CITY OF CAPE TOWN
ISIXEKO SASEKAPA
STAD KAAPSTAD

Making progress possible. Together.

MEMORANDUM OF AGREEMENT

FOR THE

DESIGN-BUILD OF
MECHANICAL AND ELECTRICAL WORKS FOR THE UPGRADE AND EXPANSION OF THE POTSDAM WASTEWATER TREATMENT PLANT

MADE AND ENTERED INTO BETWEEN

CITY OF CAPE TOWN METROPOLITAN MUNICIPALITY

AND

PCI/INENZO/RAUBEX/DEVCOTECH Consortium

CONTRACT NO. 146Q/2021/22

FILE 2 OF 2

SECTIONS OF M.O.A. INCLUDED IN THIS FILE:

- **PARTS:**
  - **5: Returnable Schedules**
  - **6: Scope of Works**
  - **7: Site Information**
- **PAGES (548 – 1131)**

CITY OF CAPE TOWN
ISIXEKO SASEKAPA
STAD KAAPSTAD

Making progress possible. Together.

MEMORANDUM OF AGREEMENT

Contract No. 146Q/2021/22

FILE 2 OF 2

INDEX PAGE (OVERALL M.O.A. DOCUMENT)

Section No.	File no.	Description	Page Range
Preamble	1	Scope of Contract Agreement	(1 - 15)
Part 1	1	Form of Offer and Acceptance (Agreement)	(16 – 127.9)
Part 2	1	General Conditions of Contract	(128 - 131)
Part 3	1	Contract Specific Data	(132 - 200)
Part 4	1	Pricing Data	(201 - 543)
Part 5	1	Returnable Schedules Submitted	(544 - 547)
Part 5	2	Returnable Schedules Submitted	(548 - 1077)
Part 6	2	Scope of Works	(1078 - 1126)
Part 7	2	Site Information	(1127 - 1131)

[redacted]

THIS AGREEMENT IS MADE ON THE 11th DAY OF FEBRUARY 2022

WORKSHARE CONSORTIUM AGREEMENT

made and entered into by and between

PATERSON CANDY INTERNATIONAL (PTY) LTD

(Registration Number 1953/001821/07)
(hereinafter referred to as "PCI")
and

INENZO WATER (PTY) LTD

[redacted]

and

RAUBEX CONSTRUCTION (PTY) LTD

[redacted]

and

DEVCOTECH ELECTRICAL ENGINEERING (PTY) LTD

[redacted]

WHEREAS

1. CITY OF CAPE TOWN , (hereinafter referred to as "the Employer") is intending to construct a project known as Tender No. 146Q/2021/22 : DESIGN – BUILD OF MECHANICAL AND ELECTRICAL WORKS FOR THE UPGRADE AND EXPANSION OF POTSDAM WASTEWATER TREATMENT PLANT ("the Project").

2. This contract includes various elements of process, mechanical, electrical, control and security equipment.

3. PCI, INENZO, RAUBEX and DEVCOTECH wish to form a workshare consortium for the purpose of submitting an offer for the works, thereby utilising their respective expertise and skills to achieve an efficient and effective contracting team.

[redacted]

4. PCI, INENZO, RAUBEX and DEVCOTECH desire to execute this Agreement to record and define certain rights and obligations between themselves arising from the tender and in the event that the Employer awards a Contract for the Works to PCI, INENZO, RAUBEX and DEVCOTECH in respect of and arising from the Contract.

NOW THEREFORE IT IS AGREED AS FOLLOWS:

1. DEFINITIONS

In this Agreement the following expressions shall have the meanings hereby given to them unless the context otherwise requires.

1.1 "The Board" shall mean the board constituted under Clause 7 hereof.

1.2 "The Contract" shall mean the contract (if awarded) between the Consortium and the Employer for the purposes of carrying out the Works or any part of the Works.

1.3 "The Contract Price" shall bear the same meaning as in the conditions of the Contract.

1.4 "The Site" shall mean each physical location where contract works have to be executed and/or equipment as been or will be installed.

1.5 "The Employer" shall mean CITY OF CAPE TOWN.

1.6 "The Consortium" shall mean the collaboration of PCI, INENZO, RAUBEX and DEVCOTECH acting together solely for the purposes of this Agreement.

1.7 "Consortium partner" shall mean the parties to the Consortium viz PCI, INENZO, RAUBEX and DEVCOTECH.

1.8 A Consortium partners respective "Share in the Contract" shall mean the value of the part of the Contract performed by that Consortium Partner in relation to the total Contract Price.

1.9 "The Contractor's Representative" shall mean the person for the time being appointed pursuant to clause 8 hereof.

1.10 "Quotation" means each Consortium Partners submission for the purposes of preparing a Tender.

1.11 "Share of the Works" shall mean for each Consortium Partner, such part of the Works as is allocated to that Consortium Partner in Schedule 1 of this Agreement.

1.12 "The Tender" shall mean the tender for the Works prepared by the Consortium and submitted to the Employer.

1.13 "The Works" shall mean the process, mechanical, electrical, instrumentation and control for Construction of the works as described in the Contract Documents.

2. FORMATION OF CONSORTIUM

2.1 The Consortium Partners hereby establish a Consortium being an unincorporated association under the name "PCI-INENZO-RAUBEX-DEVCOTECH Consortium " for the purpose of submitting the Tender and to negotiate, sign and jointly perform the Contract (if awarded). The undertaking and legal relations between the Consortiums Partners hereto and the representation of the Consortium towards third parties shall be governed by the provisions of this Agreement.

2.2 Each of the Consortium Partners undertakes to assist in the preparation and submission of the Tender and if awarded the Contract to fully co-operate with the other Consortium Partners with the object of expeditious performance of the Works in accordance with the Contract (including the programme) and this Agreement.

3. NAME OF THE CONSORTIUM AND BUSINESS ADDRESS

3.1 For the purpose of preparing and submitting the Tender and performing the Contract the name of the Consortium shall be " PCI-INENZO-RAUBEX-DEVCOTECH Consortium"

3.2 The business address of the Consortium is to be that of RAUBEX.

4. PREPARATION AND SUBMISSION OF THE TENDER

4.1 Each Consortium Partner will prepare and submit to the Board in good time a Quotation for the performance of its Share of the Works. Each Consortium Partner shall be deemed to have appraised the scope and extent of its Share of the Works and shall be responsible for the sufficiency of its Quotation therefor. The said Quotations shall be in such form as the Board shall require.

4.2 Each Consortium Partner shall disclose to the Board the names of all proposed significant sub-contractors and suppliers.

4.3 The Consortium Partners will give such commercial and technical information to each other as will be reasonably necessary to co-ordinate the preparation of the Tender and to resolve problems arising there from including interface problems to ensure the fullest integration between their respective Quotations.

4.4 Following the submission by the Consortium Partners of separate Quotations pursuant to Clause 4.1, RAUBEX will co-ordinate the preparation of the Tender under the direction of the Board incorporating the said Quotations.

[redacted]

4.5 Prior to the submission of the Tender, the Board shall, inter alia:-

4.5.1. Require from each Consortium Partner all assistance as it reasonably requires for the preparation and submission of the Tender;

4.5.2. Ensure that the consolidated planning is sound and practicable;

4.5.3. Determine all financial details pertaining to the Tender; and

4.5.4. Determine insurance arrangements.

4.5.5. Determine Performance Bond arrangements

4.6 The Tender shall, before submission to the Employer, be approved and be signed by each Consortium Partner. Each Consortium Partner shall have absolute discretion as to whether it shall sign the Tender. In circumstances where a Consortium Partner shall refuse to sign the Tender, this Agreement shall automatically terminate. After signature neither Consortium Partner shall seek to vary or withdraw the Tender outside the terms hereto. Any amendment to the Tender must be agreed in writing in advance by each of the Consortium Partners.

4.7 Each of the Consortium Partners will bear its own costs, charges, expenses and the like in preparing its Quotation and Tender and negotiation of the Contract until the date of entering into force of the Contract.

5. CONSORTIUM PROPERTY

5.1 PCI, INENZO, RAUBEX and DEVCOTECH each declares that it holds the benefit of all goodwill negotiations understandings and documents relating to the Contract upon trust for the Consortium and without any consideration payable therefore by the Consortium.

6. FINANCE OF THE CONSORTIUM

6.1 Each Consortium Partner shall provide or arrange the provision of all necessary finance required for the execution of its Share of the Works, unless otherwise agreed.

7. DIRECTION AND CONTROL OF CONSORTIUM

7.1 The Consortium Partners agree to delegate management of the Consortium to a Board. The Board will discuss, decide and settle with due regard to each of the Consortium Partner's undertakings and the Share of the Works all matters of common interest with regard to the preparation of the Tender, implementation of

[redacted]

the Contract, the relationship with the Employer, the activities to be carried out for the good performance of the Contract, as well as the co-ordination of each Consortium Partner's Share of the Works.

7.2 The Board shall be composed of four directors one nominated by PCI, one nominated by INENZO, one nominated by RAUBEX and one nominated by DEVCOTECH provided always there shall not be more than three months between consecutive meetings then the Board shall meet from time to time at the request of any of its directors. The quorum at meetings shall be four directors and there shall not be deemed to be a valid quorum unless at least one director from each of the Consortium Partners is present. Each director shall be entitled to appoint one alternative (who may be another director) to attend and vote at Board meetings in his place, such appointment to be confirmed in writing.

7.3 The resolution of all matters before the Board shall be by unanimous vote, failing which a final vote will be cast by the Contractors Representative, duly acting in an impartial manner.

7.4 A secretary to the Board shall be appointed who shall be the Contractor's Representative identified in Article 8.

7.5 The Contractor's Representative shall report and be responsible to the Board in respect of the management of the Works and shall be subject to any restrictions laid down by the Board.

7.6 The Board shall be the supreme authority of the Consortium and shall decide all matters of policy in relation to the Contract and shall exercise overall control over the administration of the same provided always that the Board shall restrict its activities to matters arising from the Consortium and shall have no right of interference with the normal working methods of the Consortium Partners, so long as each of the Consortium Partners maintain their responsibilities in terms of clause 15.1.

7.7 The Board shall as of 30th June on each year for the duration of the Contract cause accounts to be drawn up showing the financial position of the Consortium, such accounts to be approved by the Board. In addition monthly payment certificates and bank statements will be made available to the parties.

7.8 The Board shall if they deem it necessary, appoint a firm of Accountants to audit and report on the accounts in respect of those Consortium financial matters which are the responsibility of the Consortium Partners.

8. CONTRACTOR'S REPRESENTATIVE AND DEPUTY CONTRACTOR'S REPRESENTATIVE

[redacted]

[redacted]

8.1 RAUBEX shall appoint a Contractor's Representative who, subject always to the authority and control of the Board, shall supervise, co-ordinate, manage and direct the carrying out of the Works.

8.2 Contractor's Representative shall submit once a month to the Board a report containing such financial and other information and in such form as the Board shall direct.

8.3 The costs and expenses of providing a Contractor's Representative shall be borne by RAUBEX.

8.4 Correspondence with the Employer under the Contract will be directed through the Contractor's Representative. The Contractor's Representative shall keep the Consortium Partners copied with correspondence received and submitted, however copies of all correspondence concerning the Works or the Contract received or submitted by Consortium Partners shall be copied by that Consortium Partner to the others.

8.5 INENZO shall appoint a Deputy Contractor's Representative who subject always to the authority and control of the Board and Contractor's Representative, shall supervise, co-ordinate, manage and direct the carrying out of the works. The Deputy Contractor's Representative shall assume the role of Contractor's Representative when the Contractor's Representative is on normal annual leave which is expected to be 20 days per annum.

8.6 The cost and expenses of providing a Deputy Contractor's Representative shall be borne by INENZO.

9. CONSORTIUM COSTS

9.1 If the Contract is not awarded to the Consortium:-

9.1.1 Each Consortium Partner will bear any management engineering travelling or other costs incurred by it (including any charges or costs of any of its associated companies).

9.1.2 The Consortium Partners will not make any charge for any time spent or goods spent or services rendered by it to the Consortium.

10. INSURANCE OF THE WORKS

10.1 Each Consortium Partner shall be responsible for providing its own insurance requirements in respect of Professional Indemnity for that part of the Works for which it is responsible.

[redacted]

[redacted]

10.2 Each Consortium Partner shall be responsible for providing insurance for its own vehicles, plant and equipment and for insurance in terms of the Compensation for Occupational Injuries and Diseases Act of 1993 and in terms of the Unemployment Insurance Act of 1966. The cost of such insurance shall be borne by the Policy Holders.

10.3 Prior to commencement of the Works RAUBEX agree to effecting a Policy of Insurance in the joint names of PCI, INENZO, RAUBEX, DEVCOTECH, sub-contractors and in the name of the Employer, which Policy shall cover such risks as the contract stipulates and for the full contract duration. In any event each Consortium Partner shall remain responsible for the provision of its own insurance for risks not covered by the aforesaid joint policy.

When such a joint policy is effected RAUBEX shall bear the costs of the premium at the time or times the said premium is due to be paid.

10.4 In the event of a claim or claims arising under the above policies each Consortium Partner shall bear the cost of any excess in proportion to its liability. Such liability shall be determined by agreement or otherwise by application of the procedures of clause 18.5.

11. PAYMENTS

11.1 In relation to each Interim Certificate, amounts received in respect of sums certified by the Engineer under the Contract shall be divided between the Consortium Partners in the same proportion as the sums certified in respect of work done by each Party bears to the sums certified in respect of work done by the Consortium Partners, less any monies the Board may deem appropriate to withhold.

11.2 Any and all sums payable or allowable in respect of liquidated damages for delay, defect rectification, all as defined in the Contract, shall be divided or borne (as the case may be) by each Consortium Partner in proportion to its liabilities as specified in Clause 18.5.

11.3 Each Consortium Partner accepts the risk:

That the portion of the Contract Price related to its Share of the Works may not be sufficient to cover its cost of completing the same or give to it its expected profit.

11.4 The Consortium Partner's shall establish a Consortium bank account into which all payments made by the Employer will be made. Payments from this account to each Consortium Partner's own bank account (the details of such account

[redacted]

having been notified in advance to the Board) will be made within 7 days in respect of its entitlement under this Agreement, such payments shall require the written authorisation of the Board and shall be release by the agreed authorised parties.

11.5 In circumstances where payments are made by the Employer directly to a Consortium bank account the Board shall do all things necessary in order to ensure that no tax consequences adverse to the Consortium Partners arise by reason of the operation of such an account. This shall include the expeditious consultation with all relevant Tax authorities wherever necessary.

11.6 Raubex will be resposnible for establishing the Consortium bank account, VAT registration and the monthly compilation of the Consortium payment certificates in respect of work done by each Consortium Partner.

