Professional accreditation		Relevant experience		Maximum points available
	Type	Points	Type	Points	Years	Points	
Contractor's Representative in terms of Clause 4.3 of the General Conditions of Contract	4yr Eng + Masters[5] degree	8	ECSA Pr Eng	2	>15	12	22
					>10	8	
	4yr Eng degree	6	ECSA Pr Eng	2	>15	12	20
					>10	8	
	3yr Eng diploma or BTech	4	ECSA Pr Tech	1	>15	12	17
					>10	8	
Design Engineers responsible for Contractor's obligations in terms of Clause 5 and the associated obligations in terms of Clause 6.8 of the General Conditions of Contract[1]	4yr Eng degree	3	ECSA Pr Eng	2	>10	10	4 x 15 = 60
					>6	5	
	3yr Eng diploma or BTech	1	ECSA Pr Tech	1	>10	10	4 x 12 = 48
					>6	5	
Installation/construction Foremen responsible for the Contractor's associated obligations in terms of Clause 6.8 of the General Conditions of Contract (to be full-time on site whilst associated work is underway)[2]	3yr Eng diploma or higher	2	NA		>10	4	2 x 6 = 12
					>6	3	
	Other tertiary	1	NA		>10	4	2 x 5 = 10
					>6	3	
Commissioning Engineers responsible for Contractor's obligations in terms of Clause 9 and the associated obligations in terms of Clause 6.8 of the General Conditions of Contract (to be full-time on site whilst associated work is underway)[3]	4yr Eng degree	3	NA		>10	10	4 x 13 = 52
					>6	5	
	3yr Eng diploma or BTech	1	NA		>10	10	4 x 11 = 44
					>6	5	
Environmental Officer responsible for the Contractor's associated obligations in terms of Clause 6.8 of the General Conditions of Contract	3yr diploma/ degree	1	SACNASP or similar	1	>5	1	3
Health and Safety Agent/ Accident Prevention Officer responsible for Contractor's obligations in terms of Clause 6.7 of the General Conditions of Contract (to be full-time on site whilst installation/ construction/ commissioning activities are underway)	3yr diploma/ degree	1	Member ACHASM or similar	1	>5	3	5
Total points available							**154**

Notes:

1: A score for up to four (4) Design Engineers will be allocated. Further instructions concerning Design Engineers and information required in support of an associated score, are contained in Schedule 14.1: Key personnel assigned to the Contract

2: A score for up to two (2) Installation Foremen will be allocated. Further instructions concerning Installation Foremen and information required in support of an associated score, are contained in Schedule 14.1: Key personnel assigned to the Contract

3: A score for up to four (4) Commissioning Engineers will be allocated. Further instructions concerning Commissioning Engineers and information required in support of an associated score, are contained in Schedule 14.1: Key personnel assigned to the Contract

4: In order to obtain a score for "Qualification", the qualification held must be relevant to the Key Personnel Role proposed (for instance an electrical engineering qualification for a Design Engineer responsible for electrical work)

5: The Masters degree may be an engineering degree, project management, business administration or similar degree

ATD1 - 1.2 *Delete the entire* "Table 4: Functionality Score for Tenderer's Expertise and Experience", *and replace with the following:*

Table 4-A: Functionality Score for Tenderer's Expertise and Experience

Item No.	Project / Component of Work Description	Description of Quality Scoring Criteria

1.	CONTRACTOR'S PROPOSAL	Points rating / allocation		Maximum Points per category
1.1	Thorough completion of Returnable schedules/technical detail sheets and provision of other information required with the tender as listed in the List of Returnable Documents (refer to Schedule 18).	Excellent	100%	20
		Satisfactory	50%	
		Poor	0%	
1.2	Submission of separate file (with clear table of contents and section dividers) marked "Returnable Documents in Support of Quality Score", containing documentation (such as drawings, brochures, characteristic curves, and other relevant technical information concerning all equipment offered) required to support the allocation of quality score for the evaluation of responsive tender.	Excellent	100%	15
		Satisfactory	50%	
		Poor	0%	
1.3	Provision of equipment with established local representation agents in the Western Cape for the past 5 years related to (i) Servicing and repairs of equipment; as well as (ii) stock of spares.[1]	Excellent	100%	10
		Satisfactory	50%	
		Poor	0%	
2.	**MEMBRANE BIOREACTOR (MBR) SPECIALIST EXPERTISE AND PREVIOUS EXPERIENCE WITH WORK OF A SIMILAR NATURE – TO BE SUBSTANTIATED BY SUBMISSION OF A DETAILED LIST AND DESCRIPTION OF RELEVANT PROJECTS/WORK, WITH CLIENT AND OR ENGINEER REFERENCE LETTERS:**	**Points per project**		**Maximum Points per category**
		Year when project completed	**Points**	
2.1	Comprehensive wastewater treatment works projects (local and/or international) with an average dry weather flow capacity of 20 Mℓ/d or more where the **Membrane Supplier** has successfully implemented (supplied, installed, tested and commissioned) their membrane equipment (completed in the past 10 years) which has been commissioned, and has been operational for 36 months and longer as of 01 December 2016: Membrane Supplier.[2]	2002 to 2016	12	36
		1996 to 2001	6	
2.2	**Lead contractor** for provision of mechanical and electrical equipment for construction of the whole MBR wastewater treatment works (as opposed to individual components and unit processes) of capacity <30 ML/d (average dry weather flow, ADWF), or construction of <30 ML/d (ADWF) capacity upgrades to whole MBR wastewater treatment works (as opposed to individual components) to be confirmed by the end-user (Client) reference letter, and the Consultant/ Engineer involved with the project.[3]	2002 to 2016	7	21
		1996 to 2001	3	
	[3]**Lead contractor** for provision of mechanical and electrical equipment for construction of the whole MBR wastewater treatment works (as opposed to individual components and unit processes) of capacity >30 ML/d (average dry weather flow, ADWF), or construction of >30 ML/d (ADWF) capacity upgrades to whole MBR wastewater treatment works (as opposed to individual components) to be confirmed by the end-user (Client) reference letter, and the Consultant/ Engineer involved with the project.	2002 to 2016	10	30
		1996 to 2001	5	
2.3	**Membrane Supplier's** and/ or **Lead contractor's** expertise and experience with at least 20 years design and at least 10 years active/installed operation and maintenance (local and/ or international) with the same type MBR plant.	2002 to 2016	12	36
		1996 to 2001	6	
	Membrane Supplier's and/ or **Lead contractor's** expertise and experience with at least 5 years design and at least 3 years active/installed operation and maintenance (local and/ or international) of MBR Plant Fine Screening equipment.	2002 to 2016	10	30
		1996 to 2001	5	
2.4	Provision of SCADA and PLC automated electrical control systems with a value exceeding R 5 million excluding VAT, for MBR plant (of at least 10 Mℓ/d ADWF) wastewater treatment works or other industrial processes (local and/ or international).	2002 to 2016	8	24
		1996 to 2001	3	
3.	**MEMBRANE BIOREACTOR (MBR) LIFE CYCLE COST AND REMOTE OPERATION SUPPORT**	**Points rating / allocation**		**Maximum Points per category**
3.1	Guaranteed Life Cycle Costs (LCC) for the MBR system based on 10 years of installed experience (local and/ or international) with the same type of membranes offered.[4]	Excellent	100%	84
		Satisfactory	50%	
		Poor	0%	
3.2	Tenderer's expertise and experience of MBR system Remote Operation Support for a period of at least 10 years, based on at least 5 years installed experience (local and/ or international) with the same type of membranes offered.[5]	Excellent	100%	50
		Satisfactory	50%	
		Poor	0%	

(Continued overleaf)

Item No.	Project / Component of Work Description	Description of Quality Scoring Criteria		
4	**GENERAL WATER/ WASTEWATER TREATMENT SPECIALIST EXPERTISE AND PREVIOUS EXPERIENCE WITH WORK OF A SIMILAR NATURE – TO BE SUBSTANTIATED BY SUBMISSION OF A DETAILED LIST AND DESCRIPTION OF RELEVANT PROJECTS/WORK, WITH CLIENT AND OR ENGINEER REFERENCE LETTERS:**	**Points per project**		**Maximum Points per category**
		Year when project completed	**Points**	
4.1	Lead contractor for contracts based on the Conditions of Contract for Plant and Design-Build for Electrical and Mechanical Plant, and for Building and Engineering Works, Designed by the Contractor, First Edition 1999 published by Federation Internationale des Ingenieurs-Conseils (FIDIC Yellow Book).	2002 to 2016	9	45
		1996 to 2001	5	
4.2	Reinforced concrete construction of components of water and wastewater treatment works with a value exceeding R2 million excluding VAT[6]	2002 to 2016	10	20
		1996 to 2001	4	
4.3	Provision of individual fine bubble diffused aeration (FBDA) blower of size 110 kW or greater, plus associated diffusers, diffuser chemical dosing skid, thermal air flow meters, control valves, pipework as well as dissolved oxygen (DO) and blower automation of the FBDA system.	2002 to 2016	10	40
		1996 to 2001	9	
4.4	Provision of complete Medium Voltage (MV) of at least 315 kVA and Light Voltage (LV) electrical equipment in water or wastewater treatment works or other industrial processes.	2002 to 2016	10	40
		1996 to 2001	4	
4.5	Provision of individual pump-sets of size 30 kW or greater, plus associated pump station pipework, flow meters etc. in water or wastewater treatment works or other industrial processes.	2002 to 2016	6	30
		1996 to 2001	3	
4.6	Provision of citric and sodium hypochlorite chemical dosing systems and bulk storage tanks as well as associated equipment for the MBR plant.[7]	2002 to 2016	5	15
		1996 to 2001	3	
4.7	Provision of ferric and caustic soda chemical dosing systems and pressurized bulk storage tanks as well as associated equipment in water or wastewater treatment works or other industrial processes.[7]	2002 to 2016	5	15
		1996 to 2001	3	
4.8	Provision of chlorine dosing and chlorine gas scrubbing systems and associated equipment in water or wastewater treatment works or other industrial processes.[7]	2002 to 2016	5	10
		1996 to 2001	2	
4.9	Provision of complete electric and pneumatic actuation systems for control of valves and sluices in water or wastewater treatment works or other industrial processes.[1]	2002 to 2016	10	30
		1996 to 2001	6	
Total points available				**550**

1. Preference will be given to tenders offering equipment with established representation agents in the Western Cape for at least the past 5 years. Such representation shall include proven technical expertise, and reference lists (with client and consultant contact details) of where the proposed equipment has been successfully used.

2. To be substantiated by submission of a detailed list and description of relevant projects/work, with client and or engineer reference letters (refer to Schedules 8 and 14.6). In addition, preference will be given to tenderers whose design, testing and commissioning of the MBR system is guaranteed to be undertaken by a team with project experience in MBR systems with an average capacity of 20 Ml/d and above

3. Preference will be given to lead contractor(s) for wastewater treatment works projects (local and/or international) where the membrane bioreactor (MBR) technology has successfully been implemented (supplied, installed, tested and commissioned in the past 5 years), and has remained fully functional and operational for 36 months and longer as of 01 December 2016.

4 Preference will be given to tenderers who guarantee the most favourable life cycle cost for the MBR system. The onus is on the tenderer to prove favourable life cycle costs (LCC = CAPEX + OPEX) to the satisfaction of the Employer. The tender submission must therefore clearly substantiate the life cycle cost calculations, showing pricing assumptions, the guaranteed life of components (such as chemical and power consumptions under specified design loads, and the guaranteed purchase price of membrane replacement and other associated equipment – refer Technical Data Sheets No. 16 an 67 included in Volume 2C). The life cycle cost for the MBR system equipment required in terms of the Quality Scoring Evaluation Criteria Table shall be based on current day cost over a 10 year period, and an electricity unit cost of ZAR1,50/kWh. There shall be liquidated Damages/Penalties for failing to meet the claimed OPEX as per membrane equipment specifications included in Volume 2A.

5. Preference will be given to tenders offering the most favourable remote support for operation of the MBR system. In addition to the requirements of the specifications, the Contractor's Proposal must clearly set out the details of the support offered.

6. Preference will be given to tenders who have grouted in their own equipment themselves (such as base plates/ holding down bolts for machines), concreting of pipes and screeding of clarifiers and primary sedimentation tanks etc. (to be accompanied by reference letters from the Engineer(s) involved on the project(s) where Functionality Score/Points are claimed).

7. Where the tenderer makes use of a subcontractor or joint venture partner for such work, points will only be allocated if the tenderer's proposed team includes the entity that executed this work, and where this is clearly demonstrated in the tender.

The term "*provision*" denotes the aggregation of the activities of supply, delivery to site, installation, testing, and commissioning

"The stipulated minimum threshold percentages for local production and content for the **Electrical and Telecoms Cable sector** is **90%** and for **Valve Products and Actuators** is **70%** ("the designated sector") and will include all sub-sectors from the applicable National Treasury Instruction Note."

ATD1 - 2 **Part C1: C1.2: Contract Data (Volume 2)**

ATD1 - 2.1 Appendix to Tender (Part 1: Contract Data completed by the Employer)

ATD1 - 2.1.1 *In the entry column of Sub-Clause 4.2 (i.e. Amount of Performance Security), delete* "10%", *and replace with* "7%".

ATD1 - 3 **Part C2: C2.2: Schedule of Quantities (Volume 2)**

ATD1 - 3.1 **Electronic copy of Bill of Quantities issued in accordance with F.2.13.2 of T1.2: Tender Data**

An updated Bill of Quantities in PDF and MS Excel format (file name: "178Q-2016-17_T1 Tenderer's copy") with amendments highlighted in red, and with the changes below, will be sent to Tenderers via e-mail (and Dropbox) for their convenience. This file supersedes the earlier versions issued to Tenderers with the Tender Documents. This updated electronic copy of the Bill of Quantities is issued in good faith, and can be submitted in lieu of the hard copy issued with the tender documents subject to the requirements of Clause F.2.13.2 of T1.2: Tender Data.

ATD1 - 3.2 **Schedule B: Sundries**

ATD1 - 3.2.1 *Amend the description* "Corrosion protection of equipment (inclusive of common equipment) for:" *to read* "Corrosion protection and Painting of equipment (inclusive of common equipment) for:"

ATD1 - 3.3 **Schedule M1: Lifting Equipment**

ATD1 - 3.3.1 *Delete item 18.*
ATD1 - 3.3.2 *In item 29, amend the quantity from* "140" *to* "120"
ATD1 - 3.3.3 *In item 43, amend the quantity from* "80" *to* "120"
ATD1 - 3.3.4 *Delete item 49*
ATD1 - 3.3.5 *Delete item 51*
ATD1 - 3.3.6 *Delete item 65*
ATD1 - 3.3.7 *After item 64, insert* "Item 65a" *against the description* "Existing Dewatering building overhead travelling crane".
ATD1 - 3.3.8 *Delete the following two items which comes after item 65a:*
"(i) Existing Dewatering building support structure; and
(ii) Existing Dewatering building rails".

ATD1 - 3.4 **Schedule M3: Spares**

ATD1 - 3.4.1 *After item 44, and before item 45, amend the description* "FBDA Centrifugal Blowers (MBR B)" *to read* "FBDA Centrifugal Blowers (MBR A)"

ATD1 - 3.5 **Schedule M4: MBR Fine Screening Facility (Section A of the Works)**

ATD1 - 3.5.1 *In items 2 and 12, amend the descriptions from* "Fine Screen units with integrated instrumentation, conveyors, etc." *to read* "Fine Screen"
ATD1 - 3.5.2 *In items 9 and 19, amend the descriptions from* "All Anchors and Supports" *to read* "Supports"
ATD1 - 3.5.3 *Delete items 10 and 20 (Note: This is not scheduled separately, but included in the pipework items)*

ATD1 - 3.6 **Schedule M6: Fine Bubble Diffused Aeration Equipment (Section A of the Works)**

ATD1 - 3.6.1 *In items 7 and 23, amend the descriptions from* "Laterals pipework" *to read* "Laterals pipework and zone headers"
ATD1 - 3.6.2 *In item 11 and 27, amend the descriptions from* "Lateral supports" *to read "Lateral and zone header supports"*
ATD1 - 3.6.3 *Delete item 12 (Note: This is not scheduled separately, but included in the pipework items)*
ATD1 - 3.6.4 *In item 14, amend the description from* "Formic Acid mobile dosing skid system, along with all the pipe connection, injection/ quick release fittings on the dropleg etc for safe and proper functioning of the FBDA equipment" *to read* "Formic Acid mobile dosing skid system"

the Works)

ATD1 - 3.7.1 *In Items 95 and 104, amend the descriptions from* "Filling station pump" *to read* "Filling station pump and pipework"

ATD1 - 3.7.2 *In Item 111, amend the description* "Membrane Tanks Feed/ Mixed Liquor Transfer Pumps" *to read* "Complete Membrane Plant Equipment"

ATD1 - 3.7.3 *Delete* "Item 112"

ATD1 - 3.7.4 *Delete* "Item 113"

ATD1 - 3.7.5 *Delete* "Item 114"

ATD1 - 3.7.6 *Delete* "Item 115"

ATD1 - 3.7.7 *Delete* "Item 116"

ATD1 - 3.7.8 *Delete* "Item 117"

ATD1 - 3.7.9 *Delete* "Item 118"

ATD1 - 3.8 Schedule M9: Instrument Air Equipment (Section A of the Works)

ATD1 - 3.8.1 *Delete* "Items 3 and 12". *(Note: This is not scheduled separately, but included in the Instrument Air items)*

ATD1 - 3.8.2 *In Items 7 and 16, amend the descriptions* "All connecting pipework" *to read* "Pipework and supports"

ATD1 - 3.8.3 *In Items 9 and 18,* amend the description from "Pneumatic control system and SS solenoid valve terminal cabinet for each process area, complete with tubing, service unit, pressure regulator & auto drain etc." *to read* "Pneumatic Actuation Equipment for each Process Area".

ATD1 - 3.8.4 *Delete the Items following Items 9 and 18.*

ATD1 - 3.8.5 *Delete Item 19 including the related description* "Pneumatic Actuation Equipment".

ATD1 - 3.9 Schedule M10: Service Water Equipment (Section A of the Works)

ATD1 - 3.9.1 *In Items 4 and 9, amend the description from* "All pipework connections, fittings etc as shown on drawings" *to read* "Pipework".

ATD1 - 3.10 Schedule M12: MBR Fine Screening Odour Control (Section A of the Works)

ATD1 - 3.10.1 *Delete* "Items 17 and 18".

ATD1 - 3.11 Schedule M14: Existing CAS Reactor Equipment (Section B of the Works)

ATD1 - 3.11.1 *Delete* "Items 15 and 16".

ATD1 - 3.12 Schedule M16: Existing Secondary Settling Tank Equipment (Section B of the Works)

ATD1 - 3.12.1 *In Item 7 and 14, amend the description from* "SS V-notch weirs (75 mm deep) for full circumference of the clarifier" *to read* "SS V-notch weirs for full circumference of the clarifier".

ATD1 - 3.13 Schedule M17: New Secondary Settling Tank Equipment (Section B of the Works)

ATD1 - 3.13.1 *In Items 4 and 10, amend the description from* "SS V-notch weirs (75 mm deep) for full circumference of the clarifier" *to read* "SS V-notch weirs for full circumference of the clarifier".

ATD1 - 3.14 Schedule M18: Chlorine Disinfection Equipment (Section B of the Works)

ATD1 - 3.14.1 *In Items 4 and 24, amend the quantity from* "6" to "8".

ATD1 - 3.14.2 *Add the following new items:*

"

Item No	Short Description	Unit	Quantity	Rate	Amount R c
	Schedule M18: Chlorine Disinfection Equipment (Section B of the Works)				
4a	Drum cradles without scales	No	8		
24a	Drum cradles without scales	No	8		

"

ATD1 - 3.14.3 *In Items 5 and 25, amend the description from* "All chlorine gas pipework complete as specified, including valves, pressure reducing valves, catchpots, heaters, vaporisers, pigtails supports etc., as

reducing devices, catchpots, heaters, vaporisers, pigtails supports etc., as required".

ATD1 - 3.14.4 *Delete* "Items 10 and 30".

ATD1 - 3.14.5 *In Item 11 and 31, amend the descriptions from* "Pipework and supports as required" *to read* "Pipework and supports".

ATD1 - 3.14.6 *In Items 21 and 39, amend the unit from* "Sum" *to read "Month" and quantity from* "-" to "8".

ATD1 - 3.14.7 *In Item 22, amend the unit from* "Month" *to read "Sum" and quantity from* "8" to read "-".

ATD1 - 3.14.8 *Add the following new Items:*

"

Item No	Short Description	Unit	Quantity	Rate	Amount R c
	Schedule M18: Chlorine Disinfection Equipment (Section B of the Works)				
	Instrument Air				
22a	Compressors	No	2		
22b	Air receiver (moisture trap)	No	1		
22c	Air receiver	No	1		
22d	Condensate management system	Sum	-		
22e	Pipework and supports	Sum	-		
22f	Separator units and filter sets	No	3		
	Pneumatic Actuation Equipment				
22g	Pneumatic Actuation Equipment for each Process Area	Sum	-		
	Instrument Air				
41a	Compressors	No	2		
41b	Air receiver (moisture trap)	No	1		
41c	Air receiver	No	1		
41d	Condensate management system	Sum	-		
41e	Pipework and supports	Sum	-		
41f	Separator units and filter sets	No	3		
	Pneumatic Actuation Equipment				
41g	Pneumatic Actuation Equipment for each Process Area	Sum	-		

"

ATD1 - 3.14.9 *Insert "37a and 37b" in the Item No. column against the two items following item 37 ("Safety Signage (Wall charts)" and "Complete Shower Stainless Steel full body shower and eye bath (Including Accumulator and Pumps)" respectively.*

ATD1 - 3.15 Schedule M19: Clarifier Scum Pump Station Equipment (Section B of the Works)

ATD1 - 3.15.1 *In Item 4, amend the description from* "Suction pipework" *to read* "Suction pipework per scum pump station"

ATD1 - 3.15.2 *In Item 5, amend the description from* "Discharge pipework" to read "Discharge pipework per scum pump station"

ATD1 - 3.16 Schedule M20: Chemical Dosing Equipment (Section C of the Works)

ATD1 - 3.16.1 *In Items 6, 16, 26 and 35, amend the descriptions from* "All dosing pipework complete as specified, including valves, pressure reducing valves, etc." *to read* "Pipework"

ATD1 - 3.17.1 *In Item 5, amend the quantity from* "12" *to* "6"
ATD1 - 3.17.2 *In Item 6, amend the quantity from* "12" *to* "6"
ATD1 - 3.17.3 *In Item 7, amend the quantity from* "12" *to* "6"
ATD1 - 3.17.4 *In Item 8, amend the quantity from* "12" *to* "6"

ATD1 - 3.18 Schedule M22: Fine Bubble Diffused Aeration Equipment (Section C of the Works)

ATD1 - 3.18.1 *In Items 7 and 18, amend the descriptions from* "Lateral pipework" *to read* "Lateral pipework and zone headers".
ATD1 - 3.18.2 *In Items 11 and 22, amend the descriptions from* "Lateral supports" *to read* "Lateral and zone header supports".
ATD1 - 3.18.3 *In Item 13, amend the description from* "Formic Acid mobile dosing skid system, along with all the pipe connection, injection/ quick release fittings on the dropleg etc for safe and proper functioning of the FBDA equipment" *to read* "Formic Acid mobile dosing skid".
ATD1 - 3.18.4 *In Item 16, amend the quantity from* "5" *to* "3".
ATD1 - 3.18.5 *Delete Item 24.*

ATD1 - 3.19 Schedule M24: Existing Ultra-Filtration (UF) Membrane Bioreactor (MBR) Plant Equipment (Section C of the Works)

ATD1 - 3.19.1 *In the Amount column of Item 13, Insert* "Rate only".
ATD1 - 3.19.2 *In Item 14, amend the description from* "Air scour distribution pipework to membrane cassettes" *from to read* "New air scour distribution pipework to membrane cassettes".
ATD1 - 3.19.3 *In the Amount column of Item 17, Insert* "Rate only".
ATD1 - 3.19.4 *Add the following new items:*
"

Item No	Short Description	Unit	Quantity	Rate	Amount R c
	Schedule M24: Existing Ultra-Filtration (UF) Membrane Bioreactor (MBR) Plant Equipment (Section C of the Works)				
	Permeate/Backpulse Pumps				
17a	New Permeate Suction Pipework	Sum	-		
17b	New Permeate Discharge Pipework	Sum	-		
	Permeate/Backpulse Pumps				
61a	New Permeate Suction Pipework	Sum	-		
61b	New Permeate Discharge Pipework	Sum	-		

"

ATD1 - 3.19.5 *Delete* "Item 57".
ATD1 - 3.19.6 *Delete* "Item 61".
ATD1 - 3.19.7 *Delete* "Items 94 and 95" *including the related description* "Handling of existing equipment".

ATD1 - 3.20 Schedule M25: Instrument Air Equipment (Section C of the Works)

ATD1 - 3.20.1 *Delete* "Items 5 and 14".
ATD1 - 3.20.2 *In Items 9 and 18, amend the descriptions* "All connecting pipework" *to read* "Pipework and supports"
ATD1 - 3.20.3 *In Items 11 and 20, amend the description from* "Pneumatic control system and SS solenoid valve terminal cabinet for each process area, complete with tubing, service unit, pressure regulator & auto drain etc." *to read* "Pneumatic Actuation Equipment for each Process Area".
ATD1 - 3.20.4 *After Item 11, delete the unnumbered item starting with "UV Stabilised...".*
ATD1 - 3.20.5 *Delete* "Item 21".
ATD1 - 3.20.6 *Delete* "Item 22".

ATD1 - 3.21 Schedule E4: LV Electrical and Control Cables

ATD1 - 3.21.1 *In Item 1, amend the quantity from* "10 000" *to* "11 000".
ATD1 - 3.21.2 *In Item 2, amend the quantity from* "1 200" *to* "1 700".
ATD1 - 3.21.3 *In Item 4, amend the quantity from* "3 500" *to* "4 000".
ATD1 - 3.21.4 *In Item 76, amend the quantity from* "1" *to* "1000", *and In the Amount column, delete* "Rate only".

ATD1 - 3.21.6 *In Item 92, amend the quantity from "1" to "1000", and in the Amount column, delete "Rate only".*
ATD1 - 3.21.7 *In Item 99, amend the quantity from "1" to "20", and in the Amount column, delete "Rate only".*
ATD1 - 3.21.8 *In Item 101, amend the quantity from "7 800" to "9 000".*

ATD1 - 3.22 Schedule E5: LV Electrical Installation

ATD1 - 3.22.1 *In Item 31, amend the quantity from "10 000" to "11 000".*
ATD1 - 3.22.2 *In Item 32, amend the quantity from "1 200" to "1 700".*
ATD1 - 3.22.3 *In Item 34, amend the quantity from "3 500" to "4 000".*
ATD1 - 3.22.4 *In Item 106, amend the quantity from "1" to "1000", and in the Amount column, delete "Rate only".*
ATD1 - 3.22.5 *In Item 115, amend the quantity from "1" to "20", and in the Amount column, delete "Rate only".*
ATD1 - 3.22.6 *In Item 122, amend the quantity from "1" to "1000", and in the Amount column, delete "Rate only".*
ATD1 - 3.22.7 *In Item 129, amend the quantity from "1" to "20", and in the Amount column, delete "Rate only".*
ATD1 - 3.22.8 *In Item 131, amend the quantity from "0" to "9 000".*
ATD1 - 3.22.9 *In Item 155, amend the quantity from "100" to "200".*
ATD1 - 3.22.10 *In Item 164, amend the quantity from "500" to "1 000".*
ATD1 - 3.22.11 *In Item 164, amend the unit from "m³" to "m".*
ATD1 - 3.22.12 *In Items 2 to 19, amend the descriptions from* "Heavy Duty Cable Ladder" *to read* "Heavy Duty Cable Ladder – Stainless Steel 316L".
ATD1 - 3.22.13 *In Items 20 to 23, amend the descriptions from* "Welded Wire Mesh Cable Tray" *to read* "Welded Wire Mesh Cable Tray – Stainless Steel 316L".
ATD1 - 3.22.14 *In Items 135 to 152, amend the descriptions from* "Heavy Duty Cable Ladder" *to read* "Heavy Duty Cable Ladder – Stainless Steel 316L".
ATD1 - 3.22.15 *In Items 153 to 156, amend the descriptions from* "Welded Wire Mesh Cable Tray" *to read* "Welded Wire Mesh Cable Tray – Stainless Steel 316L".

ATD1 - 3.22.16 *Add the following new items:*
"

Item No	Short Description	Unit	Quantity	Rate	Amount R c
	Schedule E5: LV Electrical Installation				
	Allow for all the costs and expenses in connection with the design, manufacture, painting, supplying, delivery, offloading and storage of the following materials and equipment:				
	Heavy Duty Cable Ladder - Hot Dipped Galvanised Steel				
	100 x 100mm (W x H)				
175	Straight length	m	100		
176	Extras: Tee piece or 90° deg Horizontal elbow or Internal Riser or Dropper	No	5		
177	4 Way cross over	No	1		
	200 x 100mm (W x H)				
178	Straight length	m	100		
179	Extras: Tee piece or 90° deg Horizontal elbow or Internal Riser or Dropper	No	5		
180	4 Way cross over	No	1		
	300 x 100mm (W x H)				
181	Straight length	m	100		
182	Extras: Tee piece or 90° deg Horizontal elbow or Internal Riser or Dropper	No	5		
183	4 Way cross over	No	1		
	600 x 100mm (W x H)				

184	Straight length	m	100		
185	Extras: Tee piece or 90° deg Horizontal elbow or Internal Riser or Dropper	No	5		
186	4 Way cross over	No			
	800 x 100mm (W x H)				
187	Straight length	m	200		
188	Extras: Tee piece or 90° deg Horizontal elbow or Internal Riser or Dropper	No	10		
189	4 Way cross over	No	2		
	1000 x 100mm (W x H)				
190	Straight length	m	200		
191	Extras: Tee piece or 90° deg Horizontal elbow or Internal Riser or Dropper	No	10		
192	4 Way cross over	No	2		
	Welded Wire Mesh Cable Tray - Hot Dipped Galvanised Steel				
	100 x 50mm (W x H), Ø 4mm Wire				
193	Straight length	m	100		
	200 x 50mm (W x H), Ø 4mm Wire				
194	Straight length	m	100		
	300 x 50mm (W x H), Ø 4mm Wire				
195	Straight length	m	50		

Item No	Short Description	Unit	Quantity	Rate	Amount R c
	400 x 50mm (W x H), Ø 4mm Wire				
196	Straight length	m	100		
	Allow for all costs and expenses in connection with the Site Installation in terms of in terms of FIDIC and Part C3: Scope of Work (excluding pre-commissioning) for the following:				
	Heavy Duty Cable Ladder - Hot Dipped Galvanised Steel				
	100 x 100mm (W x H)				
197	Straight length	m	100		
198	Extras: Tee piece or 90° deg Horizontal elbow or Internal Riser or Dropper	No	5		
199	4 Way cross over	No	1		
	200 x 100mm (W x H)				
200	Straight length	m	100		
201	Extras: Tee piece or 90° deg Horizontal elbow or Internal Riser or Dropper	No	5		
202	4 Way cross over	No	1		
	300 x 100mm (W x H)				
203	Straight length	m	100		

204	Internal Riser or Dropper	No	5		
205	4 Way cross over	No	1		
	600 x 100mm (W x H)				
206	Straight length	m	100		
207	Extras: Tee piece or 90° deg Horizontal elbow or Internal Riser or Dropper	No	5		
208	4 Way cross over	No	1		
	800 x 100mm (W x H)				
209	Straight length	m	200		
210	Extras: Tee piece or 90° deg Horizontal elbow or Internal Riser or Dropper	No	10		
211	4 Way cross over	No	2		
	1000 x 100mm (W x H)				
212	Straight length	m	200		
213	Extras: Tee piece or 90° deg Horizontal elbow or Internal Riser or Dropper	No	10		
214	4 Way cross over	No	2		
	Welded Wire Mesh Cable Tray - Hot Dipped Galvanised Steel				
	100 x 50mm (W x H), Ø 4mm Wire				
215	Straight length	m	100		
	200 x 50mm (W x H), Ø 4mm Wire				
216	Straight length	m	100		

Item No	Short Description	Unit	Quantity	Rate	Amount R c
	300 x 50mm (W x H), Ø 4mm Wire				
217	Straight length	m	50		
	400 x 50mm (W x H), Ø 4mm Wire				
218	Straight length	m	100		

ATD1 - 3.23 **Schedule E7: LV Switchgear and Controlgear Assemblies**

ATD1 - 3.23.1 *In Item 45, remove the unit "No" and the quantity "6". (Note: This line serves only as a heading for items 46 to 48).*

ATD1 - 3.24 **Schedule E8: Programmable Logic Controllers**

ATD1 - 3.24.1 *Add the following new items:*

"

Item No	Short Description	Unit	Quantity	Rate	Amount R c
	Schedule E8: Programmable Logic Controllers				
121	Integration of control systems in this schedule with the remainder of the WWTW across the plant wide fibre optic ring network	Sum	1		

ATD1 - 3.25 **Schedule E9: SCADA**

ATD1 - 3.25.1 *In Items 42 and 43, delete the "Rate Only" from the Amount column.*

ATD1 - 3.26 **Schedule E12: Area Lighting**

ATD1 - 3.26.1 *Add the following new Items:*

"

Item No	Short Description	Unit	Quantity	Rate	Amount R c
	Schedule E12: Area Lighting				
3b	Decommissioning, moving, reinstallation and recommissioning of existing high mast lights in new location	No	1		

"

ATD1 - 4 **Part C3.6 Annexes: Mechanical Specifications (Volume 2A)**

ATD1 - 4.1 **A4 MBR Module B: Fine Screening Station**

ATD1 - 4.1.1 A4.3 Screenings Compactor

In the sentence starting with "The screenings shall...", *replace* "60%" with "45%".

ATD1 - 4.1.2 A4.4.1 MBR Fine Screen

In the last Paragraph of the second sentence starting with "They shall be selected...", *replace* "2.5" with "1.75".

ATD1 - 4.2 **A7 MBR Module B: Fine Bubble Diffused Aeration (FBDA) System**

ATD1 - 4.2.1 A7.4.1 Diffuser assemblies

(a) General

In the first Paragraph of the first sentence after "...bubble type", *delete* "PTFE-coated".