12. EXCLUSIVITY

12.1 This Agreement shall relate solely to the Works and shall not extend to other activities or transactions between the Consortium Partners. Each of the Consortium Partners agrees neither (directly or indirectly through a subsidiary, affiliated or associate company or any other person, firm or business entity over which either Consortium Partner may exercise control) to co-operate with any third party or parties in the furtherance of proposals or contracts for the Employer which may be competitive with this Tender or any part thereof nor to submit any proposal direct to the Employer which may be competitive with this Tender or any part thereof.

12.2 The foregoing provisions of clause 12.1 shall not apply to cases in which one of the Consortium Partners responds to a request (not solicited by such Consortium Partner) from the Employer provided such Consortium Partner has previously consulted with and obtained the agreement of the other Consortium Partner.

13. TENDER AND CONTRACT NEGOTIATIONS

13.1 The Consortium Partners shall negotiate the Tender with the Employer in close consultation and will use all reasonable efforts to obtain the Employer's agreement to provisions which are based upon the provisions as agreed between the Consortium Partners prior to submission of the Tender. Each Consortium Partner shall inform the other of all meetings with the Employer and may be represented at all such meetings and each Consortium Partner shall consult with the other on all correspondence to be sent to and received from the Employer which in any way affects or may affect the other.

14. NO PARTNERSHIP OR AGENCY

[redacted]

14.1 Nothing in this Agreement shall be construed as:

14.1.1 creating a general or other type of partnership between the Consortium Partners, or as creating a corporation or other entity having a distinct legal standing or,

14.1.2 authorising either Consortium Partner to act as general agent or legal representative of the other, or

14.1.3 permitting the Consortium Partners to bid for or undertake any contracts on behalf of the other, or

14.1.4 permitting the Consortium Partners to borrow money on behalf of the other Consortium Partners, or pledge the credit the other Consortium Partners.

15. CONTRACT PERFORMANCE

15.1 Each Consortium Partner shall be responsible to the Employer, to the other Consortium Partner and to any third party for all matters or things necessary for or connected with or arising out of its Share of the Works.

15.2 Each Consortium Partner undertakes that it will not create obligations or accept commitments for and on behalf of the other Consortium Partners without the specific prior written consent of that Consortium Partner or Partners.

15.3 Each Consortium Partner shall provide all staff, labour, plant, materials, supplies and everything of every kind whatsoever necessary for or required for or in connection with its Share of the Works whether or not such supplies and services are fully specified in the Tender, this Agreement or in the Contract.

15.3.1 The Consortium Partners agree that should either of the Consortium Partners require to utilise any of the resources noted in 15.3 above permission to do so will not be withheld subject to availability and agreement of cost, prior to such usage.

15.4 Each of the Consortium Partners shall be responsible for ensuring that the plant and materials of its supply does not infringe patents, registered designs, trademarks or copyrights and shall keep the other Consortium Partner hereto indemnified in respect of claims arising from any such infringement provided that such Consortium Partner is permitted at its own expense to conduct any litigation that may ensue and all negotiations for a settlement of the claim.

15.4 Each Consortium Partner shall use all reasonable endeavours to look after the interests of the Consortium as if they were its own, including but not limited to

[redacted]

[redacted]

interface problems between each Consortium Partner's share of the Works.

16. ASSIGNMENTS

16.1 A Consortium Partners shall not cede any of its rights or assign any of its obligations under this Agreement or the Contract without the prior written consent of the other Consortium Partners, such consent not to be unreasonably withheld

17. RECORDS

17.1 Each of the Consortium Partners shall keep and preserve the books, records, accounts, documents, reports, data and other information pertaining to its Share of the Works and the performance of its contractual responsibilities for seven (7) years.

18. LIABILITIES

18.1 The Consortium Partners shall negotiate a contract with the Employer whereby they shall be jointly and severally liable to the Employer.

18.2 Notwithstanding sub-clause 18.1 the internal relationship of the Consortium Partners shall be as though each Consortium Partner had submitted its own tender and concluded its own contract for its Share of the Works.

Therefore each Consortium Partner shall carry full responsibility for and be liable for due fulfilment of its Share of the Works.

18.3 Each Consortium Partner shall be responsible for repairing substituting and/or making good pursuant to the Contract any defective parts of its Share of the Works.

18.4 Each Consortium Partner shall be responsible and liable for and shall indemnify the other Consortium Partner against:-

18.4.1 any direct costs or damages including liquidated damages for delay (which for the avoidance of doubt shall not include loss of profits, loss of use, loss of Industry or loss of contracts) suffered by the other Consortium Partners; and

18.4.2 any loss, liability, costs or damages suffered by any third party (including the Employer);

resulting from any act or omission attributable to such Consortium Partner, which shall include any increase in overall cost in the Share of the Works of one Consortium Partner caused by the other Consortium Partner modifying any supply and/or service within his Share of the Works unless

[redacted]

such increased costs are paid by the Employer.

18.5 Should it not be immediately practicable to determine which Consortium Partner is at fault and liable, the Consortium Partners shall bear the liability in proportion to their Share in the Contract (for the avoidance of doubt the share in the contract for each Consortium Partner shall be determined by the value of their Share of the Works divided by the sum of each of the Consortium Partners value of their share of the works, expressed as a percentage) at the date that the said liability falls due to be paid. This is deemed to be a preliminary ruling if such liability is a matter of dispute between the Consortium Partners. Upon liability being established, if necessary in accordance with Clause 28, the liable Consortium Partner shall without delay pay back the other Consortium Partner the sums advanced by it.

18.6 Each Consortium Partner shall in any case be responsible and liable for the acts and omissions of its employees, sub-contractors and agents.

19. CONFIDENTIALITY

19.1 All information acquired by the Consortium Partners from the other shall be treated as confidential by the recipient and shall not be used other than for the purpose contemplated by this Agreement without the consent in writing of the other unless such information

19.1.1 is or later becomes public knowledge other than by a breach of the foregoing paragraph, or

19.1.2 is in the possession of the recipient with the full rights to disclose prior to receiving it from the other, or

19.1.3 is independently received by the recipient from a third party having the full right to disclose, or

19.1.4 is independently developed by an employee of the recipient to whom no disclosure shall have been made.

19.2 Where it is necessary for Consortium Partners to supply data or technical information to any sub-contractor, supplier or consultant for purposes relating to any tender or contract resulting here from the Consortium Partner supplying such data or technical information shall use his best endeavours to ensure that the provisions of this Clause are properly observed by sub-contractors.

19.3 Either Consortium Partner shall be at liberty to require the other to refrain from disclosing specific information to named sub-contractors.

19.4 The provisions of this Clause 19 shall survive the termination of this Agreement

[redacted]

[redacted]

[redacted]

for fifteen (15) years.

20. DEFAULT AND INSOLVENCY

20.1 In the event that a Consortium Partner ("the Consortium Partner in default")

20.1.1 without reasonable cause wholly or substantially suspends its work under the Contract or fails or delays (if such failure or delay continues after 14 days of written notice from the other party) in fulfilling its obligations so as to jeopardise completion of the Contract, or

20.1.2 becomes insolvent, or

20.1.3 has a receiving order made against it, or

20.1.4 compounds with its creditors, or

20.1.5 commences to be wound up

20.1.6 carries on its business under a receiver for the benefit of its creditors generally or any of them, or

20.1.7 has an administrator or trustee appointed.

THEN

the other Consortium Partner (the non-defaulting Consortium Partners) may at the expense of the Consortium Partner in default employ and pay a third party or parties to carry out and fulfil the then unfulfilled work and obligations under the Contract of the Consortium Partner in default who shall at no charge make available for this purpose all plant, machinery, goods, facilities, labour and design licences and data ("the Plant") and shall transfer as directed the benefit of any contract entered into by it for the purpose of completing the Contract. Once the Contract has been completed the Consortium Partner in default shall be at liberty to repossess the Plant not incorporated in the Works.

20.2 The Consortium Partner in default shall execute and do or cause to be executed and done all deeds, documents and things necessary or expedient to enable the non-defaulting Consortium Partners to exercise such entitlement (including but without prejudice to the generality of the foregoing any deed or document necessary or expedient to enable the non-defaulting Consortium Partner to operate any bank account in the name of the Consortium) without reference to the Consortium Partner in default.

20.3 Upon completion or sooner determination of the Contract and receipt by the Consortium of all monies due to it the Consortium Partner in default shall be

[redacted]

entitled to receive an amount equal to such monies as shall have been received by the Consortium on account of the work, services and supplies performed by the Consortium Partner in default in pursuance of its performance of its Share of the Works assessed up to the date of its exclusion less its share of any liabilities and expenses resulting from the performance of the Contract assessed up to the date of completion of the Contract (whether incurred before or after the date of exclusion).

In circumstances where the Consortium Partner in default's share of liabilities and expenses exceed the monies that the Consortium Partner in default is entitled to receive the excess of expenses and liabilities shall be a debt due to the non-Defaulting Consortium Partner by the Consortium Partner in default and shall be payable promptly as a simple contract debt.

20.4 In addition all costs, charges and expenses incurred by the non-Defaulting Consortium Partner as a result of the insolvency, liquidation or default of the Consortium Partner in default shall constitute a debt due from the Consortium Partner in default to the non-defaulting Consortium Partners which debt shall be added to the Consortium Partner in default's said share of liabilities and expenses referred to in Clause 20.3 above.

21. NO CLAIMS

21.1 Without prejudice and subject to the provisions of Clause 12 above the Consortium Partners shall have any claim against the other arising out of failure to secure the Contract.

22. PUBLICITY

22.1 The Consortium Partners shall release or allow others to release any publicity material concerning the Tender or the Contract except with the prior written approval of the other, which approval shall not be unreasonably withheld.

23. AMENDMENTS

23.1 All amendments hereof and all agreements between the Consortium Partners which are in conflict with the provisions hereof must be in writing and signed on behalf of the Consortium Partners.

24. GUARANTEES

24.1 In the event that the Employer shall exercise his right under the Contract to the provision by the Consortium Partners of any bond or financial guarantee the Consortium Partners shall promptly arrange for the procurement and supply of such bond or financial guarantee.

[redacted]

24.2 At their discretion and subject to the Employer's agreement Raubex will arrange to procure such bond or guarantee on behalf of the Consortium, in which event the cost of such bond or guarantee shall be borne by Raubex.

24.3 Each Consortium Partner by agreement will promptly provide, the one to the other and vice versa a guarantee to cover any risks associated with the failure of either of the Consortium Partners to full fill their obligations in terms of the contract. The value and wording of such guarantee will be agreed on contract award. The said guarantee does not limit any other recourse that may be applicable in terms of this agreement or by law.

25. HEADINGS

25.1 The headings to the Clauses in this Agreement shall not affect the interpretation thereof.

26. NOTICES

26.1 Any notice hereunder may be served by sending the same by Courier confirmed by Facsimile and email to the Directors of INENZO (or their authorised representative) or Directors of PCI (or their authorised representative) or Directors of RAUBEX (or their authorised representative) or the Directors of DEVCOTECH (or their authorised representative) at their respective addresses given on pages 15 and 16 of this Agreement and service shall be deemed to have been effected 48 hours after the time of posting.

27. COMMENCEMENT AND DURATION OF CONSORTIUM

27.1 This Agreement and the Consortium shall be deemed to have commenced on the date hereof and shall continue until terminated by whichever is the earliest of the following events:-

27.1.1 unconditional rejection by the Employer of the Tender;

27.1.2 award of a contract by the Employer for the Works to a party or parties other than the Consortium;

27.1.3 the discharge of all the Consortium Partner's rights and obligations under the Contract and under this Agreement;

27.1.4 completion of an agreement by the Consortium Partners which supersedes this Agreement in its entirety;

27.1.5 thirty six months from the date hereof unless within such period the Contract shall have been awarded to the Consortium.

[redacted]

28 BREACH

28.1 If a Consortium Partner is of the opinion that another has committed a material breach of the provisions of this Agreement, it shall give written notice thereof to the party who is perceived to have committed a breach. The matter shall thereafter be referred to the Board for a decision as to whether such a breach exists.

28.2 If the Board finds that a material breach has been committed, the defaulting Consortium Partner shall remedy such breach within seven (7) days of such finding, failing which the other Consortium Partner shall have the right without prejudice to any other remedy they may have, to assume control of the defaulting Consortium Partner's interest in the Consortium.

29 DEADLOCK

29.1 Should the Board not be able to reach a decision as to whether a material breach exists, the matter shall be referred for decision to the Chief Executives (by whatever name known) of the Consortium Partners. If the said Chief Executives are unable to resolve the dispute, the matter shall be referred to the final decision of an Arbitrator to be appointed by the Consortium Partners.

30 ARBITRATION

30.1 The Arbitrator shall be an independent suitably qualified person agreed upon by the Consortium Partners and appointed in terms of Clause 29, and failing agreement shall be an Arbitrator of not less than 10 (ten) years experience as such, nominated by the Consortium Partners. The cost of the Arbitrator shall be equally split by the parties to the Arbitration. Durbanville

30.2 The arbitration shall be held in either Johannesburg or Cape Town by agreement, in a summary manner, that is on the basis that it shall not be necessary to observe or carry out the usual formalities or procedures (e.g. there shall not be any pleadings or discovery) or the strict rules of evidence, but otherwise subject to the afore going under the provisions of the Arbitration Act of the Republic of South Africa, with the intent that arbitration shall be held immediately with a view to its being completed within 21 (twenty one) days after it has been demanded

30.3 The arbitrator shall decide the matter submitted to him according to what he considers just and equitable in the circumstances and therefore the strict rules of law shall not be observed or taken into account by him arriving at his decision.

30.4 Any decision given by the arbitrator shall be final and binding upon the Consortium Partners, shall be carried into effect by the Consortium Partners

[redacted]

and may be made an order of the Court of competent jurisdiction if so desired.

30.5 This Clause is separable from the rest of the agreement and shall remain in effect notwithstanding its termination.

31 LAW

31.1 South African Law shall govern the construction, validity and performance of this Agreement.

32 DISTINCT AND SEVERABLE

32.1 Each of the provisions of this Agreement is distinct and severable from each other and if at any time for any reason one or more of such provisions is or becomes invalid illegal or unenforceable then the validity legality and enforceability of the remaining provisions shall in so far as is possible not be affected or impaired thereby.

33 FINAL ACCOUNT

33.1 The Board shall, upon being satisfied that the Consortium has received all monies due to it under the Contract to the extent that such monies are reasonably recoverable and has discharged all liabilities and obligations in respect thereto, cause a duly audited final account to be prepared by the Consortium in relation to the Contract.

The Consortium Partners in proportion to their respective Share in the Contract shall share any balance of the surplus remaining.