(b) Diffuser location

(i) Delete the last sentence of the second Paragraph ending with "...are not acceptable".
(ii) In the fourth Paragraph after "...manufacture of", *delete* "PTFE coated".
(iii) In Table 62, delete "Surface Coating (Anti-Fouling)"*and* "PTFE or equivalent" *in the Description and Material/Value columns respectively.*

ATD1 - 4.3 **A8 MBR Module B: FBDA and Air Scour Blower Equipment**

ATD1 - 4.3.1 A8.2.4 Blow-off Valve

In the first sentence of the second paragraph, the sentence starting with "Each blower shall be..." *amend to read* "Each blower blow-off shall discharge to a safe environment"

ATD1 - 4.3.2 A8.2.5 Blower Compact Enclosure

In the sentence starting with "The enclosure shall accommodate lifting..." *in the first paragraph; amend to read* "If the compact enclosure panels do not allow for a two man lift (max. 40kg per panel); the blower enclosure shall be suitable to be lifted by lifting equipment"

In the sentence starting with "The only items allowed..." *in the second paragraph; amend to read* "The only items allowed to be mounted outside are the non-return valve, isolation valve, inlet filter, outlet silencer and blow-off valve (provided the discharge is to a safe environment)."

ATD1 - 4.4 **A10 MBR Module B: Membrane Bioreactor (MBR) Plant Equipment**

ATD1 - 4.4.1 A10.4 Design Requirements

requirements as follows:

Parameter	Unit	Effluent Quality Target	Requirement Type	Maximum Value
Faecal Coliform	(Count/100 ml)	250	Geomean	750

ATD1 - 4.4.2 A10.7.2 Flux and Membrane Area

a) In the Paragraph starting with "The MBR equipment...", and ending with "...wet weather flow", replace "1.5" with "1.65".

b) In Paragraph starting with "The MBR equipment...", *add the following after the sentence ending with* "...wet weather flow":

"A minor deviation of no more than 1.5% is allowable for the design fluxes, except for the peak hourly flow. The Contractor shall justify his proposed fluxes by data from at least three (3) operational plants, based on the last five (5) years of operation or more."

ATD1 - 4.4.3 A10.25.3 Performance Criteria for the Membrane System

a) Delete "Item (b)".

b) Delete the entire "Item (c)" *and replace with the following:*

"Permeate turbidity to be less than 0.2 NTU 95% of the time, and less than 0.5 NTU 100% of the time".

ATD1 - 4.5 A12 MBR Module B: Service Water Station

ATD1 - 4.5.1 A12.2 General

Add the following paragraph to this clause:
"Service water shall be pumped with 4 service water pumps, one of four the pumps shall be a standby pump. The service water system shall charge two accumulators via one of two UV disinfection units in a duty/standby configuration."

ATD1 - 4.5.2 A12.3.2 UV Disinfection units

In "Table 86: MBR UV Disinfection Design Criteria", *amend the Faecal Coliform inlet parameters as follows:*
"

Parameter	Average Conditions	Membrane Rupture
Faecal Coliform at Inlet of UV (CFU/100ml)	250	750

(a) Lamps

In the first sentence of the first paragraph, delete the word "operation" *and replace with* "installed".
In the fourth sentence of the first paragraph, "Lamps shall be adjustable...", *amend to read* "Lamp output shall be adjustable; a minimum turn-down ration of 60% for Medium Pressure lamps, and a minimum of 50% for Low Pressure lamps."

(c) Automatic Quartz Sleeve Cleaning

In the second paragraph "The automated cleaning..." *amend this sentence to read* "The automated cleaning action shall consist of a mechanical wiping system, however provision shall be made to chemically clean the system when the unit is off-line."

ATD1 - 4.6 A30 MBR Module A: Mixed Liquor Recycle Pumps

ATD1 - 4.6.1 A30.3 Performance Requirements

a) *In Table 119, amend the Expected Duty range of the Membrane Tank Feed Pumps from* "1,500 – 3,500" *to* "1,600 – 3,785".

ATD1 - 4.7 A31 MBR Module A: Existing MBR Plant Equipment

ATD1 - 4.7.1 A31.2 Scope

a) *In the first sentence of item (b)(i) after* "...area of at least", *amend* "47 500 m^2" *to* "45 300 m^2".

ATD1 - 4.7.2 A31.8.2 Flux and Membrane Area

a) *Delete the entire* "Table 121: MBR A Hydraulic Loading", *and replace with the following:*

"Table 1-A: MBR A Hydraulic Loading

Parameter	Design Capacity[5]		Constraint
	m^3/d	m^3/h	
Average Daily Flow	18 000	750	N (indefinitely)
Maximum Monthly Flow	27 500[1]	1 146[1]	N (indefinitely)
Maximum Daily Flow	33 750[2]	1 406[2]	N (indefinitely)
Average Wet Weather Flow	36 000[3]	1 500[3]	N (for at least 15 days on a continuous basis)
Instantaneous Peak Hourly Flow	45 000[4]	1 875[4]	N (for 8 hrs continuously)

[1]Maximum monthly flow with all six (6) trains on-line. The MBR plant equipment shall be designed to run under this conditions indefinitely.
[2]Maximum flow with one train offline for maintenance or recovery cleaning (for a maximum of 10 hours)
[3]Average wet weather flow with all six (6) trains on-line. The MBR plant equipment shall be designed to run under this conditions for at least 15 consecutive days (i.e. on a continuous basis) at membrane tank MLSS concentration not less than 9 500 mgTSS/ℓ.
[4]The membrane bioreactor plant equipment shall be designed taking cognisance of the peak instantaneous flow occurring for 8 hours continuously with all six (6) trains on line.
[5]The maximum allowable MLSS in the membrane tank shall be limited to 12 500 mgTSS/ℓ for all flow conditions except for 36 000 m^3/d. For the 36 000 m^3/d condition, the maximum MLSS in the membrane tank shall not be less than 9,500 mgTSS/ℓ.

b) *Delete the Paragraph starting with* "The MBR equipment...", *and ending with* "...net flux rate.", *and replace with the following:*

"The MBR equipment shall be designed for a maximum monthly flow net flux rate of not more than 25 litres per square meter per hour (LMH), and an instantaneous peak hourly flow net flux rate equal to or less than 1.65 times the maximum monthly flow net flux rate.

A minor deviation of no more than 1.5% is allowable for the design fluxes, except for the peak hourly flow. The Contractor shall justify his proposed fluxes by data from at least three (3) operational plants, based on the last five (5) years of operation or more."

c) *In the Paragraph starting with* "The number of membrane modules...", *and ending with* "...stated herein.", replace "47 500 m^2" *with* "45 300 m^2".

d) *In the Paragraph starting with "The number of membrane modules...", add the following after the sentence ending with* "...conditions stated herein":

"The Contractor shall design the membrane plant taking cognisance of spare space requirements of between 8 and 12.5%."

ATD1 - 4.7.3 A31.13 Permeate and Backpulse Pumps

a) *In the second Paragraph of the third sentence starting with* "The Contractor shall...", *and ending with* "...of about 25 m.", replace "325 m^3/h" *with* "380 m^3/h".

ATD1 - 4.8 A42 Pipework and Valve Equipment

ATD1 - 4.8.1 Add item (j) to A42.4: All pipework shall be painted and colour banded in accordance with the requirements of section D.

ATD1 - 5 Part C3.6Annexes: Electrical and Electronic Specifications (Volume 2B)

ATD1 - 5.1 B8 LV Cabling Installation

ATD1 - 5.1.1 B8.4 LV Cable Support System

Amend all clauses "stainless steel 316" *to read* "stainless steel 316L".

ATD1 - 5.1.2 B8.4 LV Cable Support System

Add the following paragraphs to the Contents of B8.4:

"The cable ladders shall have 2mm thick side rails with channel cross rungs at 300mm centres. The installation price shall be complete with couplers, clamps, threaded rods, hangers, cantilevers, brackets etc. to fix to trusses, walls, etc. as required and as shown on the drawings.

Wire Mesh Cable Tray shall have a 50 x 50mm Base Aperture and 25 x 50mm Side Aperture. The installation price shall be complete with splices, couplers, clamps, threaded rods, hangers, brackets etc. to fix to trusses, walls, etc. as required and as shown on the drawings."

ATD1 - 5.2 B10 LV Switchgear and Controlgear Assemblies

ATD1 - 5.2.1 B10.10 MCC Room Ventilation

Delete the first line of B10.10 and replace with "The ventilation system shall comply with the requirements of Section A"

ATD1 - 6 Technical Data Sheets (Volume 2C)

ATD1 - 6.1 Technical Detail Sheet No. 21: Rotary Lobe Pump: MBR B Permeate/Backpulse

ATD1 - 6.1.1 *In the Description column, replace* "flow range" with "minimum flow"; *and in the Specified column, replace* "325 – 450" *with* "550".

ATD1 - 6.2 Technical Detail Sheet No. 69: Vertical Shaft Propeller Pump: MBR A Membrane Train Feed

ATD1 - 6.2.1 *In the Specified column, amend the specified Flow Range from* "1,500 – 3,500" *to* "1,600 – 3,785".

ATD1 - 6.2.2 *In the Specified column, amend the specified Head Range from* "1.4 – 1.6" *to* "1.9 – 2.3".

ATD1 - 6.3.1 *Replace Items 1, 2 and 3 of Technical Detail Sheet 70 with the following:*

DESCRIPTION	Unit	Specified		Offered	
1. Membrane Key Data/ Operational Parameters					
Membrane Model					
Membrane Material		PVDF			
Type		Submerged; Outside-In			
Nominal membrane pore size	µm	0.04 to 0.1 (max)			
Membrane area per cassette (fully filled)	m^2	1,510			
Number of filtration trains	No.	6			
Cassettes per filtration train	No.	5			
Membrane area per filtration train	m^2	7,550			
Total membrane area	m^2	45,300			
Membrane volume per train	m^2				
Aeration rate per train	Nm^3/hr per train	2,400			
Specific Aeration Demand (SAD_m) per per permeate volume	$Nm^3/m^2/hr$	0.32			
SAD_p per membrane surface area @ Average Daily Flow	m^3 air/m^3 permeate	19.2			
SAD_p per membrane surface area @ Maximum Daily Flow	m^3 air/m^3 permeate	9.6			
Net filtration time per 24 hours	h	>22			
Backpulse time	s				
Relaxation time	s				
Filtration time	s				
Backpulse time	s				
Relaxation time	s				
Material of Construction (Cassette assembly - frame & beam)		EN Grade 1.4401			
2. Membrane Design Flow Criteria		**Average**	**Peak**	**Average**	**Peak**
Capacity	m^3/d	18,000	36,000		
Duration	Day(s)	∞	15days Continuously		
Net flux (N trains)	LMH				
Backpulse Flux	LMH				
Backpulse Pressure	bar				
Biomass concentration (MLSS)	mg/ℓ	10,500	9,500		
Design operating temperature	°C	14			
Operating pH range	-	5.9 - 7.8			
Typical trans-membrane pressure (TMP)	bar	0.1 - 0.35			
Maximum trans-membrane pressure (TMP)	bar	≤0.55			
3. Membrane Design Flow Criteria and Corresponding Net Flux		**Flow Rate (m^3/d)**	**Net Flux (LMH)**	**Flow Rate (m^3/d)**	**Net Flux (LMH)**
Average Daily (Dry) Flow (N)				18,000	
Maximum Monthly (Dry) Flow (N)				27,500	
Maximum Daily (Dry) Flow (N)				33,750	
Average Wet Weather Flow (N)				36,000	
Peak Hourly Flow				45,000	

ATD1 - 6.4 **Technical Detail Sheet No. 75: Rotary Lobe Pump: MBR A Permeate/Backpulse**

ATD1 - 6.4.1 *In the Description column, replace* "flow range" with "minimum flow", and in the Specified column, replace "325 – 450" with "380"

ATD1 - 6.5 **Technical Detail Sheet No. E04 Generator Set**

ATD1 - 6.5.1 *Item 8.1 - Amend the Dummy Load Requirement from* "50%" *to* "40%".
ATD1 - 6.5.2 *Item 9.4 - Amend the louvre material of construction from* "Aluminium" *to* "Stainless Steel 316".

ATD1 - 6.6 **Technical Detail Sheet No. E09 Streetlights**

ATD1 - 6.6.1 *Item 3.3 - Amend the Pole Height from* "4m" *to* "7m".

ATD1 - 7 **Drawings (Volume 3)**

ATD1 - 7.1 **Service Water System**

ATD1 - 7.1.1 *The following revised Process and Instrumentation Diagrams (drawings) are attached (in reduced A4 format) for the Tenderers' convenience , and supersedes those included in the original book of drawings (i.e. Book 4) - Note: Tenderers will be sent a Dropbox link for downloading a full size drawing:*

a) Replace "110585-WWTW-DRG-PID-1143 rev. T0" *with* "110585-WWTW-DRG-PID-1143 rev. T1";
b) Replace "110585-WWTW-DRG-PID-1161 rev. T0" *with* "110585-WWTW-DRG-PID-1161 rev. T1";
c) Replace "110585-WWTW-DRG-PID-1165 rev. T0" *with* "110585-WWTW-DRG-PID-1165 rev. T1".

ATD1 - 7.1.2 *The following new/ additional Process and Instrumentation Diagram (drawing) is attached (in reduced A4 format) for the Tenderers' convenience , and forms part of the drawings included in Volume 3: Book of Drawings - Note: Tenderers will be sent a Dropbox link for downloading a full size drawing:*

a) Add drawing "110585-WWTW-DRG-PID-1170 rev. T0 (i.e. Process & Instrumentation Diagram MBR A Service Water Pump Station: Service Water Pumps" *to the book of drawings as well as on the drawing register.*

Tenderers are to return a signed copy of this notice/addendum with the submission of their Tender (See Schedule 18 of Tender Document). Failure to return a signed copy of the Addendum may result in the Tender being declared Non-Responsive.

Kindly acknowledge receipt of this Addendum by e-mail using the enclosed Acknowledgement Receipt.

Yours faithfully,

.....

For Director: Supply Chain Management

WRITTEN ACKNOWLEDGEMENT OF RECEIPT

ADDENDUM TO TENDER DOCUMENTS No 1

CITY OF CAPE TOWN

BOX NUMBER: 169

for

TENDER NUMBER: 178Q/2016/17

DESCRIPTION: **DESIGN-BUILD OF MECHANICAL AND ELECTRICAL WORKS FOR THE CONSTRUCTION OF AN MBR PLANT AND BOTTLENECK ALLEVIATION AT ZANDVLIET WASTEWATER TREATMENT WORKS**

CLOSING DATE OF TENDER: **27 FEBRUARY 2017**

Kindly acknowledge receipt of this Addendum by e-mailing this to

We acknowledge receipt of the above Addendum and confirm that any tender we submit will take account of the instructions detailed therein.

Signature..... **Date**.....

Legal and full name of tendering entity:

.....

.....

ADDENDA TO TENDER DOCUMENTS No. 2

CITY OF CAPE TOWN
ISIXEKO SASEKAPA
STAD KAAPSTAD

FINANCE
SUPPLY CHAIN MANAGEMENT

Supply Chain Management

T: [illegible]
E: [illegible]

31 January 2017

TO ALL TENDERERS

Dear Sirs,

ADDENDUM TO TENDER DOCUMENTS No 2
(23 Pages)

CITY OF CAPE TOWN

BOX NUMBER: 169

for

TENDER NUMBER: 178Q/2016/17

DESCRIPTION: **DESIGN-BUILD OF MECHANICAL AND ELECTRICAL WORKS FOR THE CONSTRUCTION OF AN MBR PLANT AND BOTTLENECK ALLEVIATION AT ZANDVLIET WASTEWATER TREATMENT WORKS**

CLOSING DATE OF TENDER: **27 FEBRUARY 2017**

Dear Sir/Madam

Your attention is specifically drawn to the following amendments which are to be made to the Contract Document for the above in terms of Clause F.3.2 of the Standard Conditions of Tender and you will be deemed to have made allowance necessary to provide for these amendments in your Tender offer.

This "Addendum to Tender Documents (ATD)" is an addition to the Tender Documents listed in the Tender Data. Any tender submitted will be deemed to be in accordance with those Documents amended in accordance with the following instructions:

Tenderers should take note of the following:

Please ignore Addendum No 1 and take note of the below.

ATD1 - 1 **Part T1: T1.2: Tender Data (Volume 2)**

ATD1 - 1.1 *Delete the entire* "Table 2: Functionality Score for Key Personnel Assigned to the Work", *and replace with the following:*

Table 2-A: Functionality Score for Key Personnel Assigned to the Work

Key Personnel Role	Qualification[4]		Professional accreditation		Relevant experience		Maximum points available
	Type	Points	Type	Points	Years	Points	
Contractor's Representative in terms of Clause 4.3 of the General Conditions of Contract	4yr Eng + Masters[5] degree	8	ECSA Pr Eng	2	>15	12	22
					>10	8	
	4yr Eng degree	6	ECSA Pr Eng	2	>15	12	20
					>10	8	
	3yr Eng diploma or BTech	4	ECSA Pr Tech	1	>15	12	17
					>10	8	
Design Engineers responsible for Contractor's obligations in terms of Clause 5 and the associated obligations in terms of Clause 6.8 of the General Conditions of Contract[1]	4yr Eng degree	3	ECSA Pr Eng	2	>10	10	4 x 15 = 60
					>6	5	
	3yr Eng diploma or BTech	1	ECSA Pr Tech	1	>10	10	4 x 12 = 48
					>6	5	
Installation/construction Foremen responsible for the Contractor's associated obligations in terms of Clause 6.8 of the General Conditions of Contract (to be full-time on Site whilst associated work is underway)[2]	3yr Eng diploma or higher	2	NA		>10	4	2 x 6 = 12
					>6	3	
	Other tertiary	1	NA		>10	4	2 x 5 = 10
					>6	3	
Commissioning Engineers responsible for Contractor's obligations in terms of Clause 9 and the associated obligations in terms of Clause 6.8 of the General Conditions of Contract (to be full-time on Site whilst associated work is underway)[3]	4yr Eng degree	3	NA		>10	10	4 x 13 = 52
					>6	5	
	3yr Eng diploma or BTech	1	NA		>10	10	4 x 11 = 44
					>6	5	
Environmental Officer responsible for the Contractor's associated obligations in terms of Clause 6.8 of the General Conditions of Contract	3yr diploma/ degree	1	SACNASP or similar	1	>5	1	3
Health and Safety Agent/ Accident Prevention Officer responsible for Contractor's obligations in terms of Clause 6.7 of the General Conditions of Contract (to be full-time on Site whilst installation/ construction/ commissioning activities are underway)	3yr diploma/ degree	1	Member ACHASM or similar	1	>5	3	5
Total points available							**154**

Notes:

1: A score for up to four (4) Design Engineers will be allocated. Further instructions concerning Design Engineers and information required in support of an associated score, are contained in Schedule 14.1: Key personnel assigned to the Contract

2: A score for up to two (2) Installation Foremen will be allocated. Further instructions concerning Installation Foremen and information required in support of an associated score, are contained in Schedule 14.1: Key personnel assigned to the Contract

3: A score for up to four (4) Commissioning Engineers will be allocated. Further instructions concerning Commissioning Engineers and information required in support of an associated score, are contained in Schedule 14.1: Key personnel assigned to the Contract

4: In order to obtain a score for "Qualification", the qualification held must be relevant to the Key Personnel Role proposed (for instance an electrical engineering qualification for a Design Engineer responsible for electrical work)

5: The Masters degree may be an engineering degree, project management, business administration or similar degree

ATD1 - 1.2 *Delete the entire* "Table 4: Functionality Score for Tenderer's Expertise and Experience", *and replace with the following:*

Table 4-A: Functionality Score for Tenderer's Expertise and Experience

Item No.	Project / Component of Work Description	Description of Quality Scoring Criteria		
1.	**CONTRACTOR'S PROPOSAL**	Points rating / allocation		Maximum Points per category
1.1	Thorough completion of Returnable schedules/technical detail sheets and provision of other information required with the tender as listed in the List of	Excellent	100%	20
		Satisfactory	50%	

	Returnable Documents (refer to Schedule 18).	Poor	0%	
1.2	Submission of separate file (with clear table of contents and section dividers) marked "Returnable Documents in Support of Quality Score", containing documentation (such as drawings, brochures, characteristic curves, and other relevant technical information concerning all equipment offered) required to support the allocation of quality score for the evaluation of responsive tender.	Excellent	100%	15
		Satisfactory	50%	
		Poor	0%	
1.3	Provision of equipment with established local representation agents in the Western Cape for the past 5 years related to (i) Servicing and repairs of equipment; as well as (ii) stock of spares.[1]	Excellent	100%	10
		Satisfactory	50%	
		Poor	0%	
2.	**MEMBRANE BIOREACTOR (MBR) SPECIALIST EXPERTISE AND PREVIOUS EXPERIENCE WITH WORK OF A SIMILAR NATURE – TO BE SUBSTANTIATED BY SUBMISSION OF A DETAILED LIST AND DESCRIPTION OF RELEVANT PROJECTS/WORK, WITH CLIENT AND OR ENGINEER REFERENCE LETTERS:**	**Points per project**		**Maximum Points per category**
		Year when project completed	**Points**	
2.1	Comprehensive wastewater treatment works projects (local and/or international) with an average dry weather flow capacity of 20 Ml/d or more where the **Membrane Supplier** has successfully implemented (supplied, installed, tested and commissioned) their membrane equipment (completed in the past 10 years) which has been commissioned, and has been operational for 36 months and longer as of 01 December 2016: Membrane Supplier.[2]	2002 to 2016	12	36
		1996 to 2001	6	
2.2	**Lead contractor** for provision of mechanical and electrical equipment for construction of the whole MBR wastewater treatment works (as opposed to individual components and unit processes) of capacity <30 ML/d (average dry weather flow, ADWF), or construction of <30 ML/d (ADWF) capacity upgrades to whole MBR wastewater treatment works (as opposed to individual components) to be confirmed by the end-user (Client) reference letter, and the Consultant/ Engineer involved with the project.[3]	2002 to 2016	7	21
		1996 to 2001	3	
	[3]**Lead contractor** for provision of mechanical and electrical equipment for construction of the whole MBR wastewater treatment works (as opposed to individual components and unit processes) of capacity >30 ML/d (average dry weather flow, ADWF), or construction of >30 ML/d (ADWF) capacity upgrades to whole MBR wastewater treatment works (as opposed to individual components) to be confirmed by the end-user (Client) reference letter, and the Consultant/ Engineer involved with the project.	2002 to 2016	10	30
		1996 to 2001	5	
2.3	**Membrane Supplier's** and/ or **Lead contractor's** expertise and experience with at least 20 years design and at least 10 years active/installed operation and maintenance (local and/ or international) with the same type MBR plant.	2002 to 2016	12	36
		1996 to 2001	6	
	Membrane Supplier's and/ or **Lead contractor's** expertise and experience with at least 5 years design and at least 3 years active/installed operation and maintenance (local and/ or international) of MBR Plant Fine Screening equipment.	2002 to 2016	10	30
		1996 to 2001	5	
2.4	Provision of SCADA and PLC automated electrical control systems with a value exceeding R 5 million excluding VAT, for MBR plant (of at least 10 Ml/d ADWF) wastewater treatment works or other industrial processes (local and/ or international).	2002 to 2016	8	24
		1996 to 2001	3	
3.	**MEMBRANE BIOREACTOR (MBR) LIFE CYCLE COST AND REMOTE OPERATION SUPPORT**	**Points rating / allocation**		**Maximum Points per category**
3.1	Guaranteed Life Cycle Costs (LCC) for the MBR system based on 10 years of installed experience (local and/ or international) with the same type of membranes offered.[4]	Excellent	100%	84
		Satisfactory	50%	
		Poor	0%	
3.2	Tenderer's expertise and experience of MBR system Remote Operation Support for a period of at least 10 years, based on at least 5 years installed experience (local and/ or international) with the same type of membranes offered.[5]	Excellent	100%	50
		Satisfactory	50%	
		Poor	0%	

(Continued overleaf)

Table 4-A: Functionality Score for Tenderer's Expertise and Experience

Item No.	Project / Component of Work Description	Description of Quality Scoring Criteria		
4	**GENERAL WATER/ WASTEWATER TREATMENT SPECIALIST EXPERTISE AND PREVIOUS EXPERIENCE WITH WORK OF A SIMILAR NATURE – TO BE SUBSTANTIATED BY SUBMISSION OF A DETAILED LIST AND DESCRIPTION OF RELEVANT PROJECTS/WORK, WITH CLIENT AND OR ENGINEER REFERENCE LETTERS:**	**Points per project**		**Maximum Points per category**
		Year when project completed	**Points**	

4.1	**Lead contractor** for contracts based on the Conditions of Contract for Plant and Design-Build for Electrical and Mechanical Plant, and for Building and Engineering Works, Designed by the Contractor, First Edition 1999 published by Federation Internationale des Ingenieurs-Conseils (FIDIC Yellow Book).	2002 to 2016	9	45
		1996 to 2001	5	
4.2	Reinforced concrete construction of components of water and wastewater treatment works with a value exceeding R2 million excluding VAT[6]	2002 to 2016	10	20
		1996 to 2001	4	
4.3	Provision of individual fine bubble diffused aeration (FBDA) blower of size 110 kW or greater, plus associated diffusers, diffuser chemical dosing skid, thermal air flow meters, control valves, pipework as well as dissolved oxygen (DO) and blower automation of the FBDA system.	2002 to 2016	10	40
		1996 to 2001	9	
4.4	Provision of complete Medium Voltage (MV) of at least 315 kVA and Light Voltage (LV) electrical equipment in water or wastewater treatment works or other industrial processes.	2002 to 2016	10	40
		1996 to 2001	4	
4.5	Provision of individual pump-sets of size 30 kW or greater, plus associated pump station pipework, flow meters etc. in water or wastewater treatment works or other industrial processes.	2002 to 2016	6	30
		1996 to 2001	3	
4.6	Provision of citric and sodium hypochlorite chemical dosing systems and bulk storage tanks as well as associated equipment for the MBR plant.[7]	2002 to 2016	5	15
		1996 to 2001	3	
4.7	Provision of ferric and caustic soda chemical dosing systems and pressurized bulk storage tanks as well as associated equipment in water or wastewater treatment works or other industrial processes.[7]	2002 to 2016	5	15
		1996 to 2001	3	
4.8	Provision of chlorine dosing and chlorine gas scrubbing systems and associated equipment in water or wastewater treatment works or other industrial processes.[7]	2002 to 2016	5	10
		1996 to 2001	2	
4.9	Provision of complete electric and pneumatic actuation systems for control of valves and sluices in water or wastewater treatment works or other industrial processes.[1]	2002 to 2016	10	30
		1996 to 2001	6	
Total points available				**550**

Notes:

1. Preference will be given to tenders offering equipment with established representation agents in the Western Cape for at least the past 5 years. Such representation shall include proven technical expertise, and reference lists (with client and consultant contact details) of where the proposed equipment has been successfully used.

2. To be substantiated by submission of a detailed list and description of relevant projects/work, with client and or engineer reference letters (refer to Schedules 8 and 14.6). In addition, preference will be given to tenderers whose design, testing and commissioning of the MBR system is guaranteed to be undertaken by a team with project experience in MBR systems with an average capacity of 20 Ml/d and above

3. Preference will be given to lead contractor(s) for wastewater treatment works projects (local and/or international) where the membrane bioreactor (MBR) technology has successfully been implemented (supplied, installed, tested and commissioned in the past 5 years), and has remained fully functional and operational for 36 months and longer as of 01 December 2016.

4. Preference will be given to tenderers who guarantee the most favourable life cycle cost for the MBR system. The onus is on the tenderer to prove favourable life cycle costs (LCC = CAPEX + OPEX) to the satisfaction of the Employer. The tender submission must therefore clearly substantiate the life cycle cost calculations, showing pricing assumptions, the guaranteed life of components (such as chemical and power consumptions under specified design loads, and the guaranteed purchase price of membrane replacement and other associated equipment – refer Technical Data Sheets No. 16 an 67 included in Volume 2C). The life cycle cost for the MBR system equipment required in terms of the Quality Scoring Evaluation Criteria Table shall be based on current day cost over a 10 year period, and an electricity unit cost of ZAR1.50/kWh. There shall be liquidated Damages/Penalties for failing to meet the claimed OPEX as per membrane equipment specifications included in Volume 2A.

5. Preference will be given to tenders offering the most favourable remote support for operation of the MBR system. In addition to the requirements of the specifications, the Contractor's Proposal must clearly set out the details of the support offered.

6. Preference will be given to tenders who have grouted in their own equipment themselves (such as base plates/ holding down bolts for machines), concreting of pipes and screeding of clarifiers and primary sedimentation tanks etc. (to be accompanied by reference letters from the Engineer(s) involved on the project(s) where Functionality Score/Points are claimed).

7. Where the tenderer makes use of a subcontractor or joint venture partner for such work, points will only be allocated if the tenderer's proposed team includes the entity that executed this work, and where this is clearly demonstrated in the tender.

The term "*provision*" denotes the aggregation of the activities of supply, delivery to site, installation, testing, and commissioning

ATD1 - 1.2.1 *Delete the entire "F2.1.1.4.1", and replace with the following:*

"The stipulated minimum threshold percentages for local production and content for the **Electrical and Telecoms Cable sector** is **90%** and for **Valve Products and Actuators** is **70%** ("the designated sector") and will include all sub-sectors from the applicable National Treasury Instruction Note."

ATD1 - 2 **Part C1: C1.2: Contract Data (Volume 2)**

ATD1 - 2.1 Appendix to Tender (Part 1: Contract Data completed by the Employer)

ATD1 - 2.1.1 *In the entry column of Sub-Clause 4.2 (i.e. Amount of Performance Security), delete "10%", and replace with "7%".*

ATD1 - 3 **Part C2: C2.2: Schedule of Quantities (Volume 2)**

ATD1 - 3.1 **Electronic copy of Bill of Quantities issued in accordance with F.2.13.2 of T1.2: Tender Data**

An updated Bill of Quantities in PDF and MS Excel format [file name: "178Q-2016-17_T1 Tenderer's copy"] with amendments highlighted in red, and with the changes below, will be sent to Tenderers via e-mail (and Dropbox) for their convenience. This file supersedes the earlier versions issued to Tenderers with the Tender Documents. This updated electronic copy of the Bill of Quantities is issued in good faith, and can be submitted in lieu of the hard copy issued with the tender documents subject to the requirements of Clause F.2.13.2 of T1.2: Tender Data.

ATD1 - 3.2 **Schedule B: Sundries**

ATD1 - 3.2.1 *Amend the description* "Corrosion protection of equipment (inclusive of common equipment) for:" *to read* "Corrosion protection and Painting of equipment (inclusive of common equipment) for:"

ATD1 - 3.3 **Schedule M1: Lifting Equipment**

ATD1 - 3.3.1 *Delete item 18.*
ATD1 - 3.3.2 *In item 29, amend the quantity from* "140" *to* "120"
ATD1 - 3.3.3 *In item 43, amend the quantity from* "80" *to* "120"
ATD1 - 3.3.4 *Delete item 49*
ATD1 - 3.3.5 *Delete item 51*
ATD1 - 3.3.6 *Delete item 65*
ATD1 - 3.3.7 *After item 64, insert* "Item 65a" *against the description* "Existing Dewatering building overhead travelling crane".
ATD1 - 3.3.8 *Delete the following two items which comes after item 65a:*
"(i) Existing Dewatering building support structure; and
(ii) Existing Dewatering building rails".

ATD1 - 3.4 **Schedule M3: Spares**

ATD1 - 3.4.1 *After item 44, and before item 45, amend the description* "FBDA Centrifugal Blowers (MBR B)" *to read* "FBDA Centrifugal Blowers (MBR A)"

ATD1 - 3.5 **Schedule M4: MBR Fine Screening Facility (Section A of the Works)**

ATD1 - 3.5.1 *In items 2 and 12, amend the descriptions from* "Fine Screen units with integrated instrumentation, conveyors, etc." *to read* "Fine Screen"
ATD1 - 3.5.2 *In items 9 and 19, amend the descriptions from* "All Anchors and Supports" *to read* "Supports"
ATD1 - 3.5.3 *Delete Items 10 and 20 (Note: This is not scheduled separately, but included in the pipework items)*

ATD1 - 3.6 **Schedule M6: Fine Bubble Diffused Aeration Equipment (Section A of the Works)**

ATD1 - 3.6.1 *In items 7 and 23, amend the descriptions from* "Laterals pipework" *to read* "Laterals pipework and zone headers"
ATD1 - 3.6.2 *In item 11 and 27, amend the descriptions from* "Lateral supports" *to read "Lateral and zone header supports"*
ATD1 - 3.6.3 *Delete item 12 (Note: This is not scheduled separately, but included in the pipework items)*
ATD1 - 3.6.4 *In item 14, amend the description from* "Formic Acid mobile dosing skid system, along with all the pipe connection, injection/ quick release fittings on the dropleg etc for safe and proper functioning of the FBDA equipment" *to read* "Formic Acid mobile dosing skid system"

ATD1 - 3.7 **Schedule M8: New Ultra-Filtration (UF) Membrane Bioreactor (MBR) Plant Equipment (Section A of the Works)**

ATD1 - 3.7.1 *In Items 95 and 104, amend the descriptions from* "Filling station pump" *to read* "Filling station pump and pipework"

ATD1 - 3.7.2 *In Item 111, amend the description* "Membrane Tanks Feed/ Mixed Liquor Transfer Pumps" *to read* "Complete Membrane Plant Equipment"

ATD1 - 3.7.3 *Delete* "Item 112"

ATD1 - 3.7.4 *Delete* "Item 113"

ATD1 - 3.7.5 *Delete* "Item 114"

ATD1 - 3.7.6 *Delete* "Item 115"

ATD1 - 3.7.7 *Delete* "Item 116"

ATD1 - 3.7.8 *Delete* "Item 117"

ATD1 - 3.7.9 *Delete* "Item 118"

ATD1 - 3.8 **Schedule M9: Instrument Air Equipment (Section A of the Works)**

ATD1 - 3.8.1 *Delete* "Items 3 and 12". *(Note: This is not scheduled separately, but included in the Instrument Air Items)*

ATD1 - 3.8.2 *In Items 7 and 16, amend the descriptions* "All connecting pipework" *to read* "Pipework and supports"

ATD1 - 3.8.3 *In Items 9 and 18,* amend the description from "Pneumatic control system and SS solenoid valve terminal cabinet for each process area, complete with tubing, service unit, pressure regulator & auto drain etc." *to read* "Pneumatic Actuation Equipment for each Process Area".

ATD1 - 3.8.4 *Delete the Items following Items 9 and 18.*

ATD1 - 3.8.5 *Delete Item 19 including the related description* "Pneumatic Actuation Equipment".

ATD1 - 3.9 **Schedule M10: Service Water Equipment (Section A of the Works)**

ATD1 - 3.9.1 *In Items 4 and 9, amend the description from* "All pipework connections, fittings etc as shown on drawings" *to read* "Pipework".