THUS DONE and SIGNED at LASURPARK this 11th day of February 2022

for and on behalf of

[redacted]

[redacted]

who by his signature hereto, warrants that he is duly authorised.

AS WITNESSES

[redacted]

[redacted]

1. [redacted]

2 [redacted]

THUS DONE and SIGNED at Kraalfontein this 11th day of February 2022

for and on behalf of
INENZO WATER PTY LTD

[redacted]

[redacted]

who by his signature hereto, warrants that he is duly authorised.

AS WITNESSES

1. [redacted]

2. [redacted]

THUS DONE and SIGNED at Durbanville this 11th day of February 2022

for and on behalf of
RAUBEX PTY LTD

[redacted]

[redacted]

who by his signature hereto, warrants that he is duly authorised.

AS WITNESSES

1. [redacted]

[redacted]

2. [redacted]

THUS DONE and SIGNED at Durbanville this 11th day of February 2022

for and on behalf of
Devcotech Electrical Engineering (Pty) Ltd

[redacted]

[redacted]

who by his signature hereto, warrants that he is duly authorised.

AS WITNESSES

1. [redacted]

2. [redacted]

[redacted]

Left Blank



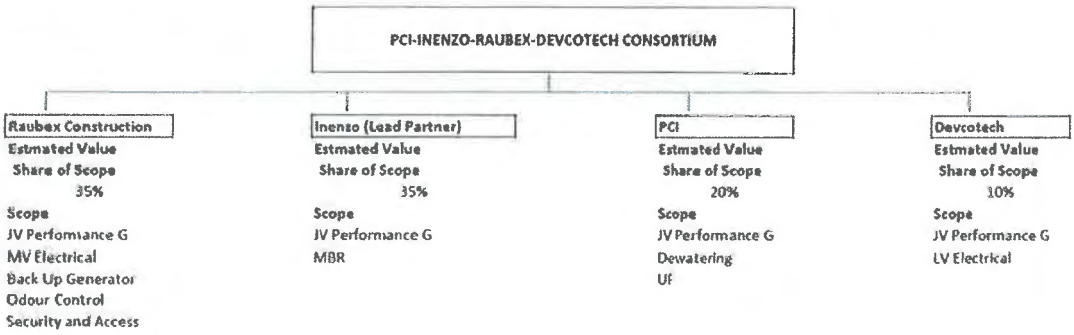
SCHEDULE No. 1

1.1 DIVISION OF RESPONSIBILITIES

These responsibilities are clearly defined in the responsibility matrix as attached.

SCHEDULE No. 1: DIVISION OF RESPONSIBILTIES FOR

146Q/2021/22 : DESIGN – BUILD OF MECHANICAL AND ELECTRICAL WORKS FOR THE UPGRADE AND EXPANSION OF POTSDAM WASTEWATER TREATMENT PLANT



[redacted]

5.2 Details of Qualifications and Experience of Staff

[redacted]

CITY OF CAPE TOWN

WATER AND SANITATION

CONTRACT NO. 146Q/2021/22

DESIGN – BUILD OF MECHANICAL AND ELECTRICAL WORKS FOR THE UPGRADE AND EXPANSION OF POTSDAM WASTEWATER TREATMENT PLANT

SCHEDULE 12: DETAILS OF QUALIFICATIONS AND STAFF EXPERIENCE OF STAFF

Careful consideration must be given to Clause C2.1.4.3.3 of T1.2: Tender Data: Functionality Criteria to ensure data provided here corresponds to the data required in terms of Table 3: Functionality Score for Key Personnel.

Tenderers shall insert in the table below, the names, qualifications, professional accreditation and relevant experience of the key personnel that the tenderer proposes to assign to the Contract. Curriculum Vitae (CV) must be submitted for each of the key personnel proposed and shall be in the form given in Schedule 12a (refer to overleaf). The tenderer shall use its discretion regarding the number of supervisors that will be required for this project. However, only two installation/commissioning supervisors will be scored in terms of functionality criteria. The two installation/commissioning supervisors that the Contractor wishes to be scored has to be indicated on the project organogram which shall form part of Schedule 21.

The tenderer shall complete **Table RS 12** in his/her tender submission for ease of reference:

Table RS 12: Details of qualifications and experience of key personnel

Key position	Name and Surname	Qualifications	Professional Accreditation	Relevant Experience (years)
Contract Director/Manager[1]	[redacted]	B.Eng	Pr. Eng	30
Contractors Representative[2]		B.Eng	Pr. Eng	16
Design Engineer (Mechanical)[3]		B.Sc-Mech	Pr. Eng	32
Design Engineer (Electrical)[3]		B.Sc-Eng	Pr. Eng	39
Design Engineer (Electronic)[3]		B.Sc-Eng		33
Environmental Site Officer[4]		B.Sc	SACNASP	10
Health and Safety Officer[5]		SAMTRAC	SACPCMP	18
Integration Manager[6]		Dip. Civil Eng	Pr.Eng	35
Construction Manager[7]		B Eng	Pr.Eng	20
Installation/commissioning supervisor[7]		B.Eng	-	29
Installation/commissioning supervisor[7]		B.Sc	Pr.Eng	23

Note:
1. In terms of the OSH ACT 16 (1).
2. In terms of Clause 4.3 of the GCC (Fidic Yellow)
3. In terms of Clause 5 of the GCC (Fidic Yellow)
4. Environmental site officer is defined in the Environmental Management Plan.
5. Health and safety office as defined in the Project Specification (Health and Safety Specification)
6. Design and program co-ordinator in terms of Clause 4.6 of the Particular Conditions of Contract.
7. In terms of Clause 6.8 of the GCC (Fidic Yellow)

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

SIGNED ON BEHALF OF THE TENDERER: ..... [redacted] .....

* Refer to Quality Scoring Fit.

[redacted]

5.3 Schedule of Sub-contractors

[redacted]

CITY OF CAPE TOWN

WATER AND SANITATION

CONTRACT NO. 146Q/2021/22

DESIGN – BUILD OF MECHANICAL AND ELECTRICAL WORKS FOR THE UPGRADE AND EXPANSION OF POTSDAM WASTEWATER TREATMENT PLANT

SCHEDULE 18: SCHEDULE OF SUB-CONTRACTORS

Tenderers shall stipulate their intention to employ sub-contractors for work (excluding work covered by provisional sums and contingencies) in this contract by completing the table attached hereto.

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.

Tenderers shall take note of Clause C.2.1.4.3.3 of Part T1.2: Tender Data, which states limits the total value that the maximum threshold applicable can be sub-contracted to subcontracting shall be 40% of the total monetary construction monetary value of the tender offer.

SUB-CONTRACTORS		
Sub-contractor's name	Work activities to be undertaken by the Sub-contractor	Estimated value of work (Rand)
Alveo Water	Mechanical supply and installation of pressurised UF system	R 72 650 000
HHK Earthing & lightning Protection Systems	Earthing and lightning Protection	R 16 936 901,63

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

SIGNED ON BEHALF OF TENDERER: [redacted] .....

[redacted]

5.4 Declaration Certificate for Local Production and Content for Designated Sectors

[redacted]

CITY OF CAPE TOWN

WATER AND SANITATION

CONTRACT NO. 146Q/2021/22

DESIGN – BUILD OF MECHANICAL AND ELECTRICAL WORKS FOR THE UPGRADE AND EXPANSION OF POTSDAM WASTEWATER TREATMENT PLANT

SCHEDULE 22.1 : DECLARATION CERTIFICATE FOR LOCAL PRODUCTION AND CONTENT FOR DESIGNATED SECTORS

This declaration is based on and replaces Municipal Bid Document 6.2 (MBD 6.2).

The amendments made to the MBD 6.2 document have been necessary to clarify this standard document as it relates to local production and content in the designated sector.

Before completing this declaration, bidders must study the General Conditions, Definitions, Directives applicable in respect of Local Content as prescribed in the Preferential Procurement Regulations, 2017 and the South African Bureau of Standards (SABS) approved technical specification number SATS 1286:2011 (Edition 1) and the Guidance on the Calculation of Local Content together with the Local Content Declaration Templates [Annex C (Local Content Declaration: Summary Schedule), D (Imported Content Declaration: Supporting Schedule to Annex C) and E (Local Content Declaration: Supporting Schedule to Annex C)].

Documents listed herein are downloadable from the dtic's official website, http://www.thedtic.gov.za.

This schedule must be completed by tenderers and returned with their tender at the closing date and time for this tender.

1. General Conditions

1.1 Preferential Procurement Regulations, 2017 (Regulation 8) makes provision for the promotion of local production and content.

1.2 Regulation 8(2) prescribes that in the case of designated sectors, organs of state must advertise such with the specific bidding condition that only locally produced goods with a stipulated minimum threshold for local production and content will be considered.

1.3 Where necessary, for tenders referred to in paragraph 1.2 above, a two stage bidding process may be followed, where the first stage involves a minimum threshold for local production and content and the second stage price and B-BBEE..

1.4 A person awarded a contract in relation to a designated sector, may not sub-contract in such a manner that the local production and content of the overall value of the contract is reduced to below the stipulated minimum threshold.

1.5 The local content (LC) expressed as a percentage of the bid price must be calculated in accordance with the SABS approved technical specification number SATS 1286: 2011 as follows:

$$LC = [1 - x / y] * 100$$

Where

x is the imported content in Rand
y is the bid price in Rand excluding value added tax (VAT)

Prices referred to in the determination of x must be converted to Rand (ZAR) by using the exchange rate published by Nedbank 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.thedtic.gov.za.at no cost.

1.6 A bid may 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.

[redacted]

SCHEDULE 22.1 : DECLARATION CERTIFICATE FOR LOCAL PRODUCTION AND CONTENT FOR DESIGNATED SECTORS (Cont'd)

2. **The stipulated minimum threshold(s) for local production and content (refer to Annex A of SATS 1286:2011) for this bid is/are as follows:**

Description of services, works or goods	Stipulated minimum threshold
Steel Conveyance Pipes, Pipe Fittings and Specials	**100%**

3. 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	✓

3.1 If yes, the rate(s) of exchange to be used in this bid to calculate the local content as prescribed in paragraph 1.5 of the above General Conditions must be the rate(s) published by Nedbank 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	n/a.
Pound Sterling	
Euro	
Yen	
Other	

NB: Suppliers must submit proof of the Nedbank rate(s) of exchange used.

4. Where, after the award of a bid, challenges are experienced in meeting the stipulated minimum threshold for local content the dtic must be informed accordingly in order for the dtic to verify and in consultation with the CCT provide directives in this regard.

[redacted]

CITY OF CAPE TOWN

DIRECTORATE: DEPARTMENT

CONTRACT NO. 462Q/2013/14

PROJECT TITLE

SCHEDULE 22.1: 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. 146Q/2021/2022

ISSUED BY: (Procurement Authority / Name of Municipality / Municipal Entity):
City of Cape Town - Water and Sanitation
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.thedtic.gov.za. Bidders should first complete Declaration D. After completing Declaration D, bidders should complete Declaration E and then consolidate the information on Declaration C. **Declaration C should be submitted with the bid documentation at the closing date and time of the bid in order to substantiate the declaration made in paragraph (c) below.** Declarations D and E should be kept by the bidders for verification purposes for a period of at least 5 years. The successful bidder is required to continuously update Declarations C, D and E with the actual values for the duration of the contract.

I, the undersigned, [redacted] (full names),
do hereby declare, in my capacity as Authorised Signatory
of PCI-INENZO-RAUBEX-DEVCOTECH Consortium (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 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)	R106 258 401,90
Imported content (x), as calculated in terms of SATS 1286:2011	R 0
Stipulated minimum threshold for local content (paragraph 2 above)	100%.
Local content %, as calculated in terms of SATS 1286:2011	100%.

If the bid is for more than one product, the local content percentages for each product contained in Declaration C shall be used instead of the table above. The local content percentages for each product has been calculated using the formula given in clause 3 of SATS 1286:2011, the rates of exchange indicated in paragraph 3.1 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 [redacted] of the Preferential Procurement Regulations, 2017 promulgated under [redacted] (PPPFA), 2000 (Act No. 5 of 2000).

SIGNATURE: [redacted] DATE: 28/04/2022

WITNESS No. 1 [redacted] DATE: 28/04/2022

WITNESS No. 2 [redacted] DATE: 28/04/2022

[redacted]

ANNEX C

LOCAL CONTENT DECLARATION-SUMMARY SCHEDULE

(C1)	Tender No:	1460/2021/22						Note: VAT to be excluded from all calculations
(C2)	Tender description:	Design-build of upgrade and expansion of Potsdam WWTP						
(C3)	Designated product(s)	Steel Conveyance Pipes, Pipe Fittings and Specials						
(C4)	Tender Authority:	City of Cape Town						
(C5)	Tendering Entity name:	PCI-INENZO-RAUBEX-DEVCOTECH Consortium						
(C6)	Tender exchange rate:	GBP	20.49	USD	15.31	EURO	17.53	OTHER
(C7)	Specified local content %	100						

		Calculation of Local Content						Tender Summary			
Tender item numbers	List of items	Tender price- each	Exempted import value	Tender value net of exempted imported content	Imported value	Local value	Local content % (per item)	Tender quantity	Total tender value	Total exempted imported content	Total imported content
(C8)	(C9)	(C10)	(C11)	(C12)	(C13)	(C14)	(C15)	(C16)	(C17)	(C18)	(C19)
VI1.2.8.1	Supply of T-off on discharge manifold to 1m outside pump station building	N/A				R -	-	1	N/A	N/A	N/A
VI1.2.8.4	Supply of pipework to the '08 PST division	R 196.643.84		R 196.643.84	R -	R 196.643.84	100%	1	R 196.643.84	R -	R -
VI3.2.10.5	Drainage pipework from grit classifier	R 88.984.00		R 88.984.00	R -	R 88.984.00	100%	1	R 88.984.00	R -	R -
M4.2.2.1.a	Suction pipework from sump to pump inlet complete with fittings & specials	Included	R -		R -	R -	100%	1	Included	Included	Included
M4.2.2.1.b	Pump discharge pipework to common manifold complete with fittings & specials	R 270.390.00		R 270.390.00	R -	R 270.390.00	100%	1	R 270.390.00	R -	R -
M4.2.2.1.c	Common manifold pipework complete :common with fittings & specials	R 205.565.00		R 205.565.00	R -	R 205.565.00	100%	1	R 205.565.00	R -	R -
M4.2.2.2.a	Suction pipework from sump to pump inlet complete with fittings & specials	R 3.402.106.40		R 3.402.106.40	R -	R 3.402.106.40	100%	1	R 3.402.106.40	R -	R -
M4.2.2.2.b	Pump discharge pipework to common manifold complete with fittings & specials	R 1.485.499.40		R 1.485.499.40	R -	R 1.485.499.40	100%	1	R 1.485.499.40	R -	R -
M4.2.2.2.c	Common manifold pipework complete :common with fittings & specials	R 3.721.404.50		R 3.721.404.50	R -	R 3.721.404.50	100%	1	R 3.721.404.50	R -	R -
M4.2.2.3.a	Suction pipework from sump to pump inlet complete with fittings & specials	R 123.396.00		R 123.396.00	R -	R 123.396.00	100%	1	R 123.396.00	R -	R -
M4.2.2.3.b	Pump discharge pipework to common manifold complete with fittings & specials	R 72.405.00		R 72.405.00	R -	R 72.405.00	100%	1	R 72.405.00	R -	R -
M4.2.2.3.c	Common manifold pipework complete :common with fittings & specials	R 110.265.00		R 110.265.00	R -	R 110.265.00	100%	1	R 110.265.00	R -	R -
M4.2.2.3.d	Straipress discharge pipework complete with fittings & specials	R 130.738.00		R 130.738.00	R -	R 130.738.00	100%	1	R 130.738.00	R -	R -
M4.2.2.4.a	Suction pipework from sump to pump inlet complete with fittings & specials	R 169.421.00		R 169.421.00	R -	R 169.421.00	100%	1	R 169.421.00	R -	R -
M4.2.2.4.b	Pump discharge pipework to common manifold complete with fittings & specials	R 118.064.00		R 118.064.00	R -	R 118.064.00	100%	1	R 118.064.00	R -	R -