ATD1 - 3.10 **Schedule M12: MBR Fine Screening Odour Control (Section A of the Works)**

ATD1 - 3.10.1 *Delete* "Items 17 and 18".

ATD1 - 3.11 **Schedule M14: Existing CAS Reactor Equipment (Section B of the Works)**

ATD1 - 3.11.1 *Delete* "Items 15 and 16".

ATD1 - 3.12 **Schedule M16: Existing Secondary Settling Tank Equipment (Section B of the Works)**

ATD1 - 3.12.1 *In Item 7 and 14, amend the description from* "SS V-notch weirs (75 mm deep) for full circumference of the clarifier" *to read* "SS V-notch weirs for full circumference of the clarifier".

ATD1 - 3.13 **Schedule M17: New Secondary Settling Tank Equipment (Section B of the Works)**

ATD1 - 3.13.1 *In Items 4 and 10, amend the description from* "SS V-notch weirs (75 mm deep) for full circumference of the clarifier" *to read* "SS V-notch weirs for full circumference of the clarifier".

ATD1 - 3.14 **Schedule M18: Chlorine Disinfection Equipment (Section B of the Works)**

ATD1 - 3.14.1 *In Items 4 and 24, amend the quantity from* "6" to "8".

ATD1 - 3.14.2 *Add the following new Items:*

"

Item No	Short Description	Unit	Quantity	Rate	Amount R c
	Schedule M18: Chlorine Disinfection Equipment (Section B of the Works)				
4a	Drum cradles without scales	No	8		
24a	Drum cradles without scales	No	8		

"

ATD1 - 3.14.3 *In Items 5 and 25, amend the description from* "All chlorine gas pipework complete as specified, including valves, pressure reducing valves, catchpots, heaters, vaporisers, pigtails supports etc., as required" *to read* "All chlorine gas pipework complete as specified, including valves, pressure reducing devices, catchpots, heaters, vaporisers, pigtails supports etc., as required".

ATD1 - 3.14.4 *Delete* "Items 10 and 30".

ATD1 - 3.14.5 *In Item 11 and 31, amend the descriptions from* "Pipework and supports as required" *to read* "Pipework and supports".

ATD1 - 3.14.6 *In Items 21 and 39, amend the unit from* "Sum" *to read "Month" and quantity from* "-" to "8".

ATD1 - 3.14.7 *In Item 22, amend the unit from* "Month" to *read "Sum" and quantity from* "8" to read "-".

ATD1 - 3.14.8 *Add the following new Items:*

"

Item No	Short Description	Unit	Quantity	Rate	Amount R c
	Schedule M18: Chlorine Disinfection Equipment (Section B of the Works)				
	Instrument Air				
22a	Compressors	No	2		
22b	Air receiver (moisture trap)	No	1		
22c	Air receiver	No	1		
22d	Condensate management system	Sum	-		
22e	Pipework and supports	Sum	-		
22f	Separator units and filter sets	No	3		
	Pneumatic Actuation Equipment				
22g	Pneumatic Actuation Equipment for each Process Area	Sum	-		
	Instrument Air				
41a	Compressors	No	2		
41b	Air receiver (moisture trap)	No	1		
41c	Air receiver	No	1		
41d	Condensate management system	Sum	-		
41e	Pipework and supports	Sum	-		
41f	Separator units and filter sets	No	3		
	Pneumatic Actuation Equipment				
41g	Pneumatic Actuation Equipment for each Process Area	Sum	-		

"

ATD1 - 3.14.9 *Insert "37a and 37b"in the Item No. column against the two items following Item 37 ("*Safety Signage (Wall charts)" *and* "Complete Shower Stainless Steel full body shower and eye bath (including Accumulator and Pumps)" *respectively.*

ATD1 - 3.15 Schedule M19: Clarifier Scum Pump Station Equipment (Section B of the Works)

ATD1 - 3.15.1 *In Item 4, amend the description from* "Suction pipework" *to read* "Suction pipework per scum pump station"

ATD1 - 3.15.2 *In Item 5, amend the description from* "Discharge pipework" to read "Discharge pipework per scum pump station"

ATD1 - 3.16 Schedule M20: Chemical Dosing Equipment (Section C of the Works)

ATD1 - 3.16.1 *In Items 6, 16, 26 and 35, amend the descriptions from* "All dosing pipework complete as specified, including valves, pressure reducing valves, etc." *to read* "Pipework"

ATD1 - 3.17 Schedule M21: Bioreactor Mixing Equipment (Section C of the Works)

ATD1 - 3.17.1 *In Item 5, amend the quantity from* "12" *to* "6"
ATD1 - 3.17.2 *In Item 6, amend the quantity from* "12" *to* "6"
ATD1 - 3.17.3 *In Item 7, amend the quantity from* "12" *to* "6"
ATD1 - 3.17.4 *In Item 8, amend the quantity from* "12" *to* "6"

ATD1 - 3.18 Schedule M22: Fine Bubble Diffused Aeration Equipment (Section C of the Works)

ATD1 - 3.18.1 *In Items 7 and 18, amend the descriptions from* "Lateral pipework" *to read* "Lateral pipework and zone headers".
ATD1 - 3.18.2 *In Items 11 and 22, amend the descriptions from* "Lateral supports" *to read* "Lateral and zone header supports".
ATD1 - 3.18.3 *In Item 13, amend the description from* "Formic Acid mobile dosing skid system, along with all the pipe connection, injection/ quick release fittings on the dropleg etc for safe and proper functioning of the FBDA equipment" *to read* "Formic Acid mobile dosing skid".
ATD1 - 3.18.4 *In Item 16, amend the quantity from* "5" *to* "3".
ATD1 - 3.18.5 *Delete Item 24.*

ATD1 - 3.19 Schedule M24: Existing Ultra-Filtration (UF) Membrane Bioreactor (MBR) Plant Equipment (Section C of the Works)

ATD1 - 3.19.1 *In the Amount column of Item 13, insert* "Rate only".
ATD1 - 3.19.2 *In Item 14, amend the description from* "Air scour distribution pipework to membrane cassettes" *from to read* "New air scour distribution pipework to membrane cassettes".
ATD1 - 3.19.3 *In the Amount column of Item 17, insert* "Rate only".
ATD1 - 3.19.4 *Add the following new Items:*

"

Item No	Short Description	Unit	Quantity	Rate	Amount R c
	Schedule M24: Existing Ultra-Filtration (UF) Membrane Bioreactor (MBR) Plant Equipment (Section C of the Works)				
	Permeate/Backpulse Pumps				
17a	New Permeate Suction Pipework	Sum	-		
17b	New Permeate Discharge Pipework	Sum	-		
	Permeate/Backpulse Pumps				
61a	New Permeate Suction Pipework	Sum	-		
61b	New Permeate Discharge Pipework	Sum	-		

"

ATD1 - 3.19.5 *Delete* "Item 57".
ATD1 - 3.19.6 *Delete* "Item 61".
ATD1 - 3.19.7 *Delete* "Items 94 and 95" *including the related description* "Handling of existing equipment".

ATD1 - 3.20 Schedule M25: Instrument Air Equipment (Section C of the Works)

ATD1 - 3.20.1 *Delete* "Items 5 and 14".
ATD1 - 3.20.2 *In Items 9 and 18, amend the descriptions* "All connecting pipework" *to read* "Pipework and supports".
ATD1 - 3.20.3 *In Items 11 and 20, amend the description from* "Pneumatic control system and SS solenoid valve terminal cabinet for each process area, complete with tubing, service unit, pressure regulator & auto drain etc." *to read* "Pneumatic Actuation Equipment for each Process Area".
ATD1 - 3.20.4 *After Item 11, delete the unnumbered item starting with "UV Stabilised...".*
ATD1 - 3.20.5 *Delete* "Item 21".
ATD1 - 3.20.6 *Delete* "Item 22".

ATD1 - 3.21 Schedule E4: LV Electrical and Control Cables

ATD1 - 3.21.1 *In Item 1, amend the quantity from* "10 000" *to* "11 000".
ATD1 - 3.21.2 *In Item 2, amend the quantity from* "1 200" *to* "1 700".
ATD1 - 3.21.3 *In Item 4, amend the quantity from* "3 500" *to* "4 000".
ATD1 - 3.21.4 *In Item 76, amend the quantity from* "1" *to* "1000", *and in the Amount column, delete* "Rate only".
ATD1 - 3.21.5 *In Item 85, amend the quantity from* "1" *to* "20", *and in the Amount column, delete* "Rate only".
ATD1 - 3.21.6 *In Item 92, amend the quantity from* "1" *to* "1000", *and in the Amount column, delete* "Rate only".
ATD1 - 3.21.7 *In Item 99, amend the quantity from* "1" *to* "20", *and in the Amount column, delete* "Rate only".
ATD1 - 3.21.8 *In Item 101, amend the quantity from* "7 800" *to* "9 000".

ATD1 - 3.22 Schedule E5: LV Electrical Installation

ATD1 - 3.22.1 *In Item 31, amend the quantity from* "10 000" *to* "11 000".
ATD1 - 3.22.2 *In Item 32, amend the quantity from* "1 200" *to* "1 700".
ATD1 - 3.22.3 *In Item 34, amend the quantity from* "3 500" *to* "4 000".
ATD1 - 3.22.4 *In Item 106, amend the quantity from* "1" *to* "1000", *and in the Amount column, delete* "Rate only".
ATD1 - 3.22.5 *In Item 115, amend the quantity from* "1" *to* "20", *and in the Amount column, delete* "Rate only".
ATD1 - 3.22.6 *In Item 122, amend the quantity from* "1" *to* "1000", *and in the Amount column, delete* "Rate only".
ATD1 - 3.22.7 *In Item 129, amend the quantity from* "1" *to* "20", *and in the Amount column, delete* "Rate only".
ATD1 - 3.22.8 *In Item 131, amend the quantity from* "0" *to* "9 000".
ATD1 - 3.22.9 *In Item 155, amend the quantity from* "100" *to* "200".
ATD1 - 3.22.10 *In Item 164, amend the quantity from* "500" *to* "1 000".
ATD1 - 3.22.11 *In Item 164, amend the unit from* "m³" *to* "m".
ATD1 - 3.22.12 *In Items 2 to 19, amend the descriptions from* "Heavy Duty Cable Ladder" *to read* "Heavy Duty Cable Ladder – Stainless Steel 316L".
ATD1 - 3.22.13 *In Items 20 to 23, amend the descriptions from* "Welded Wire Mesh Cable Tray" *to read* "Welded Wire Mesh Cable Tray – Stainless Steel 316L".
ATD1 - 3.22.14 *In Items 135 to 152, amend the descriptions from* "Heavy Duty Cable Ladder" *to read* "Heavy Duty Cable Ladder – Stainless Steel 316L".
ATD1 - 3.22.15 *In Items 153 to 156, amend the descriptions from* "Welded Wire Mesh Cable Tray" *to read* "Welded Wire Mesh Cable Tray – Stainless Steel 316L".

ATD1 - 3.22.16 *Add the following new items:*
"

Item No	Short Description	Unit	Quantity	Rate	Amount R c
	Schedule E5: LV Electrical Installation				
	Allow for all the costs and expenses in connection with the design, manufacture, painting, supplying, delivery, offloading and storage of the following materials and equipment:				
	Heavy Duty Cable Ladder - Hot Dipped Galvanised Steel				
	100 x 100mm (W x H)				
175	Straight length	m	100		
176	Extras: Tee piece or 90° deg Horizontal elbow or Internal Riser or Dropper	No	5		
177	4 Way cross over	No	1		
	200 x 100mm (W x H)				
178	Straight length	m	100		
179	Extras: Tee piece or 90° deg Horizontal elbow or Internal Riser or Dropper	No	5		
180	4 Way cross over	No	1		
	300 x 100mm (W x H)				
181	Straight length	m	100		
182	Extras: Tee piece or 90° deg Horizontal elbow or Internal Riser or Dropper	No	5		
183	4 Way cross over	No	1		
	600 x 100mm (W x H)				
184	Straight length	m	100		
185	Extras: Tee piece or 90° deg Horizontal elbow or Internal Riser or Dropper	No	5		
186	4 Way cross over	No			
	800 x 100mm (W x H)				

187	Straight length	m	200		
188	Extras: Tee piece or 90° deg Horizontal elbow or Internal Riser or Dropper	No	10		
189	4 Way cross over	No	2		
	1000 x 100mm (W x H)				
190	Straight length	m	200		
191	Extras: Tee piece or 90° deg Horizontal elbow or Internal Riser or Dropper	No	10		
192	4 Way cross over	No	2		
	Welded Wire Mesh Cable Tray - Hot Dipped Galvanised Steel				
	100 x 50mm (W x H), Ø 4mm Wire				
193	Straight length	m	100		
	200 x 50mm (W x H), Ø 4mm Wire				
194	Straight length	m	100		
	300 x 50mm (W x H), Ø 4mm Wire				
195	Straight length	m	50		

Item No	Short Description	Unit	Quantity	Rate	Amount R c
	400 x 50mm (W x H), Ø 4mm Wire				
196	Straight length	m	100		
	Allow for all costs and expenses in connection with the Site Installation in terms of in terms of FIDIC and Part C3: Scope of Work (excluding pre-commissioning) for the following:				
	Heavy Duty Cable Ladder - Hot Dipped Galvanised Steel				
	100 x 100mm (W x H)				
197	Straight length	m	100		
198	Extras: Tee piece or 90° deg Horizontal elbow or Internal Riser or Dropper	No	5		
199	4 Way cross over	No	1		
	200 x 100mm (W x H)				
200	Straight length	m	100		
201	Extras: Tee piece or 90° deg Horizontal elbow or Internal Riser or Dropper	No	5		
202	4 Way cross over	No	1		
	300 x 100mm (W x H)				
203	Straight length	m	100		
204	Extras: Tee piece or 90° deg Horizontal elbow or Internal Riser or Dropper	No	5		
205	4 Way cross over	No	1		
	600 x 100mm (W x H)				
206	Straight length	m	100		
207	Extras: Tee piece or 90° deg Horizontal elbow or Internal Riser or Dropper	No	5		
208	4 Way cross over	No	1		
	800 x 100mm (W x H)				

209	Straight length	m	200		
210	Extras: Tee piece or 90° deg Horizontal elbow or Internal Riser or Dropper	No	10		
211	4 Way cross over	No	2		
	1000 x 100mm (W x H)				
212	Straight length	m	200		
213	Extras: Tee piece or 90° deg Horizontal elbow or Internal Riser or Dropper	No	10		
214	4 Way cross over	No	2		
	Welded Wire Mesh Cable Tray - Hot Dipped Galvanised Steel				
	100 x 50mm (W x H), Ø 4mm Wire				
215	Straight length	m	100		
	200 x 50mm (W x H), Ø 4mm Wire				
216	Straight length	m	100		

Item No	Short Description	Unit	Quantity	Rate	Amount R c
	300 x 50mm (W x H), Ø 4mm Wire				
217	Straight length	m	50		
	400 x 50mm (W x H), Ø 4mm Wire				
218	Straight length	m	100		

ATD1 - 3.23 Schedule E7: LV Switchgear and Controlgear Assemblies

ATD1 - 3.23.1 In item 45, remove the unit "No" and the quantity "6". (Note: This line serves only as a heading for items 46 to 48).

ATD1 - 3.24 Schedule E8: Programmable Logic Controllers

ATD1 - 3.24.1 Add the following new items:

"

Item No	Short Description	Unit	Quantity	Rate	Amount R c
	Schedule E8: Programmable Logic Controllers				
121	Integration of control systems in this schedule with the remainder of the WWTW across the plant wide fibre optic ring network	Sum	1		

"

ATD1 - 3.25 Schedule E9: SCADA

ATD1 - 3.25.1 In items 42 and 43, delete the "Rate Only" from the Amount column.

ATD1 - 3.26 Schedule E12: Area Lighting

ATD1 - 3.26.1 Add the following new items:

"

Item No	Short Description	Unit	Quantity	Rate	Amount R c
	Schedule E12: Area Lighting				
3b	Decommissioning, moving, reinstallation and recommissioning of existing high mast lights in new location	No	1		

"

ATD1 - 4 Part C3.6 Annexes: Mechanical Specifications (Volume 2A)

ATD1 - 4.1 **A4 MBR Module B: Fine Screening Station**

ATD1 - 4.1.1 A4.3 Screenings Compactor

In the sentence starting with "The screenings shall...", *replace* "60%" with "45%".

ATD1 - 4.1.2 A4.4.1 MBR Fine Screen

In the last Paragraph of the second sentence starting with "They shall be selected...", *replace* "2.5" with "1.75".

ATD1 - 4.2 **A7 MBR Module B: Fine Bubble Diffused Aeration (FBDA) System**

ATD1 - 4.2.1 A7.4.1 Diffuser assemblies

(a) General

In the first Paragraph of the first sentence after "...bubble type", *delete* "PTFE-coated".

(b) Diffuser location

(i) Delete the last sentence of the second Paragraph ending with "...are not acceptable".
(ii) In the fourth Paragraph after "...manufacture of", *delete* "PTFE coated".
(iii) In Table 62, delete "Surface Coating (Anti-Fouling)"*and* "PTFE or equivalent" *in the Description and Material/Value columns respectively.*

ATD1 - 4.3 **A8 MBR Module B: FBDA and Air Scour Blower Equipment**

ATD1 - 4.3.1 A8.2.4 Blow-off Valve

In the first sentence of the second paragraph, the sentence starting with "Each blower shall be..." *amend to read* "Each blower blow-off shall discharge to a safe environment"

ATD1 - 4.3.2 A8.2.5 Blower Compact Enclosure

In the sentence starting with "The enclosure shall accommodate lifting..." *in the first paragraph; amend to read* "If the compact enclosure panels do not allow for a two man lift (max. 40kg per panel); the blower enclosure shall be suitable to be lifted by lifting equipment"

In the sentence starting with "The only items allowed..." *in the second paragraph; amend to read* "The only items allowed to be mounted outside are the non-return valve, isolation valve, inlet filter, outlet silencer and blow-off valve (provided the discharge is to a safe environment)."