[redacted]

M4.2.2.4.c	Common manifold pipework complete common with fittings & specials	R	123.290.00		R	123.290.00	R	-	R	123.290.00	100%	1	R	123.290.00	R	-	R	-
M4.2.2.5.a	Strainpress Feed Pump manifold to inlet flange of screen units	R	140.957.00		R	140.957.00	R	-	R	140.957.00	100%	1	R	140.957.00	R	-	R	-
M4.2.2.5.b	Discharge pipework from strainpress units up to the discharge sump	R	126.766.00		R	126.766.00	R	-	R	126.766.00	100%	1	R	126.766.00	R	-	R	-
M4.2.2.6.a	Inlet pipework up to inlet flange of cyclone units	R	99.907.00		R	99.907.00	R	-	R	99.907.00	100%	1	R	99.907.00	R	-	R	-
M4.2.2.6.b	Discharge pipework from cyclone units up to the discharge point in the storage tank	R	112.031.00		R	112.031.00	R	-	R	112.031.00	100%	1	R	112.031.00	R	-	R	-
M4.2.2.7.a	Inlet pipework in pump station sludge inlet chamber feeding into primary sludge channel grinder	R	195.490.00		R	195.490.00	R	-	R	195.490.00	100%	1	R	195.490.00	R	-	R	-
M4.2.2.7.b	Suction pipework from sump to pump inlet complete with fittings & specials	R	221.629.00		R	221.629.00	R	-	R	221.629.00	100%	1	R	221.629.00	R	-	R	-
M4.2.2.7.c	Pump discharge pipework to common manifold complete with fittings & specials	R	117.364.00		R	117.364.00	R	-	R	117.364.00	100%	1	R	117.364.00	R	-	R	-
M4.2.2.7.d	Common pump manifold pipework complete common with fittings & specials	R	145.589.00		R	145.589.00	R	-	R	145.589.00	100%	1	R	145.589.00	R	-	R	-
M4.2.2.8.a	Inlet pipework from UF screen outlet to bioreactor inlet	R	240.421.05		R	240.421.05	R	-	R	240.421.05	100%	1	R	240.421.05	R	-	R	-
M4.2.2.8.b	Anaerobic bypass pipework in bioreactor	R	1.221.446.58		R	1.221.446.58	R	-	R	1.221.446.58	100%	1	R	1.221.446.58	R	-	R	-
M4.2.2.9.a.i	Inlet pipework from UF screen outlet to bioreactor inlet	R	29.388.70		R	29.388.70	R	-	R	29.388.70	100%	1	R	29.388.70	R	-	R	-
M4.2.2.9.a.ii	Anaerobic bypass pipework in bioreactor	R	21.881.20		R	21.881.20	R	-	R	21.881.20	100%	1	R	21.881.20	R	-	R	-
M4.2.2.9.b.i	Pump discharge pipework to common manifold complete with fittings & specials	R	62.823.20		R	62.823.20	R	-	R	62.823.20	100%	1	R	62.823.20	R	-	R	-
M4.2.2.9.b.ii	Common manifold pipework complete common with fittings & specials	R	53.985.80		R	53.985.80	R	-	R	53.985.80	100%	1	R	53.985.80	R	-	R	-
M4.2.2.9.c.i	Pump discharge pipework to common manifold complete with fittings & specials	R	62.823.20		R	62.823.20	R	-	R	62.823.20	100%	1	R	62.823.20	R	-	R	-
M4.2.2.9.c.ii	Common manifold pipework complete common with fittings & specials	R	53.985.80		R	53.985.80	R	-	R	53.985.80	100%	1	R	53.985.80	R	-	R	-
M4.2.2.10.a.i	Suction pipework from sump to pump inletcomplete with fittings & specials	R	858.854.31		R	858.854.31	R	-	R	858.854.31	100%	1	R	858.854.31	R	-	R	-
M4.2.2.10.a.ii	Pump discharge pipework to common manifold complete with fittings & specials	R	160.415.84		R	160.415.84	R	-	R	160.415.84	100%	1	R	160.415.84	R	-	R	-
M4.2.2.10.a.iii	Common manifold pipework complete with fittings & specials	R	171.229.72		R	171.229.72	R	-	R	171.229.72	100%	1	R	171.229.72	R	-	R	-
M4.2.2.10.b.i	Suction pipework from sump to pump inlet complete with fittings & specials	R	858.854.31		R	858.854.31	R	-	R	858.854.31	100%	1	R	858.854.31	R	-	R	-
M4.2.2.10.b.ii	Pump discharge pipework to common manifold complete with fittings & specials	R	160.415.84		R	160.415.84	R	-	R	160.415.84	100%	1	R	160.415.84	R	-	R	-

M4.2.2.10.b.iii	Common manifold pipework complete with fittings & specials	R 171.229.72		R 171.229.72	R -	R 171.229.72	100%	1	R 171.229.72	R -	R -
M4.2.2.11.a.i	Suction pipework from sump to pump inletcomplete with fittings & specials	R 72.196.00		R 72.196.00	R -	R 72.196.00	100%	1	R 72.196.00	R -	R -
M4.2.2.11.a.ii	Pump discharge pipework to common manifold complete with fittings & specials	R 59.882.00		R 59.882.00	R -	R 59.882.00	100%	1	R 59.882.00	R -	R -
M4.2.2.11.a.iii	Common manifold pipework complete with fittings & specials	R 66.402.00		R 66.402.00	R -	R 66.402.00	100%	1	R 66.402.00	R -	R -
M4.2.2.11.b.i	Suction pipework from sump to pump inletcomplete with fittings & specials	R 72.196.00		R 72.196.00	R -	R 72.196.00	100%	1	R 72.196.00	R -	R -
M4.2.2.11.b.ii	Pump discharge pipework to common manifold complete with fittings & specials	R 59.882.00		R 59.882.00	R -	R 59.882.00	100%	1	R 59.882.00	R -	R -
M4.2.2.11.b.iii	Common manifold pipework complete with fittings & specials	R 66.402.00		R 66.402.00	R -	R 66.402.00	100%	1	R 66.402.00	R -	R -
M4.2.2.12.a	Suction pipework from sump to pump inletcomplete with fittings & specials	R 1.208.509.49		R 1.208.509.49	R -	R 1.208.509.49	100%	1	R 1.208.509.49	R -	R -
M4.2.2.12.b	Pump discharge pipework to common manifold complete with fittings & specials	R 2.306.092.34		R 2.306.092.34	R -	R 2.306.092.34	100%	1	R 2.306.092.34	R -	R -
M4.2.2.12.c	Common manifold pipework complete with fittings & specials	R 69.900.00		R 69.900.00	R -	R 69.900.00	100%	1	R 69.900.00	R -	R -
M4.2.2.13.a	Suction pipework from sump to pump inlet complete with fittings & specials	R 175.505.86		R 175.505.86	R -	R 175.505.86	100%	1	R 175.505.86	R -	R -
M4.2.2.13.b	Pump discharge pipework to common manifold complete with fittings & specials	R 39.318.75		R 39.318.75	R -	R 39.318.75	100%	1	R 39.318.75	R -	R -
M4.2.2.13.c	Common manifold pipework complete with fittings & specials	R 39.318.75		R 39.318.75	R -	R 39.318.75	100%	1	R 39.318.75	R -	R -
M4.2.2.13.d	Common discharge manifold pipework complete with fittings & specials	R 223.815.49		R 223.815.49	R -	R 223.815.49	100%	1	R 223.815.49	R -	R -
M4.2.2.14.a	Suction pipework from sump to pump inlet complete with fittings & specials	R 166.976.00		R 166.976.00	R -	R 166.976.00	100%	1	R 166.976.00	R -	R -
M4.2.2.14.b	Pump discharge pipework to common manifold complete with fittings & specials	Included	R -		R -	R -	100%	1	Included	Included	Included
M4.2.2.14.c	Common manifold pipework complete with fittings & specials	Included	R -		R -	R -	100%	1	Included	Included	Included
M4.2.2.14.d	Common d scharge manifold pipework complete with fittings & specials	R 173.885.00		R 173.885.00	R -	R 173.885.00	100%	1	R 173.885.00	R -	R -
M4.2.2.15.a.i	Suction pipework from sump to pump inlet complete with fittings & specials	R 230.311.88		R 230.311.88	R -	R 230.311.88	100%	1	R 230.311.88	R -	R -
M4.2.2.15.a.ii	Pump discharge pipework to common manifold complete with fittings & specials	R 188.516.81		R 188.516.81	R -	R 188.516.81	100%	1	R 188.516.81	R -	R -
M4.2.2.15.a.iii	Common manifold pipework to MBR tanks complete with fittings & specials	R 1.048.745.82		R 1.048.745.82	R -	R 1.048.745.82	100%	1	R 1.048.745.82	R -	R -

M4.2.2.15.b.I	Suction pipework from sump to pump inlet complete with fittings & specials	R	230.311.88		R	230.311.88	R	-	R	230.311.88	100%	1	R	230.311.88	R	-	R	-
M4.2.2.15.b.II	Pump discharge pipework to common manifold complete with fittings & specials	R	188.516.81		R	188.516.81	R	-	R	188.516.81	100%	1	R	188.516.81	R	-	R	-
M4.2.2.15.b.III	Common manifold pipework to MBR tanks complete with fittings & specials	R	1.048.745.82		R	1.048.745.82	R	-	R	1.048.745.82	100%	1	R	1.048.745.82	R	-	R	-
M4.2.2.16.a	Suction pipework from sump to pump inlet complete with fittings & specials	R	1.968.788.80		R	1.968.788.80	R	-	R	1.968.788.80	100%	1	R	1.968.788.80	R	-	R	-
M4.2.2.16.b	Pump discharge pipework to common manifold complete with fittings & specials	R	640.940.30		R	640.940.30	R	-	R	640.940.30	100%	1	R	640.940.30	R	-	R	-
M4.2.2.16.c	Common manifold pipework complete with fittings & specials	R	1.300.464.00		R	1.300.464.00	R	-	R	1.300.464.00	100%	1	R	1.300.464.00	R	-	R	-
M4.2.2.16.d	Common discharge manifold pipework complete with fittings & specials	R	391.019.20		R	391.019.20	R	-	R	391.019.20	100%	1	R	391.019.20	R	-	R	-
M4.2.2.17.a	Sump inlet pipework (multi level draw-off)	R	504.973.70		R	504.973.70	R	-	R	504.973.70	100%	1	R	504.973.70	R	-	R	-
M4.2.2.17.b	Pump discharge pipework to common manifold complete with fittings & specials	R	111.744.60		R	111.744.60	R	-	R	111.744.60	100%	1	R	111.744.60	R	-	R	-
M4.2.2.17.c	Common manifold pipework complete with fittings & specials	R	101.871.00		R	101.871.00	R	-	R	101.871.00	100%	1	R	101.871.00	R	-	R	-
M4.2.2.18.a	Pipe work associated with WAS inlet system complete with fittings & specials	R	553.313.00		R	553.313.00	R	-	R	553.313.00	100%	1	R	553.313.00	R	-	R	-
M4.2.2.19.a	Suction pipework from sump to pump inlet complete with fittings & specials	R	356.550.00		R	356.550.00	R	-	R	356.550.00	100%	1	R	356.550.00	R	-	R	-
M4.2.2.19.b	Pump discharge pipework to common manifold complete with fittings & specials	R	261.260.00		R	261.260.00	R	-	R	261.260.00	100%	1	R	261.260.00	R	-	R	-
M4.2.2.19.c	Common manifold pipework complete with fittings & specials	R	235.217.00		R	235.217.00	R	-	R	235.217.00	100%	1	R	235.217.00	R	-	R	-
M4.2.2.20.a	Pipe work associated with Overflow dam inlet system complete with fittings & specials	R	423.338.00		R	423.338.00	R	-	R	423.338.00	100%	1	R	423.338.00	R	-	R	-
M4.2.2.20.b	Pipe work associated with '08 WAS inlet system complete with fittings & specials	R	284.604.00		R	284.604.00	R	-	R	284.604.00	100%	1	R	284.604.00	R	-	R	-
M4.2.2.20.c	Pipe work associated with '24 WAS inlet system complete with fittings & specials	R	342.908.00		R	342.908.00	R	-	R	342.908.00	100%	1	R	342.908.00	R	-	R	-
M4.2.2.20.d	Pipe work associated with '24 WAS Recycle inlet system complete with fittings & specials	R	321.938.00		R	321.938.00	R	-	R	321.938.00	100%	1	R	321.938.00	R	-	R	-
M4.2.2.20.e	Pipe work associated with '24 WAS Ring Main inlet system complete with fittings & specials	R	255.071.00		R	255.071.00	R	-	R	255.071.00	100%	1	R	255.071.00	R	-	R	-
M4.2.2.20.f	Pipe work associated with decant system complete with fittings & specials	R	70.328.00		R	70.328.00	R	-	R	70.328.00	100%	1	R	70.328.00	R	-	R	-

M4.2.2.21.a	Suction pipework from tanks to pump inlets complete with fittings & specials	R	532.986.00		R	532.986.00	R	-	R	532.986.00	100%	1	R	532.986.00	R	-	R	-
M4.2.2.21.b	Pump discharge pipework to common manifold complete with fittings & specials	R	346.739.00		R	346.739.00	R	-	R	346.739.00	100%	1	R	346.739.00	R	-	R	-
M4.2.2.21.c	Ring-main pipework complete to and from the dewatering building with all fittings & specials	R	948.488.00		R	948.488.00	R	-	R	948.488.00	100%	1	R	948.488.00	R	-	R	-
M4.2.2.22.a	Pipe work associated with WAS inlet system complete with fittings & specials	R	119.806.00		R	119.806.00	R	-	R	119.806.00	100%	1	R	119.806.00	R	-	R	-
M4.2.2.22.b	Pipe work associated with Primary Sludge Feed Pump Station inlet system complete with fittings & specials	R	138.515.00		R	138.515.00	R	-	R	138.515.00	100%	1	R	138.515.00	R	-	R	-
M4.2.2.22.c	Pipe work associated with Ring Main inlet system complete with fittings & specials	R	942.666.00		R	942.666.00	R	-	R	942.666.00	100%	1	R	942.666.00	R	-	R	-
M4.2.2.22.d	Pipe work associated with decant system complete with fittings & specials	R	71.753.00		R	71.753.00	R	-	R	71.753.00	100%	1	R	71.753.00	R	-	R	-
M4.2.2.22.f	Blanked flange access hatches complete as per specifications	R	67.432.00		R	67.432.00	R	-	R	67.432.00	100%	2	R	134.864.00	R	-	R	-
M4.2.2.23.a	Pipe work associated with Primary Sludge Storage Tanks complete with fittings & specials	R	482.018.00		R	482.018.00	R	-	R	482.018.00	100%	1	R	482.018.00	R	-	R	-
M4.2.2.23.b	Suction pipework from tank to mixing pump inlet complete with fittings & specials	R	494.602.00		R	494.602.00	R	-	R	494.602.00	100%	1	R	494.602.00	R	-	R	-
M4.2.2.23.c	Mixing pump discharge pipework including common manifold complete with fittings & specials	R	1.765.414.00		R	1.765.414.00	R	-	R	1.765.414.00	100%	1	R	1.765.414.00	R	-	R	-
M4.2.2.24.a	Suction pipework from tanks to pump inlets complete with fittings & specials	R	382.340.00		R	382.340.00	R	-	R	382.340.00	100%	1	R	382.340.00	R	-	R	-
M4.2.2.24.b	Pump discharge pipework to common manifold complete with fittings & specials	R	261.219.00		R	261.219.00	R	-	R	261.219.00	100%	1	R	261.219.00	R	-	R	-
M4.2.2.24.c	Ringmain pipework complete to and from the dewatering building with all fittings & specials	R	271.493.00		R	271.493.00	R	-	R	271.493.00	100%	1	R	271.493.00	R	-	R	-
M4.2.2.25.a	Suction pipework from 1m outside dewatering building up to pump inlet complete with fittings & specials	R	746.199.00		R	746.199.00	R	-	R	746.199.00	100%	1	R	746.199.00	R	-	R	-
M4.2.2.25.b	Pump discharge pipework up to flange connection of dewatering unit	R	3.077.929.00		R	3.077.929.00	R	-	R	3.077.929.00	100%	1	R	3.077.929.00	R	-	R	-
M4.2.2.26.a	Suction pipework from 1m outside dewatering building up to pump inlet complete with fittings & specials	R	429.569.00		R	429.569.00	R	-	R	429.569.00	100%	1	R	429.569.00	R	-	R	-
M4.2.2.26.b	Pump discharge pipework up to flange connection of dewatering unit	R	1.988.136.00		R	1.988.136.00	R	-	R	1.988.136.00	100%	1	R	1.988.136.00	R	-	R	-
M4.2.2.27.a	Pump discharge pipework up to discharge point in sludge cake silo complete with fittings & specials	R	2.803.992.00		R	2.803.992.00	R	-	R	2.803.992.00	100%	1	R	2.803.992.00	R	-	R	-

M4.2.2.28.a	Pump discharge pipework up to discharge point in sludge cake silo complete with fittings & specials	R 2.803.992.00		R 2.803.992.00	R -	R 2.803.992.00	100%	1	R 2.803.992.00	R -	R -
M4.2.2.29.a	Suction pipework from tank to pump inlet complete with fittings & specials	Included in Section 12	R -		R -	R -	100%	1	Included in Section 12	Included in Section 12	Included in Section 12
M4.2.2.29.b	Discharge pipework from pump to poly dosing point complete with fittings & specials	Included in Section 12	R -		R -	R -	100%	1	Included in Section 12	Included in Section 12	Included in Section 12
M4.2.2.30.a	Suction pipework from tank to pump inlet complete with fittings & specials	Included in Section 12	R -		R -	R -	100%	1	Included in Section 12	Included in Section 12	Included in Section 12
M4.2.2.31.a	Suction pipework from sump to pump inlet complete with fittings & specials	R 303.441.00		R 303.441.00	R -	R 303.441.00	100%	1	R 303.441.00	R -	R -
M4.2.2.31.b	Pump discharge pipework to common manifold complete with fittings & specials	R 132.867.00		R 132.867.00	R -	R 132.867.00	100%	1	R 132.867.00	R -	R -
M4.2.2.31.c	Common man fold pipework complete common with fittings & specials	R 307.790.00		R 307.790.00	R -	R 307.790.00	100%	1	R 307.790.00	R -	R -
M4.2.2.32.a	Suction pipework from sump to pump inlet complete with fittings & specials	R 178.990.00		R 178.990.00	R -	R 178.990.00	100%	1	R 178.990.00	R -	R -
M4.2.2.32.b	Pump discharge pipework to common manifold complete with fittings & specials	R 98.067.00		R 98.067.00	R -	R 98.067.00	100%	1	R 98.067.00	R -	R -
M4.2.2.32.c	Common man fold pipework complete common with fittings & specials	R 194.361.00		R 194.361.00	R -	R 194.361.00	100%	1	R 194.361.00	R -	R -
M4.2.2.33.a	Main inlet pipes form PSTs (Cast in, puddle flange pipes)	R 318.981.66		R 318.981.66	R -	R 318.981.66	100%	1	R 318.981.66	R -	R -
M4.2.2.33.b	Inlet pipework from channel to screen inlets complete with fittings & specials	R 745.625.63		R 745.625.63	R -	R 745.625.63	100%	1	R 745.625.63	R -	R -
M4.2.2.33.c	Overflow pipework complete with fittings & specials	R 619.223.13		R 619.223.13	R -	R 619.223.13	100%	1	R 619.223.13	R -	R -
M4.2.2.33.d	Screen station discharge pipework to bio-reactor complete with fittings & specials	R 1.590.917.01		R 1.590.917.01	R -	R 1.590.917.01	100%	1	R 1.590.917.01	R -	R -
M4.2.2.33.f	Cast in steel p pes not measured above at the UF fine screen station	R 56.660.48		R 56.660.48	R -	R 56.660.48	100%	1	R 56.660.48	R -	R -
M4.2.2.34.a	Diversion chamber pipework complete with fittings & specials, etc.	R 58.784.00		R 58.784.00	R -	R 58.784.00	100%	1	R 58.784.00	R -	R -
M4 2.2.34.b	'08 RAS flowmeter chamber connection pipework complete with fittings & specials, etc.	R 343.144.00		R 343.144.00	R -	R 343.144.00	100%	1	R 343.144.00	R -	R -
M4 2.2.34.c	'08 WAS draw-off puddle pipes complete with fittings & specials, etc.	R 53.574.00		R 53.574.00	R -	R 53.574.00	100%	1	R 53.574.00	R -	R -
M4 2.2.34.c	Suction pipework from sump to pump inlet co nplete with fittings & specials	R 144.005.00		R 144.005.00	R -	R 144.005.00	100%	1	R 144.005.00	R -	R -
M4 2.2.34.e	Pump discharge pipework to common man fold complete with fittings & specials	R 115.536.00		R 115.536.00	R -	R 115.536.00	100%	1	R 115.536.00	R -	R -
M4 2.2.34.F	Common manifold pipework complete common with fittings & specials	R 171.517.00		R 171.517.00	R -	R 171.517.00	100%	1	R 171.517.00	R -	R -

[redacted]

M5.2.6	PST inlet pipework (Cast in steel pipe)	R 383.932.74		R 383.932.74	R -	R 383.932.74	100%	4	R 1.535.730.96	R -	R -
M5.2.7	PST outlet pipework (Cast in steel pipe)	R 70.499.98		R 70.499.98	R -	R 70.499.98	100%	4	R 281.999.92	R -	R -
M5.2.8	PST sludge & scum draw-off pipework	R 629.685.49		R 629.685.49	R -	R 629.685.49	100%	1	R 629.685.49	R -	R -
M5.2.10	PST division structure main inlet pipework	R 966.871.95		R 966.871.95	R -	R 966.871.95	100%	1	R 966.871.95	R -	R -
M5.2.11	PST division structure outlet pipework	R 1.416.900.96		R 1.416.900.96	R -	R 1.416.900.96	100%	1	R 1.416.900.96	R -	R -
M12.2.1.4	Primary sludge filtrate and drainage pipework	Included in 12.2.1.3	R -		R -	R -	100%	1	Included in 12.2.1.3	Included in 12.2.1.3	Included in 12.2.1.3
M12.2.2.4	WAS filtrate and drainage pipework	R 36.325.00		R 36.325.00	R -	R 36.325.00	100%	1	R 36.325.00	R -	R -
M23.2.2.1.a	Suction manifold form from sump to pump inlet pipework complete with fittings	R 140.197.00		R 140.197.00	R -	R 140.197.00	100%	1	R 140.197.00	R -	R -
M23.2.2.1.b	Pump suction pipework from suction manifold to pump inlet complete with fittings	R 71.211.00		R 71.211.00	R -	R 71.211.00	100%	1	R 71.211.00	R -	R -
M23.2.2.2.a	Inlet pipework from channel to screen inlets complete with fittings	R 1.286.401.00		R 1.286.401.00	R -	R 1.286.401.00	100%	1	R 1.286.401.00	R -	R -
M23.2.2.2.b	Discharge pipework from screens to channel inlet complete with fittings	R 1.283.022.00		R 1.283.022.00	R -	R 1.283.022.00	100%	1	R 1.283.022.00	R -	R -
M23.2.2.3.a	Suction pipework from sump to pump inlet complete with fittings	R 1.386.641.00		R 1.386.641.00	R -	R 1.386.641.00	100%	1	R 1.386.641.00	R -	R -
M23.2.2.3.b	Pump discharge pipework to common manifold complete with fittings	R 348.269.00		R 348.269.00	R -	R 348.269.00	100%	1	R 348.269.00	R -	R -
M23.2.2.3.c	Common manifold pipework complete common with fittings	R 2.881.905.00		R 2.881.905.00	R -	R 2.881.905.00	100%	1	R 2.881.905.00	R -	R -
M23.2.2.4.a	Suction pipework from sump to pump inlet complete with fittings	R 425.646.00		R 425.646.00	R -	R 425.646.00	100%	1	R 425.646.00	R -	R -
M23.2.2.4.b	Pump discharge pipework to common manifold complete with fittings	R 273.741.00		R 273.741.00	R -	R 273.741.00	100%	1	R 273.741.00	R -	R -
M23.2.2.4.c	Common manifold pipework complete common with fittings	R 748.563.00		R 748.563.00	R -	R 748.563.00	100%	1	R 748.563.00	R -	R -
M23.2.2.5.a	Suction pipework from sump to pump inlet complete with fittings	R 442.716.00		R 442.716.00	R -	R 442.716.00	100%	1	R 442.716.00	R -	R -
M23.2.2.5.b	Pump discharge pipework to common manifold complete with fittings	R 283.923.00		R 283.923.00	R -	R 283.923.00	100%	1	R 283.923.00	R -	R -
M23.2.2.5.c	Common manifold pipework complete common with fittings	R 714.738.00		R 714.738.00	R -	R 714.738.00	100%	1	R 714.738.00	R -	R -
M23.2.2.6.a	Suction pipework from sump to pump inlet complete with fittings	R 6.639.544.00		R 6.639.544.00	R -	R 6.639.544.00	100%	1	R 6.639.544.00	R -	R -
M23.2.2.6.b	Pump discharge pipework to common manifold complete with fittings	R 2.269.874.00		R 2.269.874.00	R -	R 2.269.874.00	100%	1	R 2.269.874.00	R -	R -
M23.2.2.6.c	Common manifold pipework complete with fittings & surge antic pating discharge pipework	R 5.050.786.00		R 5.050.786.00	R -	R 5.050.786.00	100%	1	R 5.050.786.00	R -	R -
M23.2.2.6.f.i	Pipe specials	R 3.540.370.00		R 3.540.370.00	R -	R 3.540.370.00	100%	1	R 3.540.370.00	R -	R -
M23.2.2.6.f.ii	Pipe specials	R 4.794.693.00		R 4.794.693.00	R -	R 4.794.693.00	100%	1	R 4.794.693.00	R -	R -

[redacted]

M23.2.2.6.f iii	Pipe specials	R	3.993.554.00		R	3.993.554.00	R	-	R	3.993.554.00	100%	1	R 3.993.554.00	R - R -
M23.2.2.6.f iv	Pipe specials	R	4.735.302.00		R	4.735.302.00	R	-	R	4.735.302.00	100%	1	R 4.735.302.00	R - R -
M23.2.2.6.f v	Pipe specials	R	2.599.906.00		R	2.599.906.00	R	-	R	2.599.906.00	100%	1	R 2.599.906.00	R - R -
M23.2.2.7.a	Discharge pipework from '24 UF Reject Return Pump to manifold complete with fittings, etc.	R	1.264.770.00		R	1.264.770.00	R	-	R	1.264.770.00	100%	1	R 1.264.770.00	R - R -
M23.2.2.7.c	Common manifold complete with fittings	R	673.492.00		R	673.492.00	R	-	R	673.492.00	100%	1	R 673.492.00	R - R -
											(C20)	Total tender value	R 106.258.401.90	
											(C21)	Total exempt import content	R -	
											(C22)	Total tender value net of exempt import content	R 106.258.401.90	
											(C23)	Total imported content	R -	
											(C24)	Total local content	R 106.258.401.90	
											(C25)	Average local content % of tender	100%	

[redacted]

[redacted]

CITY OF CAPE TOWN

WATER AND SANITATION

CONTRACT NO. 146Q/2021/22

DESIGN – BUILD OF MECHANICAL AND ELECTRICAL WORKS FOR THE UPGRADE AND EXPANSION OF POTSDAM WASTEWATER TREATMENT PLANT

SCHEDULE 22.2: DECLARATION CERTIFICATE FOR LOCAL PRODUCTION AND CONTENT FOR DESIGNATED SECTORS

This declaration is based on and replaces Municipal Bid Document 6.2 (MBD 6.2).
The amendments made to the MBD 6.2 document have been necessary to clarify this standard document as it relates to local production and content in the designated sector.