ATD1 - 4.4 **A10 MBR Module B: Membrane Bioreactor (MBR) Plant Equipment**

ATD1 - 4.4.1 A10.4 Design Requirements

In "Table 70: MBR Effluent Discharge Requirements", *amend the Faecal Coliform discharge requirements as follows:*

Parameter	Unit	Effluent Quality Target	Requirement Type	Maximum Value
Faecal Coliform	(Count/100 ml)	250	Geomean	750

ATD1 - 4.4.2 A10.7.2 Flux and Membrane Area

a) In the Paragraph starting with "The MBR equipment...", and ending with "...wet weather flow", replace "1.5" with "1.65".

b) In Paragraph starting with "The MBR equipment...", *add the following after the sentence ending with* "...wet weather flow":

"A minor deviation of no more than 1.5% is allowable for the design fluxes, except for the peak hourly flow. The Contractor shall justify his proposed fluxes by data from at least three (3) operational plants, based on the last five (5) years of operation or more."

ATD1 - 4.4.3 A10.25.3 Performance Criteria for the Membrane System

a) Delete "Item (b)".

b) *Delete the entire "Item (c)" and replace with the following:*

"Permeate turbidity to be less than 0.2 NTU 95% of the time, and less than 0.5 NTU 100% of the time".

ATD1 - 4.5 A12 MBR Module B: Service Water Station

ATD1 - 4.5.1 A12.2 General

Add the following paragraph to this clause:
"Service water shall be pumped with 4 service water pumps, one of four the pumps shall be a standby pump. The service water system shall charge two accumulators via one of two UV disinfection units in a duty/standby configuration."

ATD1 - 4.5.2 A12.3.2 UV Disinfection units

In "Table 86: MBR UV Disinfection Design Criteria", amend the Faecal Coliform inlet parameters as follows:

"

Parameter	Average Conditions	Membrane Rupture
Faecal Coliform at Inlet of UV (CFU/100ml)	250	750

ATD1 - 4.5.3 A12.4.3 UV Disinfection Units

(a) Lamps

In the first sentence of the first paragraph, delete the word "operation" *and replace with* "installed".
In the fourth sentence of the first paragraph, "Lamps shall be adjustable...", *amend to read* "Lamp output shall be adjustable; a minimum turn-down ration of 60% for Medium Pressure lamps, and a minimum of 50% for Low Pressure lamps."

(c) Automatic Quartz Sleeve Cleaning

In the second paragraph "The automated cleaning..." *amend this sentence to read* "The automated cleaning action shall consist of a mechanical wiping system, however provision shall be made to chemically clean the system when the unit is off-line."

ATD1 - 4.6 A30 MBR Module A: Mixed Liquor Recycle Pumps

ATD1 - 4.6.1 A30.3 Performance Requirements

a) *In Table 119, amend the Expected Duty range of the Membrane Tank Feed Pumps from* "1,500 – 3,500" *to* "1,600 – 3,785".

ATD1 - 4.7 A31 MBR Module A: Existing MBR Plant Equipment

ATD1 - 4.7.1 A31.2 Scope

a) *In the first sentence of item (b) (i) after* "...area of at least", *amend* "47 500 m^2" *to* "45 300 m^2".

ATD1 - 4.7.2 A31.8.2 Flux and Membrane Area

a) *Delete the entire* "Table 121: MBR A Hydraulic Loading", *and replace with the following:*

"Table 1-A: MBR A Hydraulic Loading

Parameter	Design Capacity[5]		Constraint
	m^3/d	m^3/h	
Average Daily Flow	18 000	750	N (Indefinitely)
Maximum Monthly Flow	27 500[1]	1 146[1]	N (Indefinitely)
Maximum Daily Flow	33 750[2]	1 406[2]	N (Indefinitely)
Average Wet Weather Flow	36 000[3]	1 500[3]	N (for at least 15 days on a continuous basis)
Instantaneous Peak Hourly Flow	45 000[4]	1 875[4]	N (for 8 hrs continuously)

[1]Maximum monthly flow with all six (6) trains on-line. The MBR plant equipment shall be designed to run under this conditions indefinitely.
[2]Maximum flow with one train offline for maintenance or recovery cleaning (for a maximum of 10 hours)
[3]Average wet weather flow with all six (6) trains on-line. The MBR plant equipment shall be designed to run under this conditions for at least 15 consecutive days (i.e. on a continuous basis) at membrane tank MLSS concentration not less than 9 500 mgTSS/ℓ.
[4]The membrane bioreactor plant equipment shall be designed taking cognisance of the peak instantaneous flow occurring for 8 hours continuously with all six (6) trains on line.
[5]The maximum allowable MLSS in the membrane tank shall be limited to 12 500 mgTSS/ℓ for all flow conditions except for 36 000 m^3/d. For the 36 000 m^3/d condition, the maximum MLSS in the membrane tank shall not be less than 9;500 mgTSS/ℓ.

b) *Delete the Paragraph starting with* "The MBR equipment...", *and ending with* "...net flux rate.", *and replace with the following:*

"The MBR equipment shall be designed for a maximum monthly flow net flux rate of not more than 25 litres per square meter per hour (LMH), and an instantaneous peak hourly flow net flux rate equal to or less than 1.65 times the maximum monthly flow net flux rate.

A minor deviation of no more than 1.5% is allowable for the design fluxes, except for the peak hourly flow. The Contractor shall justify his proposed fluxes by data from at least three (3) operational plants, based on the last five (5) years of operation or more."

c) *In the Paragraph starting with* "The number of membrane modules...", *and ending with* "...stated herein.", replace "47 500 m^2" *with* "45 300 m^2".

d) *In the Paragraph starting with "The number of membrane modules...", add the following after the sentence ending with* "...conditions stated herein":

"The Contractor shall design the membrane plant taking cognisance of spare space requirements of between 8 and 12.5%."

ATD1 - 4.7.3 A31.13 Permeate and Backpulse Pumps

a) *In the second Paragraph of the third sentence starting with* "The Contractor shall...", *and ending with* "...of about 25 m.", replace "325 m^3/h" *with* "380 m^3/h".

ATD1 - 4.8 A42 Pipework and Valve Equipment

ATD1 - 4.8.1 Add item (j) to A42.4: All pipework shall be painted and colour banded in accordance with the requirements of section D.

ATD1 - 5 Part C3.6Annexes: Electrical and Electronic Specifications (Volume 2B)

ATD1 - 5.1 B8 LV Cabling Installation

ATD1 - 5.1.1 B8.4 LV Cable Support System

Amend all clauses "stainless steel 316" *to read* "stainless steel 316L".

ATD1 - 5.1.2 B8.4 LV Cable Support System

Add the following paragraphs to the Contents of B8.4:

"The cable ladders shall have 2mm thick side rails with channel cross rungs at 300mm centres. The installation price shall be complete with couplers, clamps, threaded rods, hangers, cantilevers, brackets etc. to fix to trusses, walls, etc. as required and as shown on the drawings.

Wire Mesh Cable Tray shall have a 50 x 50mm Base Aperture and 25 x 50mm Side Aperture. The installation price shall be complete with splices, couplers, clamps, threaded rods, hangers, brackets etc. to fix to trusses, walls, etc. as required and as shown on the drawings."

ATD1 - 5.2 B10 LV Switchgear and Controlgear Assemblies

ATD1 - 5.2.1 B10.10 MCC Room Ventilation

Delete the first line of B10.10 and replace with "The ventilation system shall comply with the requirements of Section A"

ATD1 - 6 Technical Data Sheets (Volume 2C)

ATD1 - 6.1 Technical Detail Sheet No. 21: Rotary Lobe Pump: MBR B Permeate/Backpulse

ATD1 - 6.1.1 *In the Description column, replace* "flow range" with "minimum flow", *and in the Specified column, replace* "325 – 450" *with* "550".

ATD1 - 6.2 Technical Detail Sheet No. 69: Vertical Shaft Propeller Pump: MBR A Membrane Train Feed

ATD1 - 6.2.1 *In the Specified column, amend the specified Flow Range from* "1,500 – 3,500" *to* "1,600 – 3,785".

ATD1 - 6.2.2 *In the Specified column, amend the specified Head Range from* "1.4 – 1.6" *to* "1.9 – 2.3".

ATD1 - 6.3 **Technical Detail Sheet No. 70: Membrane Equipment: MBR A**

ATD1 - 6.3.1 *Replace Items 1, 2 and 3 of Technical Detail Sheet 70 with the following:*

DESCRIPTION	Unit	Specified		Offered	
1. Membrane Key Data/ Operational Parameters					
Membrane Model					
Membrane Material		PVDF			
Type		Submerged, Outside-In			
Nominal membrane pore size	µm	0.04 to 0.1 (max)			
Membrane area per cassette (fully filled)	m^2	1,510			
Number of filtration trains	No.	6			
Cassettes per filtration train	No.	5			
Membrane area per filtration train	m^2	7,550			
Total membrane area	m^2	45,300			
Membrane volume per train	m^3				
Aeration rate per train	Nm^3/hr per train	2,400			
Specific Aeration Demand (SAD_m) per per permeate volume	$Nm^3/m^3/hr$	0.32			
SAD_p per membrane surface area @ Average Daily Flow	m^3 air/m^3 permeate	19.2			
SAD_p per membrane surface area @ Maximum Daily Flow	m^3 air/m^3 permeate	9.6			
Net filtration time per 24 hours	h	>22			
Backpulse time	s				
Relaxation time	s				
Filtration time	s				
Backpulse time	s				
Relaxation time	s				
Material of Construction (Cassette assembly - frame & beam)		EN Grade 1.4401			
2. Membrane Design Flow Criteria		**Average**	**Peak**	**Average**	**Peak**
Capacity	m^3/d	18,000	36,000		
Duration	Day(s)	∞	15days Continuously		
Net flux (N trains)	LMH				
Backpulse Flux	LMH				
Backpulse Pressure	bar				
Biomass concentration (MLSS)	mg/ℓ	10,500	9,500		
Design operating temperature	°C	14			
Operating pH range	-	6.9 - 7.8			
Typical trans-membrane pressure (TMP)	bar	0.1 - 0.35			
Maximum trans-membrane pressure (TMP)	bar	<0.55			
3. Membrane Design Flow Criteria and Corresponding Net Flux		**Flow Rate (m^3/d)**	**Net Flux (LMH)**	**Flow Rate (m^3/d)**	**Net Flux (LMH)**
Average Daily (Dry) Flow (N)				18,000	
Maximum Monthly (Dry) Flow (N)				27,500	
Maximum Daily (Dry) Flow (N)				33,750	
Average Wet Weather Flow (N)				36,000	
Peak Hourly Flow				45,000	

ATD1 - 6.4 **Technical Detail Sheet No. 75: Rotary Lobe Pump: MBR A Permeate/Backpulse**

ATD1 - 6.4.1 *In the Description column, replace* "flow range" with "minimum flow", and in the Specified column, replace "325 – 450" with "380"

ATD1 - 6.5 **Technical Detail Sheet No. E04 Generator Set**

ATD1 - 6.5.1 *Item 8.1 - Amend the Dummy Load Requirement from "50%" to "40%".*
ATD1 - 6.5.2 *Item 9.4 - Amend the louvre material of construction from "Aluminium" to "Stainless Steel 316".*

ATD1 - 6.6 **Technical Detail Sheet No. E09 Streetlights**

ATD1 - 6.6.1 *Item 3.3 - Amend the Pole Height from "4m" to "7m".*

ATD1 - 7 **Drawings (Volume 3)**

ATD1 - 7.1 **Service Water System**

ATD1 - 7.1.1 *The following revised Process and Instrumentation Diagrams (drawings) are attached (in reduced A4 format) for the Tenderers' convenience , and supersedes those included in the original book of drawings (i.e. Book 4) - Note: Tenderers will be sent a Dropbox link for downloading a full size drawing:*

a) Replace "110585-WWTW-DRG-PID-1143 rev. T0" with "110585-WWTW-DRG-PID-1143 rev. T1";
b) Replace "110585-WWTW-DRG-PID-1161 rev. T0" with "110585-WWTW-DRG-PID-1161 rev. T1";
c) Replace "110585-WWTW-DRG-PID-1165 rev. T0" with "110585-WWTW-DRG-PID-1165 rev. T1".

ATD1 - 7.1.2 *The following new/ additional Process and Instrumentation Diagram (drawing) is attached (in reduced A4 format) for the Tenderers' convenience , and forms part of the drawings included in Volume 3: Book of Drawings - Note: Tenderers will be sent a Dropbox link for downloading a full size drawing:*

a) Add drawing "110585-WWTW-DRG-PID-1170 rev. T0 (i.e. Process & Instrumentation Diagram MBR A Service Water Pump Station: Service Water Pumps" to the book of drawings as well as on the drawing register.

Tenderers are to return a signed copy of this notice/addendum with the submission of their Tender (See Schedule 18 of Tender Document). Failure to return a signed copy of the Addendum may result in the Tender being declared Non-Responsive.

Kindly acknowledge receipt of this Addendum by e-mail using the enclosed Acknowledgement Receipt.

Yours faithfully,

.....

Enclosures:
a) Acknowledgement Form
b) Bill of Quantities in PDF and MS Excel (file name: "178Q-2016-17_T1")
c) Technical Detail Sheets
d) Drawings

WRITTEN ACKNOWLEDGEMENT OF RECEIPT

ADDENDUM TO TENDER DOCUMENTS No 2

CITY OF CAPE TOWN

BOX NUMBER: 169

for

TENDER NUMBER: 178Q/2016/17

DESCRIPTION: **DESIGN-BUILD OF MECHANICAL AND ELECTRICAL WORKS FOR THE CONSTRUCTION OF AN MBR PLANT AND BOTTLENECK ALLEVIATION AT ZANDVLIET WASTEWATER TREATMENT WORKS**

CLOSING DATE OF TENDER: **27 FEBRUARY 2017**

Kindly acknowledge receipt of this Addendum by e-mailing this to

We acknowledge receipt of the above Addendum and confirm that any tender we submit will take account of the instructions detailed therein.

Signature..... **Date**.....

Legal and full name of tendering entity:

.....

.....

ADDENDA TO TENDER DOCUMENTS No. 3

CITY OF CAPE TOWN
ISIXEKO SASEKAPA
STAD KAAPSTAD

FINANCE
SUPPLY CHAIN MANAGEMENT

22 February 2017

TO ALL TENDERERS

Dear Sirs,

ADDENDUM TO TENDER DOCUMENTS No. 3
(11 Pages)

CITY OF CAPE TOWN

BOX NUMBER: 169

for

TENDER NUMBER: 178Q/2016/17

DESCRIPTION: **DESIGN-BUILD OF MECHANICAL AND ELECTRICAL WORKS FOR THE CONSTRUCTION OF AN MBR PLANT AND BOTTLENECK ALLEVIATION AT ZANDVLIET WASTEWATER TREATMENT WORKS**

CLOSING DATE OF TENDER: **13 MARCH 2017**

Dear Sir/Madam

Your attention is specifically drawn to the following amendments which are to be made to the Contract Document for the above in terms of Clause F.3.2 of the Standard Conditions of Tender and you will be deemed to have made allowance necessary to provide for these amendments in your Tender offer.