Before completing this declaration, bidders must study the General Conditions, Definitions, Directives applicable in respect of Local Content as prescribed in the Preferential Procurement Regulations, 2017 and the South African Bureau of Standards (SABS) approved technical specification number SATS 1286:2011 (Edition 1) and the Guidance on the Calculation of Local Content together with the Local Content Declaration Templates [Annex C (Local Content Declaration: Summary Schedule), D (Imported Content Declaration: Supporting Schedule to Annex C) and E (Local Content Declaration: Supporting Schedule to Annex C)].

Documents listed herein are downloadable from the dtic's official website, http://www.thedtic.gov.za.

This schedule must be completed by tenderers and returned with their tender at the closing date and time for this tender.

1. General Conditions

1.1 Preferential Procurement Regulations, 2017 (Regulation 8) makes provision for the promotion of local production and content.

1.2 Regulation 8(2) prescribes that in the case of designated sectors, organs of state must advertise such with the specific bidding condition that only locally produced goods with a stipulated minimum threshold for local production and content will be considered.

1.3 Where necessary, for tenders referred to in paragraph 1.2 above, a two stage bidding process may be followed, where the first stage involves a minimum threshold for local production and content and the second stage price and B-BBEE..

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 [redacted] 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.thedtic.gov.za at no cost.

1.6 A bid may 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.

[redacted]

CITY OF CAPE TOWN

WATER AND SANITATION

CONTRACT NO. 146Q/2021/22

DESIGN – BUILD OF MECHANICAL AND ELECTRICAL WORKS FOR THE UPGRADE AND EXPANSION OF POTSDAM WASTEWATER TREATMENT PLANT

SCHEDULE 22.2: DECLARATION CERTIFICATE FOR LOCAL PRODUCTION AND CONTENT FOR DESIGNATED SECTORS (Cont'd)

2. **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
Pumps, Medium Voltage Motor and Associated Accessories	**70%**

3. 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	

3.1 If yes, the rate(s) of exchange to be used in this bid to calculate the local content as prescribed in paragraph 1.5 of the above General Conditions must be the rate(s) published by [redacted] 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	15,31
Pound Sterling	20,48
Euro	17,53
Yen	
Other	

NB: Suppliers must submit proof of the [redacted] rate(s) of exchange used.

4. Where, after the award of a bid, challenges are experienced in meeting the stipulated minimum threshold for local content the dtic must be informed accordingly in order for the dtic to verify and in consultation with the CCT provide directives in this regard.

[redacted]

CITY OF CAPE TOWN

WATER AND SANITATION

CONTRACT NO. 146Q/2021/22

DESIGN – BUILD OF MECHANICAL AND ELECTRICAL WORKS FOR THE UPGRADE AND EXPANSION OF POTSDAM WASTEWATER TREATMENT PLANT

SCHEDULE 22.2: 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. 146Q/2021/2022.....

ISSUED BY: (Procurement Authority / Name of Municipality / Municipal Entity):
City of Cape Town - Water and Sanitation.....
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.thedtic.gov.za Bidders should first complete Declaration D. After completing Declaration D, bidders should complete Declaration E and then consolidate the information on Declaration C. **Declaration C should be submitted with the bid documentation at the closing date and time of the bid in order to substantiate the declaration made in paragraph (c) below.** Declarations D and E should be kept by the bidders for verification purposes for a period of at least 5 years. The successful bidder is required to continuously update Declarations C, D and E with the actual values for the duration of the contract.

I, the undersigned [redacted] ..... (full names),
do hereby declare, in my capacity as Authorised Signatory .....
of PCI-INENZO-RAUBEX-DEVCOTECH Consortium.....(name of bidder entity), the following:

(a) The facts contained herein are within my own personal knowledge.
(b) I have satisfied myself that:
(ii) the goods to be delivered in terms of the above-specified bid comply with the minimum local content requirements as specified in the bid, and as measured in terms of SATS 1286:2011;
(c) The local content percentages (%) indicated below has been calculated using the formula given in clause 3 of SATS 1286:2011, the rates of exchange indicated in paragraph 4.1 above and the information contained in Declaration D and E which has been consolidated in Declaration C:

Bid price, excluding VAT (y)	R 109 969 344,16
Imported content (x), as calculated in terms of SATS 1286:2011	R 39 702.76
Stipulated minimum threshold for local content (paragraph 2 above)	70%.
Local content %, as calculated in terms of SATS 1286:2011	100%.

If the bid is for more than one product, the local content percentages for each product contained in Declaration C shall be used instead of the table above. The local content percentages for each product has been calculated using the formula given in clause 3 of SATS 1286:2011, the rates of exchange indicated in paragraph 3.1 above and the information contained in Declaration D and E.

(d) I accept that the Procurement Authority / Municipality /Municipal Entity has the right to request that the local content be verified in terms of the requirements of SATS 1286:2011.
(e) I understand that the awarding of the bid is dependent on the accuracy of the information furnished in this application. I also understand that the submission of incorrect data, or data that are not verifiable as described in SATS 1286:2011, may result in the Procurement Authority / Municipal / Municipal Entity imposing any or all of the remedies as provided for in Regulation 14 of the Preferential Procurement Regulations, 2017 promulgated under the Preferential Policy Framework Act (PPPFA), 2000 (Act No. 5 of 2000).
(f)

SIGNATURE: [redacted] DATE: 28/04/2022

WITNESS No. 1 DATE: 28/04/2022

WITNESS No. 2 DATE: 28/04/2022

[redacted]

ANNEX C

LOCAL CONTENT DECLARATION-SUMMARY SCHEDULE

Note: VAT to be excluded from all calculations

(C1)	Tender No.	1460/2021/22						
(C2)	Tender description:	Design-build of upgrade and expansion of Potsdam WWTP						
(C3)	Designated product(s)	Pumps, Medium Voltage Motor and Associated Accessories						
(C4)	Tender Authority:	City of Cape Town						
(C5)	Tendering Entity name:	PCI-INENTO-RAUBEX-DEVCOTECH Consortium						
(C6)	Tender exchange rate:	GBP	20.49	USD	15.31	EURO	17.53	OTHER
(C7)	Specified local content %	70						

Calculation of Local Content

Tender item numbers	List of items	Tender price- each	Exempted import value	Tender value net of exempted imported content	Imported value	Local value	Local content % (per item)
(C8)	(C9)	(C10)	(C11)	(C12)	(C13)	(C14)	(C15)
M4.2.1.1.a	Emergency overflow recycle pump	R 185.330.00	R 136.265.31	R 49.064.69	R -	R 49.064.69	100%
M4.2.1.2.a	Raw sewage pumps	R 975.348.00		R 975.348.00	R -	R 975.348.00	100%
M4.2.1.2.b	Drainage sump pump	R 20.124.50	R 18.295.00	R 1.829.50	R -	R 1.829.50	100%
M4.2.1.3.a	08 '24 Strainpress feed pumps	R 214 001.00		R 214.001.00	R -	R 214.001.00	100%
M4.2.1.4.a	'24 Primary sludge recirculation pumps	R 220.176.00		R 220.176.00	R -	R 220.176.00	100%
M4.2.1.5.a	'24 Primary sludge storage tank feed pumps	R 382.979.00	R 245.101.00	R 137.878.00	R -	R 137.878.00	100%
M4.2.1.5.b	Drainage sump pump	R 15.433.00	R 8.180.79	R 7.252.21	R -	R 7.252.21	100%
M4.2.1.6.a	'24 Biological reactor A-recycle pumps	R 204.376.97	R 174.259.00	R 30.117.97	R -	R 30.117.97	100%
M4.2.1.7.a	'24 Biological reactor R-recycle pumps	R 272.308.46	R 84.395.00	R 187.913.46	R -	R 187.913.46	100%
M4.2.1.8.a	'24 Scum pumps	R 49.192.00	R 44.720.00	R 4.472.00	R -	R 4.472.00	100%
M4.2.1.9.a	24 MBR tank feed pumps	R 825.337.70	R 750.307.00	R 75.030.70	R -	R 75.030.70	100%
M4.2.1.10.a	24 MBR tank drainage pumps	R 291.360.10	R 248.407.00	R 42.953.10	R -	R 42.953.10	100%
M4.2.1.11.a	'24 WAS pumps	R 280.339.00	R 159.708.00	R 120.631.00	R -	R 120.631.00	100%
M4.2.1.12.a	'24 MBR permeate pumps	R 700.601.88	R 600.000.00	R 100.601.88	R -	R 100.601.88	100%
M4.2.1.13.a	'24 MBR service water supply pumps	R 475.709.24	R 403.934.20	R 71.775.04	R -	R 71.775.04	100%
M4.2.1.14.a	'24 Dewatering washwater supply pumps	R 482.795.00	R 389.904.10	R 92.894.90	R -	R 92.894.90	100%
M4.2.1.15	'24 MBR permeate recycle pumps	R 48.219.65		R 48.219.65	R 9.925.69	R 38.293.96	79%
M4.2.1.16.a	'24 MBRoff-site reuse pumps	R 401.135.90		R 401.135.90	R -	R 401.135.90	100%
M4.2.1.16.b	Drainage sump pump	R 20.124.50	R 18.295.00	R 1.829.50	R -	R 1.829.50	100%
M4.2.1.16.c	MV motors associated with re-use pumps	R 2.666.039.20		R 2.666.039.20	R -	R 2.666.039.20	100%
M4.2.1.17.a	Overflow dam recycle pumps	R 163.508.40	R 148.644.00	R 14.864.40	R -	R 14.864.40	100%
M4.2.1.18.a	'24 WAS recycle pumps	R 414.403.00	R 277.868.00	R 136.535.00	R -	R 136.535.00	100%
M4.2.1.19.a	WAS ring main pumps	R 379.107.00	R 245.119.00	R 133.988.00	R -	R 133.988.00	100%
M4.2.1.20.a	Primary sludge storage tank mixing pumps	R 383.569.00	R 245.119.00	R 138.450.00	R -	R 138.450.00	100%
M4.2.1.21.a	Primary sludge dewatering ring main pumps	R 386.480.00	R 251.245.00	R 135.235.00	R -	R 135.235.00	100%
M4.2.1.22.a	WAS dewatering feed pumps	R 603.785.00	R 480.350.00	R 123.435.00	R -	R 123.435.00	100%
M4.2.1.23.a	Primarysludge dewatering feed pumps	R 304.199.00	R 226.450.00	R 77.749.00	R -	R 77.749.00	100%

Tender Summary

Tender quantity	Total tender value	Total exempted imported content	Total imported content
(C16)	(C17)	(C18)	(C19)
2	R 370.660.00	R 272.530.62	R -
4	R 3.901.392.00	R -	R -
1	R 20.124.50	R 18.295.00	R -
2	R 428.002.00	R -	R -
2	R 440.352.00	R -	R -
2	R 765.958.00	R 490.202.00	R -
1	R 15.433.00	R 8.180.79	R -
16	R 3.270.031.52	R 2.788.144.00	R -
12	R 3.267.701.52	R 1.012.740.00	R -
6	R 295.152.00	R 268.320.00	R -
8	R 6.602.701.60	R 6.002.456.00	R -
4	R 1.165.440.40	R 993.628.00	R -
4	R 1.121.356.00	R 638.832.00	R -
16	R 11.209.630.08	R 9.600.000.00	R -
5	R 2.378.546.20	R 2.019.671.00	R -
4	R 1.931.180.00	R 1.559.600.39	R -
4	R 192.878.60	R -	R 39.702.76
6	R 2.406.815.40	R -	R -
1	R 20.124.50	R 18.295.00	R -
6	R 15.996.235.20	R -	R -
2	R 327.016.80	R 297.288.00	R -
3	R 1.243.209.00	R 833.604.00	R -
3	R 1.137.321.00	R 735.357.00	R -
4	R 1.534.276.00	R 980.476.00	R -
3	R 1.159.440.00	R 753.735.00	R -
8	R 4.830.280.00	R 3.842.800.00	R -
8	R 2.433.592.00	R 1.811.600.00	R -

M4.2 1.24.a	Primary sludge cake pumps	R	2.510.283.00	R	2.086.630.00	R	423.653.00	R	-	R	423.653.00	100%	4	R	10.041.132.00	R	8.346.520.00	R	-
M4.2 1.25.a	WAS cake pumps	R	2.510.283.00	R	2.086.630.00	R	423.653.00	R	-	R	423.653.00	100%	4	R	10.041.132.00	R	8.346.520.00	R	-
M4.2 1.26.a	WAS poly dosing pumps	R	156.484.00	R	101.380.00	R	55.104.00	R	-	R	55.104.00	100%	8	R	1.251.872.00	R	811.040.00	R	-
M4.2.1.27.a	Primary sludge poly dosing pumps	R	156.484.00	R	101.380.00	R	55.104.00	R	-	R	55.104.00	100%	8	R	1.251.872.00	R	811.040.00	R	-
M4.2.1.28.a	WAS filtrate return pumps	R	381.554.00	R	245.119.00	R	136.435.00	R	-	R	136.435.00	100%	2	R	763.108.00	R	490.238.00	R	-
M4.2.1.29.a	Primary sludge filtrate return pumps	R	381.554.00	R	245.119.00	R	136.435.00	R	-	R	136.435.00	100%	2	R	763.108.00	R	490.238.00	R	-
M4.2.1.30.a	'08 WAS pumps	R	287.734.00	R	167.160.00	R	120.574.00	R	-	R	120.574.00	100%	2	R	575.468.00	R	334.320.00	R	-
M4.2.1.31.a	General drainage pumps	R	34.810.64	R	38.051.00	-R	3.240.36	R	-	-R	3.240.36	100%	14	R	487.349.00	R	532.714.00	R	-
M4.2.1.32.a	Ground water drainage pumps	R	41.856.10	R	38.051.00	R	3.805.10	R	-	R	3.805.10	100%	2	R	83.712.20	R	76.102.00	R	-
M9.2.1.1	Ferric chloride dosing pumps	R	55.125.86	R	47.318.33	R	7.807.53	R	-	R	7.807.53	100%	3	R	165.377.58	R	141.954.99	R	-
M9.2.2.1	Ferric chloride dosing pumps	R	55.125.47	R	47.318.33	R	7.807.14	R	-	R	7.807.14	100%	4	R	220.501.88	R	189.273.32	R	-
M10.2.5.1	Sodium hypochlorite dosing pumps	R	154.961.31	R	130.514.00	R	24.447.31	R	-	R	24.447.31	100%	6	R	929.767.86	R	783.084.00	R	-
M10.2.6.1	Citric dosing pumps	R	80.392.58	R	65.256.50	R	15.136.08	R	-	R	15.136.08	100%	4	R	321.570.32	R	261.026.00	R	-
M12 2.3.4.a	Poly dosing pumps	Included in 4.2.1.27.a		R	-			R	-	R	-	100%	8	Included in 4.2.1.27.a		Included in 4.2.1.27.a		Included in 4.2.1.27.a	
M12 2.3.8.a	Poly lubrication pumps	R	140.588.00	R	116.574.00	R	24.018.00	R	-	R	24.018.00	100%	4	R	562.352.00	R	466.280.00	R	-
M12 2.4.4.a	Poly dosing pumps	Included in 4.2.1.26.a		R	-			R	-	R	-	100%	8	Included in 4.2.1.26.a		Included in 4.2.1.26.a		Included in 4.2.1.26.a	
M12 2.4.8.a	Poly lubrication pumps	R	131.026.00	R	116.574.00	R	14.456.00	R	-	R	14.456.00	100%	4	R	524.104.00	R	466.280.00	R	-
M21 2.10.1	Citric dosing pumps	R	169.828.00	R	145.771.11	R	24.052.89	R	-	R	24.052.89	100%	2	R	339.656.00	R	291.550.21	R	-
M21 2.11.1	Sodium hypochlorite dosing pumps	R	178.283.00	R	153.031.62	R	25.250.38	R	-	R	25.250.38	100%	6	R	1.069.698.00	R	918.195.71	R	-
M21 2.12.1	Sulphuric Acid dosing pumps	R	143.509.00	R	123.183.69	R	20.325.31	R	-	R	20.325.31	100%	2	R	287.018.00	R	246.367.38	R	-
M21 2.13.1	Sodium Metabisulfite dosing pumps	R	61.708.00	R	52.963.24	R	8.739.76	R	-	R	8.739.76	100%	2	R	123.416.00	R	105.936.48	R	-
M21.2.14.1	Sodium hydroxide dosing pumps	R	80.757.00	R	69.311.31	R	11.437.69	R	-	R	11.437.69	100%	2	R	161.514.00	R	138.638.63	R	-
M23.2.1.1.a	'24 Tertiary treatment service water supply pumps	R	454.671.00	R	367.212.83	R	87.458.17	R	-	R	87.458.17	100%	5	R	2.273.355.00	R	1.836.064.13	R	-
M23.2.1.2.a	'24 Pressurised UF feed pumps	R	646.583.00	R	451.700.00	R	194.883.00	R	-	R	194.883.00	100%	5	R	3.232.915.00	R	2.258.500.00	R	-
M23.2.1.2.b	Drainage sump pump	R	16.016.00	R	8.180.79	R	7.835.21	R	-	R	7.835.21	100%	1	R	16.016.00	R	8.180.79	R	-
M23.2.1.3.a	'24 Pressurised UF backwash pumps	R	575.495.00			R	575.495.00	R	-	R	575.495.00	100%	2	R	1.150.990.00	R	-	R	-
M23.2.1.4.a	'24 Pressurised UF CIP pumps	R	310.576.00			R	310.576.00	R	-	R	310.576.00	100%	2	R	621.152.00	R	-	R	-
M23.2.1.5.a	'24 Tertiary treatment reuse pumps	R	539.868.00			R	539.868.00	R	-	R	539.868.00	100%	6	R	3.239.208.00	R	-	R	-
M23.2.1.5.b	Drainage sump pump	R	17.670.00	R	8.180.79	R	9.489.21	R	-	R	9.489.21	100%	1	R	17.670.00	R	8.180.79	R	-
M23.2.1.6.a	Reject return pumps	R	329.820.00	R	248.420.19	R	81.399.81	R	-	R	81.399.81	100%	3	R	989.460.00	R	745.260.57	R	-
												(C20)	Total tender value			R	169.969.344.16		
												(C21)			Total exempt import content	R	64.049.259.80		
												(C22)	Total tender value net of exempt import content			R	45.920.084.36		
													(C23)			Total imported content		R	39.702.76
													(C24)			Total local content		R	45.880.381.60
													(C25)			Average local content % of tender			100%

[redacted]

Signature of tenderer from Annexure B

[redacted]

CITY OF CAPE TOWN

WATER AND SANITATION

CONTRACT NO. 146Q/2021/22

DESIGN – BUILD OF MECHANICAL AND ELECTRICAL WORKS FOR THE UPGRADE AND EXPANSION OF POTSDAM WASTEWATER TREATMENT PLANT

SCHEDULE 22.3: DECLARATION CERTIFICATE FOR LOCAL PRODUCTION AND CONTENT FOR DESIGNATED SECTORS

This declaration is based on and replaces Municipal Bid Document 6.2 (MBD 6.2).
The amendments made to the MBD 6.2 document have been necessary to clarify this standard document as it relates to local production and content in the designated sector.

Before completing this declaration, bidders must study the General Conditions, Definitions, Directives applicable in respect of Local Content as prescribed in the Preferential Procurement Regulations, 2017 and the South African Bureau of Standards (SABS) approved technical specification number SATS 1286:2011 (Edition 1) and the Guidance on the Calculation of Local Content together with the Local Content Declaration Templates [Annex C (Local Content Declaration: Summary Schedule), D (Imported Content Declaration: Supporting Schedule to Annex C) and E (Local Content Declaration: Supporting Schedule to Annex C)].

Documents listed herein are downloadable from the dtic's official website, http://www.thedtic.gov.za.

This schedule must be completed by tenderers and returned with their tender at the closing date and time for this tender.

1. General Conditions

1.1 Preferential Procurement Regulations, 2017 (Regulation 8) makes provision for the promotion of local production and content.

1.2 Regulation 8(2) prescribes that in the case of designated sectors, organs of state must advertise such with the specific bidding condition that only locally produced goods with a stipulated minimum threshold for local production and content will be considered.

1.3 Where necessary, for tenders referred to in paragraph 1.2 above, a two stage bidding process may be followed, where the first stage involves a minimum threshold for local production and content and the second stage price and B-BBEE..

1.4 A person awarded a contract in relation to a designated sector, may not sub-contract in such a manner that the local production and content of the overall value of the contract is reduced to below the stipulated minimum threshold.

1.5 The local content (LC) expressed as a percentage of the bid price must be calculated in accordance with the SABS approved technical specification number SATS 1286: 2011 as follows:

$$LC = [1- x / y] * 100$$

Where
x is the imported content in Rand
y is the bid price in Rand excluding value added tax (VAT)

Prices referred to in the determination of x must be converted to Rand (ZAR) by using the exchange rate published by Nedbank 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.thedtic.gov.za at no cost.

1.6 A bid may 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.

[redacted]

CITY OF CAPE TOWN

WATER AND SANITATION

CONTRACT NO. 146Q/2021/22

DESIGN – BUILD OF MECHANICAL AND ELECTRICAL WORKS FOR THE UPGRADE AND EXPANSION OF POTSDAM WASTEWATER TREATMENT PLANT

SCHEDULE 22.3: DECLARATION CERTIFICATE FOR LOCAL PRODUCTION AND CONTENT FOR DESIGNATED SECTORS (Cont'd)

2. **The stipulated minimum threshold(s) for local production and content (refer to Annex A of SATS 1286:2011) for this bid is/are as follows:**

Description of services, works or goods	Stipulated minimum threshold
Steel Products and Component for Construction	**100%**

3. 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	✓

3.1 If yes, the rate(s) of exchange to be used in this bid to calculate the local content as prescribed in paragraph 1.5 of the above General Conditions must be the rate(s) published by [redacted] at close of business on the date of advertisement of the bid.

Indicate the rate(s) of exchange against the appropriate currency in the table below (refer to Annex A of SATS 1286:2011):

Currency	Rates of exchange
US Dollar	
Pound Sterling	
Euro	
Yen	
Other	

NB: Suppliers must submit proof of the [redacted]ate(s) of exchange used.

4. Where, after the award of a bid, challenges are experienced in meeting the stipulated minimum threshold for local content the dtic must be informed accordingly in order for the dtic to verify and in consultation with the CCT provide directives in this regard.

[redacted]

CITY OF CAPE TOWN

WATER AND SANITATION

CONTRACT NO. 146Q/2021/22

DESIGN – BUILD OF MECHANICAL AND ELECTRICAL WORKS FOR THE UPGRADE AND EXPANSION OF POTSDAM WASTEWATER TREATMENT PLANT

SCHEDULE 22.3: 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. 146Q/2021/2022

ISSUED BY: (Procurement Authority / Name of Municipality / Municipal Entity):
City of Cape Town - Water and Sanitation

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, J.A.M. Cloete (full names),
do hereby declare, in my capacity as Authorised Signatory
of PCI-INENZO-RAUBEX-DEVCOTECH Consortium (name of bidder entity), the following:

(a) The facts contained herein are within my own personal knowledge.
(b) I have satisfied myself that:
(iii) the goods to be delivered in terms of the above-specified bid comply with the minimum local content requirements as specified in the bid, and as measured in terms of SATS 1286:2011;
(c) The local content percentages (%) indicated below has been calculated using the formula given in clause 3 of SATS 1286:2011, the rates of exchange indicated in paragraph 4.1 above and the information contained in Declaration D and E which has been consolidated in Declaration C;

Bid price, excluding VAT (y)	R 42 311 875,44
Imported content (x), as calculated in terms of SATS 1286:2011	R 0
Stipulated minimum threshold for local content (paragraph 2 above)	100 %
Local content %, as calculated in terms of SATS 1286:2011	100 %

If the bid is for more than one product, the local content percentages for each product contained in Declaration C shall be used instead of the table above. The local content percentages for each product has been calculated using the formula given in clause 3 of SATS 1286:2011, the rates of exchange indicated in paragraph 3.1 above and the information contained in Declaration D and E.

(d) I accept that the Procurement Authority / Municipality /Municipal Entity has the right to request that the local content be verified in terms of the requirements of SATS 1286:2011.
(e) I understand that the awarding of the bid is dependent on the accuracy of the information furnished in this application. I also understand that the submission of incorrect data, or data that are not verifiable as described in SATS 1286:2011, may result in the Procurement Authority / Municipal / Municipal Entity imposing any or all of the remedies as provided for in Regulation 14 of the Preferential Procurement Regulations, 2017 promulgated under the Preferential Policy Framework Act (PPPFA), 2000 (Act No. 5 of 2000).
(f)

SIGNATURE [redacted] DATE: 28/04/2022

WITNESS No [redacted] DATE: 28/04/2022

WITNESS No [redacted] DATE: 28/04/2022

[redacted]

ANNEX C

LOCAL CONTENT DECLARATION-SUMMARY SCHEDULE

(C1)	Tender No.	1460/2021/22						Note: VAT to be excluded from all calculations
(C2)	Tender description:	Design-build of upgrade and expansion of Potsdam WWTP						
(C3)	Designated product(s)	Steel Products and Component for Construction						
(C4)	Tender Authority:	City of Cape Town						
(C5)	Tendering Entity name:	PCI-INENZO-RAUBEX-DEVCOTECH Consortium						
(C6)	Tender exchange rate:	GBP	20.49	USD	15.31	EURO	17.53	OTHER
(C7)	Specified local content %	100						

		Calculation of Local Content							Tender Summary			
Tender item numbers	List of items	Tender price- each	Exempted import value	Tender value net of exempted imported content	Imported value	Local value	Local content % (per item)		Tender quantity	Total tender value	Total exempted imported content	Total imported content
(C8)	(C9)	(C10)	(C11)	(C12)	(C13)	(C14)	(C15)		(C16)	(C17)	(C18)	(C19)
M1.2.3.1.a	Structural steel component	R 377.460.00		R 377.460.00	R -	R 377.460.00	100%		1	R 377.460.00	R -	R -
M1.2.3.2.a	Structural steel component	R 377.460.00		R 377.460.00	R -	R 377.460.00	100%		1	R 377.460.00	R -	R -
M1.2.3.3.a	Structural steel component	R 95.668.64		R 95.668.64	R -	R 95.668.64	100%		1	R 95.668.64	R -	R -
M1.2.4.1	Weir plates	R 98.525.90		R 98.525.90	R -	R 98.525.90	100%		3	R 295.577.70	R -	R -
M1.2.4.2	Scum baffles	R 109.510.00		R 109.510.00	R -	R 109.510.00	100%		3	R 328.530.00	R -	R -
M1.2.8.5	Pipe supports	R 39.027.50		R 39.027.50	R -	R 39.027.50	100%		1	R 39.027.50	R -	R -
M2.2.1	Access platforms and walkways	R 154.202.40		R 154.202.40	R -	R 154.202.40	100%		1	R 154.202.40	R -	R -
M2.2.2	Access platforms and walkways	R 154.202.40		R 154.202.40	R -	R 154.202.40	100%		1	R 154.202.40	R -	R -
M2.2.3	Access platforms and walkways	R 480.566.00		R 480.566.00	R -	R 480.566.00	100%		1	R 480.566.00	R -	R -
M2.2.4	Access platforms and walkways	R 132.255.00		R 132.255.00	R -	R 132.255.00	100%		1	R 132.255.00	R -	R -
M.2.2.5	Access platforms and walkways	Included in Schedule 12			R -	R -	100%		1	Included in Schedule 12	Included in Schedule 12	Included in Schedule 12
M2.2.10.6	Pipe supports	R 10.697.00		R 10.697.00	R -	R 10.697.00	100%		1	R 10.697.00	R -	R -
M3.2.11.1.a	Structural steel component of dolly system	R 111.258.00		R 111.258.00	R -	R 111.258.00	100%		1	R 111.258.00	R -	R -
M3.2.11.2.a	Structural steel component of dolly system	R 111.258.00		R 111.258.00	R -	R 111.258.00	100%		1	R 111.258.00	R -	R -
M3.2.11.3.a	Structural steel component of dolly system	R 264.330.09		R 264.330.09	R -	R 264.330.09	100%		1	R 264.330.09	R -	R -
M3.2.11.4.a	Structural steel component of dolly system	R 111.258.00		R 111.258.00	R -	R 111.258.00	100%		1	R 111.258.00	R -	R -
M3.2.12.2.a	Support members	R 20.637.00		R 20.637.00	R -	R 20.637.00	100%		1	R 20.637.00	R -	R -
M3.2.12.2.b	Support members	R 10.763.00		R 10.763.00	R -	R 10.763.00	100%		1	R 10.763.00	R -	R -
M3.2.12.2.c	Support members	R 17.475.00		R 17.475.00	R -	R 17.475.00	100%		1	R 17.475.00	R -	R -
M3.2.12.2.d	Support members	R 7.281.25		R 7.281.25	R -	R 7.281.25	100%		1	R 7.281.25	R -	R -
M3.2.12.2.e	Support members	R 17.475.00		R 17.475.00	R -	R 17.475.00	100%		1	R 17.475.00	R -	R -
M3.2.12.2.f	Support members	R 11.902.00		R 11.902.00	R -	R 11.902.00	100%		1	R 11.902.00	R -	R -
M3.2.12.2.g	Support members	N/A				R -	-		1	N/A	N/A	N/A
M4.2.2.1.d	Pipe supports	R 28.921.00		R 28.921.00	R -	R 28.921.00	100%		1	R 28.921.00	R -	R -
M4.2.2.2.d	Pipe supports	R 860.900.70		R 860.900.70	R -	R 860.900.70	100%		1	R 860.900.70	R -	R -
M4.2.2.3.e	Pipe supports	R 38.843.00		R 38.843.00	R -	R 38.843.00	100%		1	R 38.843.00	R -	R -
M4.2.2.4.d	Pipe supports	R 39.729.00		R 39.729.00	R -	R 39.729.00	100%		1	R 39.729.00	R -	R -
M4.2.2.5.c	Pipe supports	No Item in BoQ			R -	R -	-			No Item in BoQ	No Item in BoQ	No Item in BoQ
M4.2.2.6.c	Pipe supports	R 46.075.00		R 46.075.00	R -	R 46.075.00	100%		1	R 46.075.00	R -	R -
M4.2.2.7.e	Pipe supports	R 39.753.00		R 39.753.00	R -	R 39.753.00	100%		1	R 39.753.00	R -	R -
M4.2.2.9.a.iii	Pipe supports	R 5.127.10		R 5.127.10	R -	R 5.127.10	100%		1	R 5.127.10	R -	R -
M4.2.2.9.b.iii	Pipe supports	R 11.680.90		R 11.680.90	R -	R 11.680.90	100%		1	R 11.680.90	R -	R -
M4.2.2.9.c iii	Pipe supports	R 11.680.90		R 11.680.90	R -	R 11.680.90	100%		1	R 11.680.90	R -	R -
M4.2.2.10.a.iv	Pipe supports	R 117.930.62		R 117.930.62	R -	R 117.930.62	100%		1	R 117.930.62	R -	R -