This "Addendum to Tender Documents (ATD)" is an addition to the Tender Documents listed in the Tender Data. Any tender submitted will be deemed to be in accordance with those Documents amended in accordance with the following instructions:

Tenderers should take note of the following:

ADDENDUM TO TENDER DOCUMENTS (ATD) No. 3

ATD2 - 1 **General Tender Information (Volume 2)**

ATD2 - 1.1 *On page (i) of the General Tender Information, Amend the closing date from* "27 February 2017" *to* "13 March 2017"

ATD2 - 2 **Part T1: T1.1: Tender Notice and Invitation to Tender (Volume 2)**

ATD2 - 2.1 *On page 2 of T1.1 Tender Notice and Invitation to Tender, in the fourth last paragraph of the sentence starting with* "The closing time...", *replace* "27 February 2017" *with* "13 March 2017"

ATD2 - 3 **Part C1: C1.2: Contract Data (Volume 2)**

ATD2 - 3.1 Appendix to Tender (Part 1: Contract Data completed by the Employer)

ATD2 - 3.1.1 *In the entry column of Sub-Clause 1.1.3.3 (i.e. Time for Completion of the Works), replace the "Time for Completion calculated from Commencement Date" as follows:*

"

Section of the Works	Time for Completion calculated from Commencement Date
Section A	896 days
Section B	1 129 days
Section C	1 342 days

"

ATD2 - 4 **Part C2: C2.2: Schedule of Quantities (Volume 2)**

ATD2 - 4.1 **Schedule M1: Lifting Equipment**

ATD2 - 4.1.1 *Delete Item 17.*

ATD2 - 4.2 **Schedule M2: Valves and Sluice Gates Equipment**

ATD2 - 4.2.1 *In Item 75, amend the quantity from* "108" *to* "126"
ATD2 - 4.2.2 *In Item 76, amend the quantity from* "9" *to* "18"
ATD2 - 4.2.3 *In Item 77, amend the quantity from* "9" *to* "18"
ATD2 - 4.2.4 *In Item 79, amend the quantity from* "54" *to* "63"
ATD2 - 4.2.5 *Delete Item 80*

ATD2 - 5 **Part C3: Scope of Work (Volume 2)**

ATD2 - 5.1 **C3.5: Management**

ATD2 - 5.1.1 1.7. Right of Access to Site

In the first Paragraph, after the last sentence ending with "...Drawing No. 110585-WWTW-DRG-CC-0006", *add the following:*

"In addition to the Sequencing of Work indicated in Table 4 (as amended herein), the Contractor shall take cognisance of the following construction activities:

The external and internal walls separating the zones in Module A bioreactor (i.e. existing MBR plant) are constructed of a proprietary Glass-Fused Steel wall, whilst the mixer platforms, mixed liquor recycle channels and floor slabs and footings are constructed of reinforced concrete. This existing proprietary Bioreactor Glass-Fused Steel Tank is to be dismantled and removed, and a new reinforced concrete (RC) water retaining structure constructed in its place by civil contractor as part of Tender No. 179Q/2016/17 which runs concurrently with this Contract. In addition, the mixed liquor transfer pumpstation and the inlet channel will be demolished and be reconstructed along with the internal and external reactor walls. The civil contractor can only commence with this work (which falls under Section C) after successful commissioning of Portion A by the Contractor

(Contract No. 178Q/2016/17) as shown on Drawings 110585-CC-1329 to 1332. It is anticipated that access will be granted to the civil contractor for the removal of the Glass-Fused Steel Tank and construction of the RC water retaining walls and channels at approximately eight hundred and ninety six (896) days after the Commencement Date of this Contract as shown in the timeline chart below (i.e. there is a period of approximately 76 days before the civil contractor can commence work under Section C after completion of Section A by the Contractor).

a) *Delete the entire* **"Table 4: Sequencing of Work with Civil Contract"**, *and replace with the following table:*

"Table 1-A: Sequencing of Work with Civil Contract

Section of the Site	Date when Section of Works will be Ready for Installation of Equipment
Section A of Site	535 days after Commencement Date of the Works
Section B of Site	820 days after Commencement Date of the Works
Section C of Site	1 112 days after Commencement Date of the Works

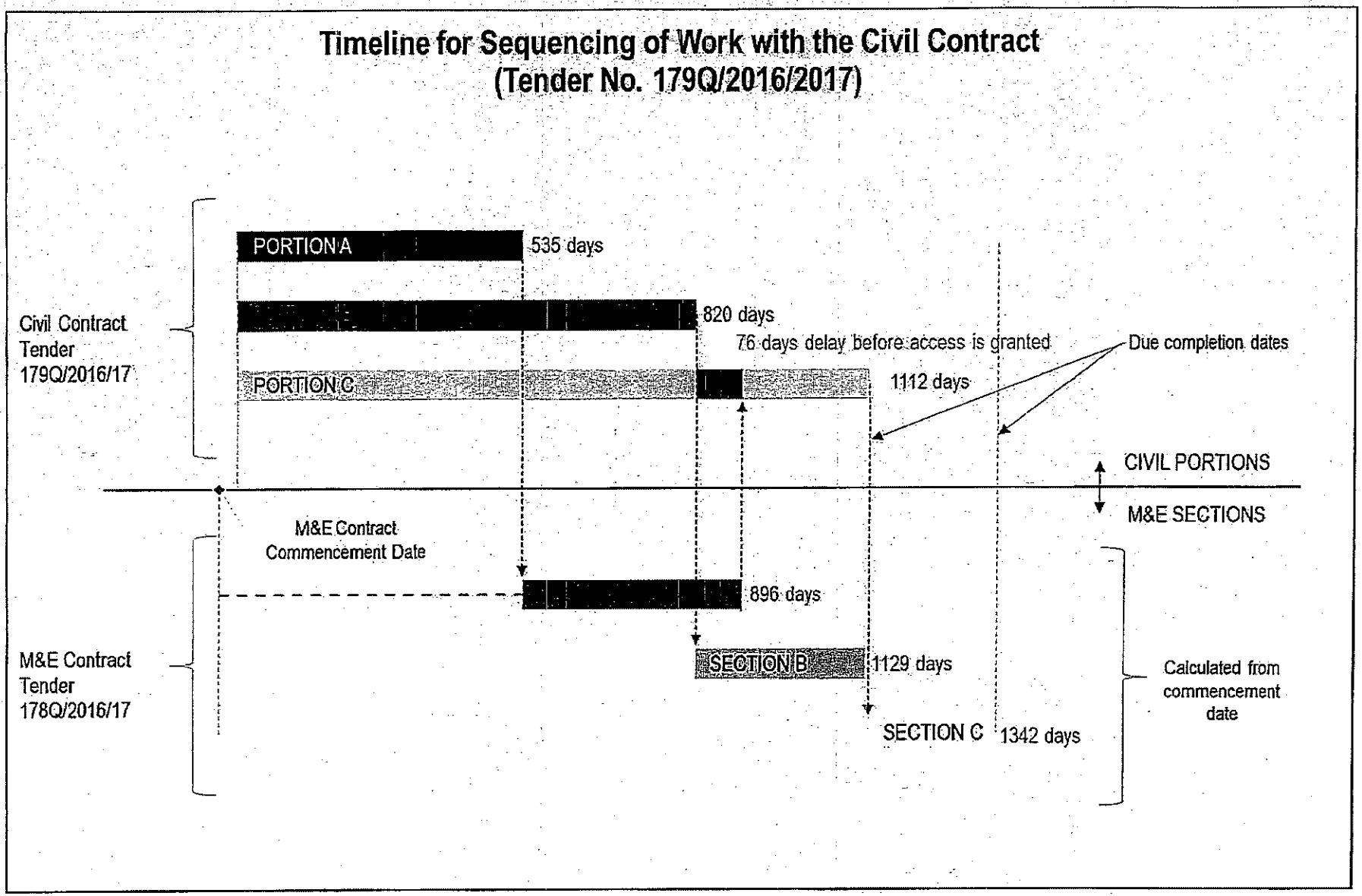
"

a) *At the end of* **"Table 4-A: Sequencing of Work with Civil Contract"**, as amended herein, add the following:

"The Sequencing of Work is also shown below in a Timeline Chart for the benefit of the Contractor.

(Continued overleaf)

Timeline for Sequencing of Work with the Civil Contract (Tender No. 179Q/2016/2017)



ATD2 - 6 **Part C3.6 Annexes: Mechanical Specifications (Volume 2A)**

ATD2 - 6.1 **A8 MBR Module B: FBDA and Air Scour Blower Equipment**

ATD2 - 6.1.1 A8.2.1 General

a) *Add the following:*

"The blower shall have turn down ratio from 100% to at least 40% of maximum rated output. The blower shall be equipped with actuated variable inlet guide vanes as well as actuated variable outlet diffuser vanes."

ATD2 - 6.1.2 A8.2.4 Blow Off Valve

a) *Amend the heading to read* "Blow Off Valve and Silencer".

b) *In the last sentence of the first Paragraph starting with* "The valve shall...", *replace* "15" *with* "10".

ATD2 - 6.2 **A10 MBR Module B: Membrane Bioreactor (MBR) Plant Equipment**

ATD2 - 6.2.1 A10.5 4 Design Requirements

In the Parameter column of Table 70: MBR Effluent Discharge Requirements, replace the fourth listed parameter "Total Nitrogen (TN)" *with* "Total Kjeldahl Nitrogen (TKN)".

ATD2 - 6.2.2 A10.16.3 Design Capacity

In the fourth sentence of the first Paragraph starting with "In addition, the Contractor...", *and after* "...information in...", *delete the word* "Section".

ATD2 - 6.2.3 A10.16.3 Design Capacity

In the first sentence replace "A24" with "A25".

ATD2 - 6.2.4 A10.17.2 MBR Plant Control

In the first sentence of the first Paragraph after "...in conjunction with..." *delete the word* "Section".

ATD2 - 6.3 **A11 MBR Module B: Filtration Drain and SCUM/WAS Pumps**

ATD2 - 6.3.1 A11.4 Design Requirements

a) Pumps

In the seventh paragraph starting with "Only pumps which..." *add the following:*

"Pumps with an easily replaceable radial casing are also acceptable, provided a radial casings shall be offered as spares in lieu of radial casing liners."

c) Drive

Amend the first sentence to read, "The drive shall be coupled via a flexible coupling".

ATD2 - 6.3.2 A11.6 Materials

Delete item (a), and replace with the following:

"The pump shaft shall be of martensitic stainless steel, hardened chrome moly, or similar. The shaft shall have high corrosion and wear resistance properties".

ATD2 - 6.4 **A14 MBR Module B: Lifting Equipment**

ATD2 - 6.4.1 A14.6 Corrosion Protection and Painting

Delete "Steelwork shall be hot dipped galvanised and painted." *and replace with* "Corrosion protection and painting shall be in accordance with Clause D59 and subsequent Clause D13.3.4 (Hot Metal Sprayed Coatings – System 3)"

ATD2 - 6.5 **A18 CAS Plant: Existing RAS and WAS Plant Equipment**

ATD2 - 6.5.1 A18 CAS Plant Existing RAS and WAS Plant Equipment

In the section heading/title, delete "A44A18 CAS Plant Existing RAS and WAS Plant Equipment" *and replace with* "A18 CAS Plant Existing RAS and WAS Plant Equipment".

ATD2 - 6.5.2 A18.5.1 Vertical Shaft Axial Flow Pumps

Delete the sentence "Preference shall be given to pumps whose speed does not exceed 1 000 RPM", i.e. the last Paragraph.

ATD2 - 6.6 **A20 CAS Plant: Secondary Settling Tanks (Existing Plant and Proposed)**

ATD2 - 6.6.1 A20.6 Design Requirements

c) Centre Column/Inlet Diffuser

In the second Paragraph of item (c), starting with "The thickness of the...", *and after,* "... 10mm", *add the following:*

"..., for bridges with no central column support. GRP or Stainless steel may be used for bridges with central concrete support structure".

ATD2 - 6.7 **A38 MBR Compressed Air Equipment**

ATD2 - 6.7.1 A38.4.3 Compressor

In the first sentence of the second paragraph starting with "The volume of air delivered..." *delete the following:*

"and shall be achieved by using a motor with VFD control. VFD control will not be required for the new chlorination facility".

ATD2 - 6.8 **A41 Citric Acid Bulk Powder Batching Equipment**

ATD2 - 6.8.1 A41.4 Design Requirements

Add the following after the end of "A41.4.4 Water Supply":

"A41.4.5 Lifting Equipment

The lifting equipment shall comply with A14.

The steel structure shall house the citric acid chute/ hopper and shall be fitted with lifting equipment, comprising an overhead travelling crane, an electric hoist trolley and electric hoist, including a bulk bag hoist frame to which the lime bags can attach as shown on Drawing Nos 110585-WWTW-DRG-WW-998 and 999 (attached hereto). The lifting equipment shall allow the Operator to seamlessly lift a bulk bag of citric acid from a position on the ground onto the platform and placing of this bulk bag onto the bag activator. From the bag activator, the bag contents will be fed under gravity into the chute/ hopper.

The total height of the bulk bag hoist will be approximately 5.0 m from the finished floor level as shown on drawings. The Contractor shall confirm this dimension. The lifting equipment shall be rated for a safe working load of at least 1.5 tonnes, which shall be permanently marked on all components.

A41.4.6 Bulk bag activator

A pneumatically driven bulk bag activator shall be provided at the new platform. The bulk bag activator shall be a proprietary vendor package from a supplier with at least 10 years' experience in this field. Equipment which has not previously been in common use in South Africa shall not be acceptable unless the Engineer agrees in writing. Bulk bag activators supplied by Flexicon or any other equivalent shall be offered. The bulk bag shall be lifted from the ground (finished floor level of the citric acid room) and be positioned on top of the platform and be connected to the bulk bag activator. The bag activator shall squeeze the bottom edges of the bags into a steep "V" shape to raise the bag and to direct the material into the bag spout outlet in order to promote total evacuation of the bulk bag. The material of construction of the bulk bag activator shall be stainless steel (Grade 316).

A41.4.7 Iris valve and a chute with a door

An iris valve and a chute with a door shall be fitted to enable the Operator to safely dissolve citric acid into the make-up tank. The iris valve and a chute with a door shall be a proprietary vendor package from a supplier with at least 10 years' experience in this field. Equipment which has not previously been in common use in South Africa shall not be acceptable unless the Engineer agrees in writing."

ATD2 - 6.9 **A42: Pipework and Valve Equipment**

ATD2 - 6.9.1 A42.1.4 Materials and Surface Coating

In item d), add the following ", for FBE coated valves."

In item f), amend "≤DN400" *to read* "<DN200".

Add the following clause:

"j) Notwithstanding the requirements of item (f), the following valves shall be of EN Grade 1.4401 stainless steel:

i) Sequential Aeration Valves
iii) Membrane cassette isolation valves
iv) Scum spray valves
v) FBDA Condensation drain and formic acid injection valves"

ATD2 - 6.9.2 A42.1.5 Actuators

In the sentence starting with "Refer to..." *amend* "A36A69 and A39" *to read* "A36 to A39".

ATD2 - 6.9.3 A42.2.1 Sludge Was Scum

In item b), amend "Rectangular through" *to read* "right through (i.e. full bore)".

ATD2 - 6.9.4 A42.2.3 Permeate Valves (Pump Isolation and Cassette Isolation)

Delete the first paragraph and replace with:

"The permeate pump isolation valves shall be wafer type or double flanged.

Membrane cassette isolation valves shall be wafer type.

Wafer type valves shall be rubber lined with stainless steel disc.

Double flanged valves may be rubber lined with stainless steel disc or double/triple eccentric with stainless steel disc.

Valves shall maintain a seal against bidirectional flow and pressure."

ATD2 - 6.9.5 A42.2.5 Clean In Place(CIP)

Delete the last paragraph and replace with:

"The stroke spindle shall be of SS316, valve body shall be made of Polyvinylidene fluoride (PVDF), and all other plastic housings integrated with the valve shall be made from Polypropylene-Glass Reinforced (PP-GF30) material."

ATD2 - 7 Part C3: Scope of Work (Volume 2)

ATD2 - 7.1 5. Work to be Carried out by Others

In Item (c) of Clause 5, after the sentence ending with "...Contract H (this Contract).", *Insert* "It is anticipated that Contract G (i.e. Tender 179Q/2016/17) will commence a month later than that of this Contract."

ATD2 - 8 Technical Data Sheets (Volume 2C)

ATD2 - 8.1 Technical Detail Sheet No. 22: Rotary Lobe Pump: MBR B Scum/WAS

ATD2 - 8.1.1 *In the Description column, replace* "flow range" with "minimum flow", *and in the Specified column, replace* "325 – 450" *with* "180".

ATD2 - 8.2 Technical Detail Sheet No. 85: Diaphragm Valve: CIP and General

ATD2 - 8.2.1 *In the Specified column, for a* "Material of body", *replace* "EN Grade 1.4401" *with* "PVDF".

ATD2 - 8.2.2 *In the Description column, delete "Corrosion protection of valve body" as well as the Unit and Specified column.*

ATD2 - 9 Drawings (Volume 3)

ATD2 - 9.1 Service Water System

ATD2 - 9.1.1 *The following new/ additional Drawings are attached (in reduced A4 format) for the Tenderers' convenience , and forms part of the drawings included in Volume 3: Book of Drawings - Note: Tenderers will be sent a Dropbox link for downloading a full size drawing:*

a) *Drawing* "110585-WWTW-DRG-WW-0998 rev. T0 (i.e. Bioreactor & MBR Plant (Module B): Citric Acid Bulk Powder Batching Equipment 3-D Views" *to the book of drawings as well as on the drawing register.*

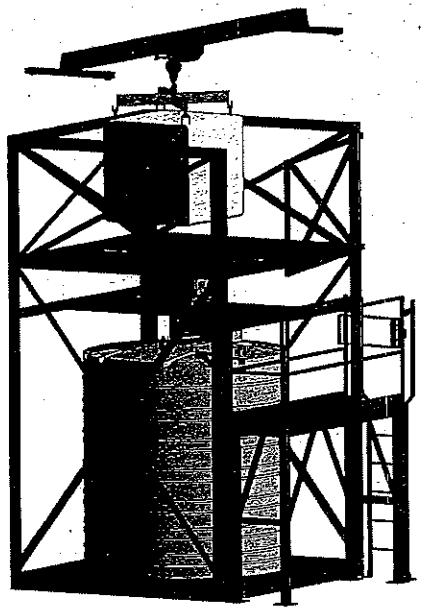
b) *Drawing* "110585-WWTW-DRG-WW-0999 rev. T0 (i.e. Bioreactor & MBR Plant (Module B): Citric Acid Bulk Powder Batching Equipment Plan and Sections." *to the book of drawings as well as on the drawing register.*

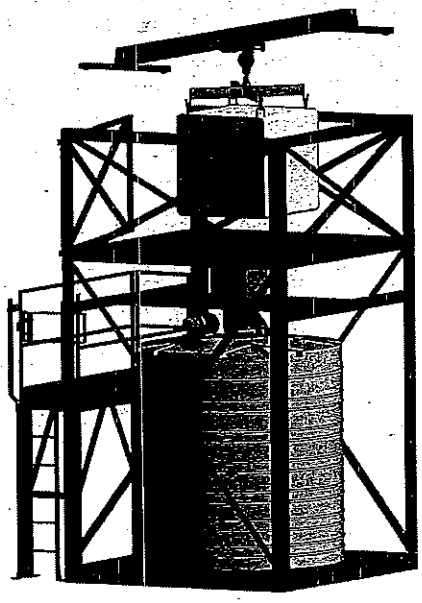
Tenderers are to return a signed copy of this notice/addendum with the submission of their Tender (See Schedule 18 of Tender Document). Failure to return a signed copy of the Addendum may result in the Tender being declared Non-Responsive.

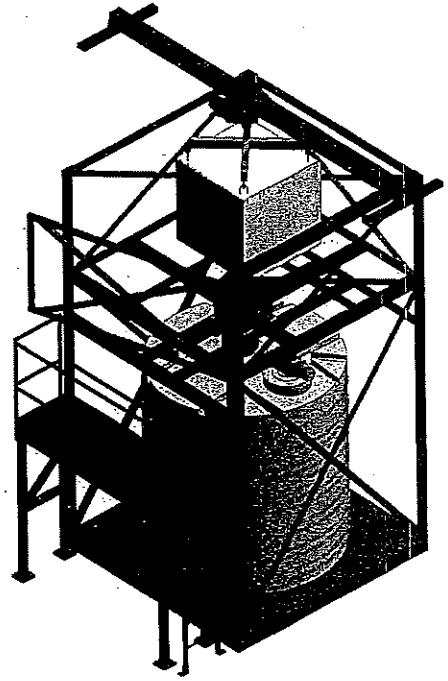
Kindly acknowledge receipt of this Addendum by e-mail using the enclosed Acknowledgement Receipt.

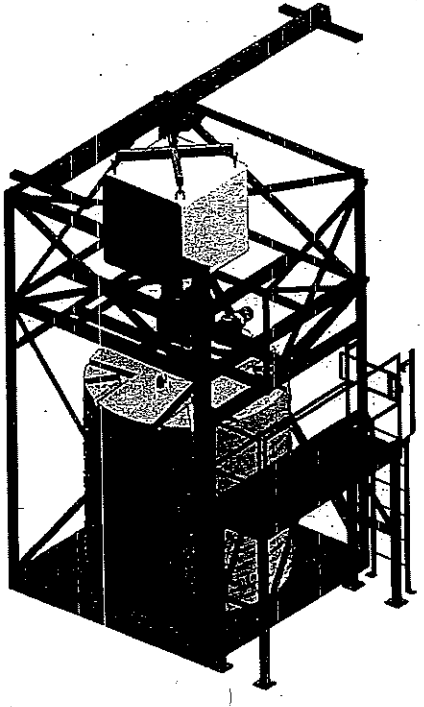
Yours faithfully,

.....









NOTES:

1. TO BE READ IN CONJUNCTION WITH DRAWINGS 110585-WW-0000 TO 0004.

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CITY OF CAPE TOWN
ISIXEKO SASEKAPA
STAD KAAPSTAD

REV	DATE	REVISION DETAIL	INITIAL
T0	15/02/17	FOR TENDER \ NOT FOR CONSTRUCTION	B. THEUNISSEN

SCALE	AS SHOWN
SIZE	A1
DRAWN	U. MA
DESIGNED	L. GREEN
VERIFIED	MC. RAMPHAO
	TENDER NOT FOR CONSTRUCTION
APPROVED	PROJECT DIRECTOR
DATE	15/02/17
	B. THEUNISSEN

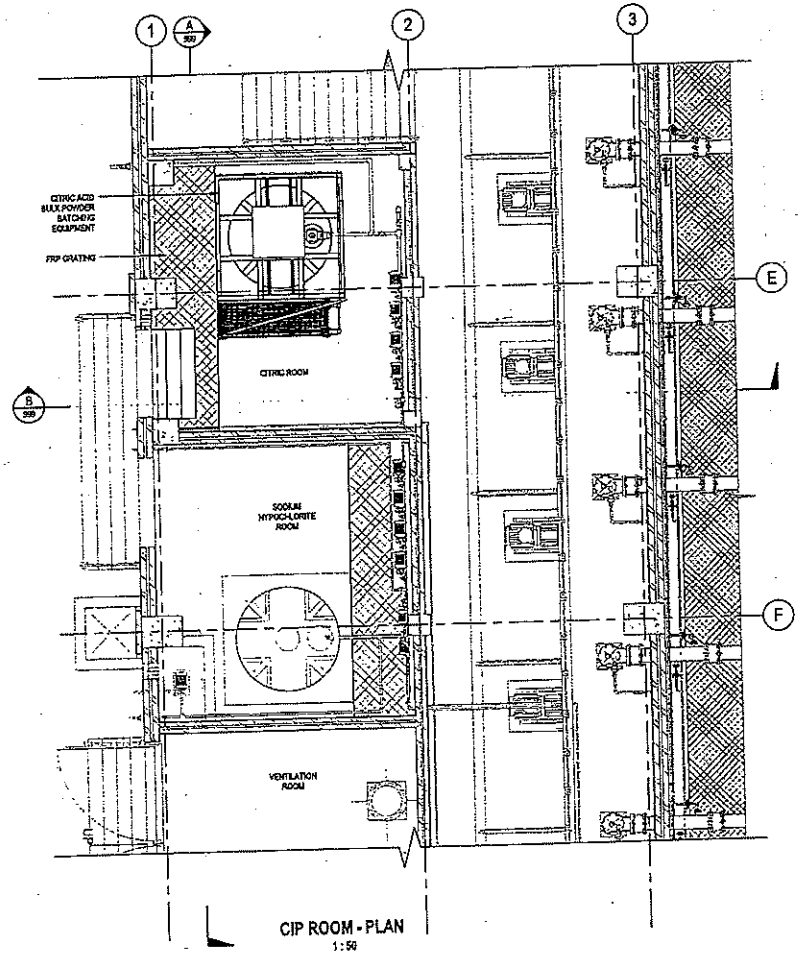
CONSTRUCTION OF AN MBR PLANT, AND BOTTLENECK ALLEVIATION AT ZANDVLIET WASTEWATER TREATMENT WORKS

BIOREACTOR & MBR PLANT (MODULE B)
CITRIC ACID BULK POWDER BATCHING EQUIPMENT
3D VIEWS

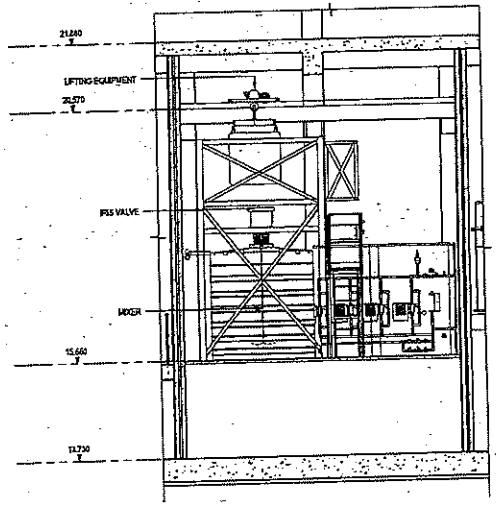
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110585	WWTW	DRG	WW	9006	T0

NOTES:

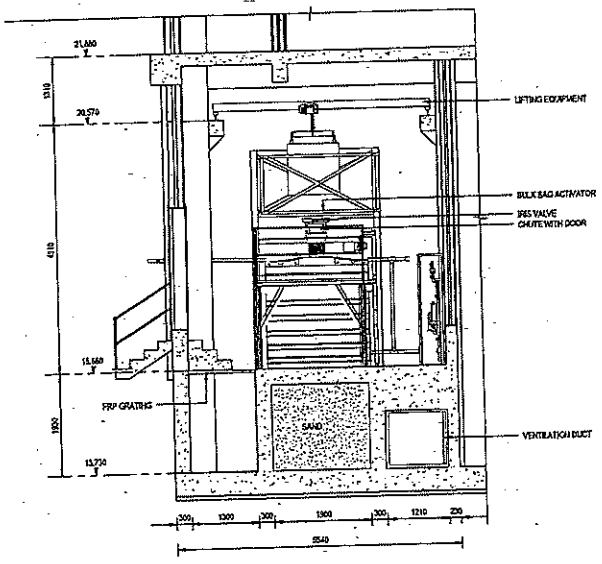
1. TO BE READ IN CONJUNCTION WITH DRAWINGS 110565-WW-9000 TO 0004.
2. TO BE READ IN CONJUNCTION WITH PEDL.
3. REFER TO DRAWING 110565-WWTW-DRG-CS-116 FOR JOINT DETAILS.
4. ALL PIPEWORK TO BE SS AS SPECIFIED.
5. ALL PIPE SUPPORTS IN CONTACT WITH WATER AND FRONE TO SPLASH ZIG TO BE SS316.
6. ALL BATCHER GRATING TO BE MOULDED FRP (50 mm x 50 mm) AND SUPPORT FRAME AS WELL AS FRONO CLAMP/CP TO BE SS316.
7. FOR BOX-OUT (S) CONSTRUCTION, REFER TO PED 5.5.20.
8. MECHANICAL AND ELECTRICAL EQUIPMENT PERTINENT TO THIS PROCESS AREA SHOWING IN RED.



CIP ROOM - PLAN
1:50



SECTION A 999
1:50



SECTION B 999

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CITY OF CAPE TOWN
ISIXEKO SASEKAPA
STAD KAAPSTAD

REV	DATE	REVISION DETAILS	APPROVED
0	16/02/17	FOR TENDER \ NOT FOR CONSTRUCTION	B.THEUNISSEN

SCALE	SIZE	
AS SHOWN	A1	TENDER NOT FOR CONSTRUCTION

DRAWN	CHECKED	APPROVED
J. MA		PROJECT DIRECTOR - DATE
DESIGNED		
I. GREEN		16/02/17
VERIFIED		B. THEUNISSEN
MC. RAMPHAO		

PROJECT
CONSTRUCTION OF AN MBR PLANT, AND BOTTLENECK ALLEVIATION AT ZANDVLIET WASTEWATER TREATMENT WORKS

TITLE
BIOREACTOR & MBR PLANT (MODULE B)
CITRIC ACID BULK POWDER BATCHING EQUIPMENT
PLAN AND SECTIONS

DRAWING NUMBER

CONTRACT	ZONE	TYPE	DISCIPLINE	SEQUENCE	REV
110565	WWTW	DRG	WW	999	0

WRITTEN ACKNOWLEDGEMENT OF RECEIPT

ADDENDUM TO TENDER DOCUMENTS No. 3

CITY OF CAPE TOWN

BOX NUMBER: 169

for

TENDER NUMBER: 178Q/2016/17

DESCRIPTION: **DESIGN-BUILD OF MECHANICAL AND ELECTRICAL WORKS FOR THE CONSTRUCTION OF AN MBR PLANT AND BOTTLENECK ALLEVIATION AT ZANDVLIET WASTEWATER TREATMENT WORKS**

CLOSING DATE OF TENDER: **13 MARCH 2017**

Kindly acknowledge receipt of this Addendum by e-mailing this to

We acknowledge receipt of the above Addendum and confirm that any tender we submit will take account of the instructions detailed therein.

Signature..... **Date**.....

Legal and full name of tendering entity:

.....

.....

Key Personnel Schedule

Position	Name	Qualifications	Professional Accreditation	Relevant experience (Years)
Contractors Representative Option1		Higher National Diploma - Mechanical Engineering	ECSA Pr Eng	33
Contractors Representative Option2		Higher National Diploma - Mechanical Engineering	ECSA Pr Eng	34
Contractors Representative Option3		Higher National Diploma - Mechanical Engineering	ECSA Pr Eng	36
Design Engineer No1 (Mechanical)		Bachelors - Mechanical Engineering	ECSA Pr Eng	20
Design Engineer No2 (Mechanical)		Bachelors - Maechanical Engineering	ECSA Pr Eng	28
Design Engineer No2 (MBR)		Msc - Chemical Engineering	Ordine Degli Ingegneri VCO	24
Design Engineer No3 (Electrical)		Bachlors - Engineering	ECSA Pr Eng	16
Design Engineer No4 (Systems)		Bachelors - Engineering	ECSA Pr Eng	11
Installation Foreman No1 (Mechanical)		Diploma - Mechanical Engineering	NA	30
Installation Foreman No2 (Electrical)		Diploma - Electrical Technology	NA	24
Commissioning Engineer No1 (Mechanical)		Bachelors - Mechanical Engineering	NA	26
Commissioning Engineer No2 (MBR)		Bachelors - Industrial Electronics Engineering	NA	25
Commissioning Engineer No1 (Electrical)		B-Tech Electrical Technology	NA	5
Commissioning Engineer No1 (Systems)		Higher Technicians Certificate	NA	42
Environmental Officer		BSc - Honours Biodiversity and conservation BSc - Zoology	SACNASP	6
Health and Safety Officer		Diploma - Management Risk Management	SAIOSH	13

Schedule 21: Price basis for imported plant & materials

Item Number	Description	Value in foreign currency	Foreign currency	ROE at base date	Value in Rand	Customs Surcharge	Customs Duty	Total
Schedule M1	Hoists & Drives	37 764,35	USD	13,24	500 000,00	-	-	500 000,00
Schedule M2	Electric Actuators - Sluices	122 549,02	GBP	16,32	2 000 000,00	-	-	2 000 000,00
Schedule M2	Electric Actuators - Valves	302 114,80	USD	13,24	4 000 000,00	-	-	4 000 000,00
Schedule M2	Electric Actuators - Sluices	157 658,33	EURO	14,11	2 224 559,10			2 224 559,10
	Electric Actuators - Valves	223 167,06	EURO	14,11	3 148 887,26			3 148 887,26
Schedule M3	Valves	110 226,31	USD	13,24	1 459 396,37			1 459 396,37
Schedule M4	SPARES	70 058,76	EURO	14,11	988 529,14			988 529,14
Schedule M5	MBR FINE SCREENING FACILITY	602 409,64	EUR	14,11	8 500 000,00	-	-	8 500 000,00
Schedule M6	Mixer Gearbox & Spares	85 046,07	EUR	14,11	1 200 000,00	-	-	1 200 000,00
Schedule M6	FBDA Blowers & Spares	620 127,57	EUR	14,11	8 750 000,00	-	-	8 750 000,00
Schedule M7	FBDA System & Spares	85 046,07	EUR	14,11	1 200 000,00	-	-	1 200 000,00
Schedule M8	Recycle Pumps & Spares	212 615,17	EUR	14,11	3 000 000,00	-	-	3 000 000,00
Schedule M8	Membranes & Spares	3 084 691,71	EUR	14,11	43 525 000,00	-	-	43 525 000,00
Schedule M8	Air Scour Blowers & Spares	212 615,17	EUR	14,11	3 000 000,00	-	-	3 000 000,00
Schedule M9	Lobe Pumps & Spares	389 794,47	EUR	14,11	5 500 000,00	-	-	5 500 000,00
Schedule M10	Instrument Air & Spares	42 523,03	EUR	14,11	600 000,00	-	-	600 000,00
Schedule M10	UV Equipment & Spares	44 294,83	EUR	14,11	625 000,00	-	-	625 000,00
Schedule M12	Service Water Pumps & Spares	28 391,21	EUR	14,11	400 600,00	-	-	400 600,00
Schedule M14	Odour Control & Spares	105 740,18	USD	13,24	1 400 000,00	-	-	1 400 000,00
Schedule M15	EXISTING CAS REACTOR EQUIPMENT	535 984,61	EURO	14,11	7 562 742,80	-	-	7 562 742,80
Schedule M15	EXISTING RAS AND WAS PUMPSTATIONS EQUIPMENT	18 208,40	USD	13,24	241 079,22			241 079,22
Schedule M19	EXISTING RAS AND WAS PUMPSTATIONS EQUIPMENT	59 300,64	EURO	14,11	836 732,00	-	-	836 732,00
Schedule M22	CLARIFIERS SCUM PUMP STATION EQUIPMENT	22 467,30	USD	13,24	297 467,05	-	-	297 467,05
Schedule M23	FINE BUBBLE DIFFUSED AERATION (FBDA) EQUIPMENT	397 490,99	EURO	14,11	5 608 597,93	-	-	5 608 597,93
Schedule M24	MIXED LIQUOR RECYCLE (MLR) PUMP EQUIPMENT	22 734,94	EURO	14,11	320 790,00	-	-	320 790,00
Schedule M27	EXISTING ULTRA-FILTRATION (UF) MEMBRANE BIOREACTOR PLANT (MBI	2 089 498,94	EURO	14,11	29 482 830,00	-	-	29 482 830,00
Schedule E6	SCUM REMOVAL EQUIPMENT	5 243,06	EURO	14,11	73 979,60	-	-	73 979,60
Schedule E8 & E14	STANDBY POWER GENERATOR	434 633,21	GBP	16,32	7 093 214,00	-	-	7 093 214,00
Schedule E7 & E13	PROGRAMMABLE LOGIC CONTROLLERS and REFURBISHMENT AND UPGRADES	106 910,25	EURO	14,11	1 508 503,62	37 712,59	271 530,65	1 817 746,86
Schedule E11, E13 & E14	LV SWITCHGEAR AND CONTROLGEAR ASSEMBLIES and REFURBISHMENT AND UPGRADES	2 138 494,40	BRL	4,11	8 789 212,00	219 730,30	1 582 056,16	10 591 000,46
	INSTRUMENTATION	937 072,43	EURO	14,11	13 222 092,00	-	-	13 222 092,00