M4.2.2.10.b.iv	Pipe supports	R	117.930.62		R	117.930.62	R	-	R	117.930.62	100%	1	R 117.930.62	R - R -
M4.2.2.11.a.iv	Pipe supports	R	38.896.00		R	38.896.00	R	-	R	38.896.00	100%	1	R 38.896.00	R - R -
M4.2.2.11.b.iv	Pipe supports	R	38.563.00		R	38.563.00	R	-	R	38.563.00	100%	1	R 38.563.00	R - R -
M4.2.2.12.d	Pipe supports	R	269.916.52		R	269.916.52	R	-	R	269.916.52	100%	1	R 269.916.52	R - R -
M4.2.2.13.e	Pipe supports	R	91.813.65		R	91.813.65	R	-	R	91.813.65	100%	1	R 91.813.65	R - R -
M4.2.2.14.e	Pipe supports	R	30.881.00		R	30.881.00	R	-	R	30.881.00	100%	1	R 30.881.00	R - R -
M4.2.2.15.a.iv	Pipe supports	R	118.489.82		R	118.489.82	R	-	R	118.489.82	100%	1	R 118.489.82	R - R -
M4.2.2.15.b.iv	Pipe supports	R	118.489.82		R	118.489.82	R	-	R	118.489.82	100%	1	R 118.489.82	R - R -
M4.2.2.16.d	Pipe supports	R	391.019.20		R	391.019.20	R	-	R	391.019.20	100%	1	R 391.019.20	R - R -
M4.2.2.17.e	Pipe supports	R	71.858.60		R	71.858.60	R	-	R	71.858.60	100%	1	R 71.858.60	R - R -
M4.2.2.18.b	Pipe supports	R	82.253.00		R	82.253.00	R	-	R	82.253.00	100%	1	R 82.253.00	R - R -
M4.2.2.19.d	Pipe supports	R	74.330.00		R	74.330.00	R	-	R	74.330.00	100%	1	R 74.330.00	R - R -
M4.2.2.2C.g	Pipe supports	R	5.504.00		R	5.504.00	R	-	R	5.504.00	100%	1	R 5.504.00	R - R -
M4.2.2.21.d	Pipe supports	R	75.456.00		R	75.456.00	R	-	R	75.456.00	100%	1	R 75.456.00	R - R -
M4.2.2.22.e	Pipe supports	R	9.791.00		R	9.791.00	R	-	R	9.791.00	100%	1	R 9.791.00	R - R -
M4.2.2.25.d	Pipe supports	R	44.581.00		R	44.581.00	R	-	R	44.581.00	100%	1	R 44.581.00	R - R -
M4.2.2.24.d	Pipe supports	R	70.712.00		R	70.712.00	R	-	R	70.712.00	100%	1	R 70.712.00	R - R -
M4.2.2.25.c	Pipe supports	R	388.341.00		R	388.341.00	R	-	R	388.341.00	100%	1	R 388.341.00	R - R -
M4.2.2.26.c	Pipe supports	R	362.746.00		R	362.746.00	R	-	R	362.746.00	100%	1	R 362.746.00	R - R -
M4.2.2.27.b	Pipe supports	R	136.859.00		R	136.859.00	R	-	R	136.859.00	100%	1	R 136.859.00	R - R -
M4.2.2.28.b	Pipe supports	R	136.859.00		R	136.859.00	R	-	R	136.859.00	100%	1	R 136.859.00	R - R -
M4.2.2.29.c	Pipe supports	Included in Section 12					R	-	R	-	100%	1	Included in Section 12	Included in Section 12 Included in Section 12
M4.2.2.30.c	Pipe supports	Included in Section 12					R	-	R	-	100%	1	Included in Section 12	Included in Section 12 Included in Section 12
M4.2.2.31.d	Pipe supports	R	51.936.00		R	51.936.00	R	-	R	51.936.00	100%	1	R 51.936.00	R - R -
M4.2.2.32.d	Pipe supports	R	46.464.00		R	46.464.00	R	-	R	46.464.00	100%	1	R 46.464.00	R - R -
M4.2.2.33.e	Pipe supports	R	58.096.22		R	58.096.22	R	-	R	58.096.22	100%	1	R 58.096.22	R - R -
M4.2.2.34.g	Pipe supports	R	46.079.00		R	46.079.00	R	-	R	46.079.00	100%	1	R 46.079.00	R - R -
M4.2.2.35.b	Pipe supports	R	96.880.14		R	96.880.14	R	-	R	96.880.14	100%	1	R 96.880.14	R - R -
M4.2.2.36.b	Pipe supports	R	16.267.50		R	16.267.50	R	-	R	16.267.50	100%	1	R 16.267.50	R - R -
M5.2.2	Complete full-bridge and scraper unit	Included					R	-	R	-	100%	4	Included	Included Included
M5.2.3	Weir plates	Included. See Item 19.2.4 nr 4					R	-	R	-	100%	4	Included. See Item 19.2.4 nr 4	Included. See Item 19. 2.4 nr 4 Included. See Item 19.2.4 nr 4
M5.2.4	Scum plates	Included					R	-	R	-	100%	4	Included	Included Included
M7.2.1.8	Pipe supports	R	511.435.00		R	511.435.00	R	-	R	511.435.00	100%	1	R 511.435.00	R - R -
M7.2.2.7	Pipe supports	R	64.011.00		R	64.011.00	R	-	R	64.011.00	100%	1	R 64.011.00	R - R -
M8.2.4.1.c	Pipe supports	R	-		R	-	R	-	R	-	#DIV/0!	1	R -	R - R -
M8.2.4.2.b	Pipe supports	R	56.471.00		R	56.471.00	R	-	R	56.471.00	100%	1	R 56.471.00	R - R -
M8.2.5.1.c	Pipe supports	R	215.534.32		R	215.534.32	R	-	R	215.534.32	100%	1	R 215.534.32	R - R -
M8.2.5.2.b	Pipe supports	R	100.779.00		R	100.779.00	R	-	R	100.779.00	100%	1	R 100.779.00	R - R -
M8.2.6.1.c	Pipe supports	R	3.780.599.75		R	3.780.599.75	R	-	R	3.780.599.75	100%	1	R 3.780.599.75	R - R -
M8.2.6.2.b	Pipe supports	R	183.616.00		R	183.616.00	R	-	R	183.616.00	100%	1	R 183.616.00	R - R -
M9.2.3.2.a	Pipe supports	R	11.253.90		R	11.253.90	R	-	R	11.253.90	100%	1	R 11.253.90	R - R -
M9.2.3.2.b	Pipe supports	R	12.982.76		R	12.982.76	R	-	R	12.982.76	100%	1	R 12.982.76	R - R -
M10.2.2 8	Pipe supports	R	592.402.50		R	592.402.50	R	-	R	592.402.50	100%	1	R 592.402.50	R - R -
M10.2.3 9	Supports	R	30.290.00		R	30.290.00	R	-	R	30.290.00	100%	1	R 30.290.00	R - R -
M10.2.5 5	Pipe supports	Included					R	-	R	-	100%	1	Included	Included Included
M10.2.5 9	Access platform and stairs	R	73.977.50		R	73.977.50	R	-	R	73.977.50	100%	1	R 73.977.50	R - R -
M10.2.6 5	Pipe supports	Included					R	-	R	-	100%	1	Included	Included Included
M10.2.6 11	Access platform and stairs	R	71.065.00		R	71.065.00	R	-	R	71.065.00	100%	1	R 71.065.00	R - R -

[redacted]

M11A.2.10	Access and maintenance platform	R	173.527.22		R	173.527.22	R	-	R	173.527.22	100%	1	R 173.527.22	R -	R -
M11B.2.9	Access and maintenance platform	R	173.527.22		R	173.527.22	R	-	R	173.527.22	100%	1	R 173.527.22	R -	R -
M12.2.1.5.	Access platform and stairs	R	2.387.542.00		R	2.387.542.00	R	-	R	2.387.542.00	100%	1	R 2.387.542.00	R -	R -
M12.2.1.6.b	Pipe supports	R	260.029.00		R	260.029.00	R	-	R	260.029.00	100%	1	R 260.029.00	R -	R -
M12.2.1.12	Access platform and stairs	R	623.310.00		R	623.310.00	R	-	R	623.310.00	100%	1	R 623.310.00	R -	R -
M12.2.2.5.	Access platform and stairs	R	3.581.313.00		R	3.581.313.00	R	-	R	3.581.313.00	100%	1	R 3.581.313.00	R -	R -
M12.2.2.6.b	Pipe supports	R	260.029.00		R	260.029.00	R	-	R	260.029.00	100%	1	R 260.029.00	R -	R -
M12.2.2.12	Access platform and stairs	R	623.310.00		R	623.310.00	R	-	R	623.310.00	100%	1	R 623.310.00	R -	R -
M12.2.3.2	Support structure and platform	R	168.727.00		R	168.727.00	R	-	R	168.727.00	100%	2	R 337.454.00	R -	R -
M12.2.4.2	Support structure and platform	R	176.122.00		R	176.122.00	R	-	R	176.122.00	100%	2	R 352.244.00	R -	R -
M12.2.6.2.a	Pipe support	R	150.632.00		R	150.632.00	R	-	R	150.632.00	100%	1	R 150.632.00	R -	R -
M12.2.6.2.b	Pipe support	R	145.946.00		R	145.946.00	R	-	R	145.946.00	100%	1	R 145.946.00	R -	R -
M12.2.6.2.c	Pipe support	R	35.369.00		R	35.369.00	R	-	R	35.369.00	100%	1	R 35.369.00	R -	R -
M12.2.6.2.d	Pipe support	R	35.369.00		R	35.369.00	R	-	R	35.369.00	100%	1	R 35.369.00	R -	R -
M12.2.6.2.e	Pipe support	R	9.497.00		R	9.497.00	R	-	R	9.497.00	100%	1	R 9.497.00	R -	R -
M13.2.4.a	Structural steel component of Dolly system	R	111.258.00		R	111.258.00	R	-	R	111.258.00	100%	1	R 111.258.00	R -	R -
M13.2.5	Structural steel	R	113.303.00		R	113.303.00	R	-	R	113.303.00	100%	1	R 113.303.00	R -	R -
M13.2.7.a	Structural steel component of Dolly system	R	111.258.00		R	111.258.00	R	-	R	111.258.00	100%	1	R 111.258.00	R -	R -
M13.2.8.2.a	Support members	R	12.280.00		R	12.280.00	R	-	R	12.280.00	100%	1	R 12.280.00	R -	R -
M15.2.1.1	Structural steel component of lifting equipment	R	188.759.00		R	188.759.00	R	-	R	188.759.00	100%	1	R 188.759.00	R -	R -
M15.2.2.1	Structural steel component of lifting equipment	R	531.310.00		R	531.310.00	R	-	R	531.310.00	100%	1	R 531.310.00	R -	R -
M15.2.3.1	Structural steel component of lifting equipment	R	594.047.48		R	594.047.48	R	-	R	594.047.48	100%	1	R 594.047.48	R -	R -
M15.2.4.1.a	Structural steel component of lifting equipment	R	422.196.00		R	422.196.00	R	-	R	422.196.00	100%	1	R 422.196.00	R -	R -
M15.2.4.2.a	Structural steel component of lifting equipment	R	439.438.00		R	439.438.00	R	-	R	439.438.00	100%	1	R 439.438.00	R -	R -
M15.2.4.3.a	Structural steel component of lifting equipment	R	226.126.50		R	226.126.50	R	-	R	226.126.50	100%	1	R 226.126.50	R -	R -
M15.2.5.1.a	Structural steel component of lifting equipment	R	254.703.95		R	254.703.95	R	-	R	254.703.95	100%	1	R 254.703.95	R -	R -
M15.2.5.2.a	Structural steel component of lifting equipment	R	85.210.43		R	85.210.43	R	-	R	85.210.43	100%	1	R 85.210.43	R -	R -
M15.2.5.3.a	Structural steel component of lifting equipment	R	194.231.13		R	194.231.13	R	-	R	194.231.13	100%	1	R 194.231.13	R -	R -
M15.2.6.1.a	Structural steel component of lifting equipment	R	2.666.793.35		R	2.666.793.35	R	-	R	2.666.793.35	100%	1	R 2.666.793.35	R -	R -
M15.2.6.2.a	Structural steel component of lifting equipment	R	95.668.64		R	95.668.64	R	-	R	95.668.64	100%	1	R 95.668.64	R -	R -
M15.2.6.3.a	Structural steel component of lifting equipment	R	435.571.37		R	435.571.37	R	-	R	435.571.37	100%	1	R 435.571.37	R -	R -
M15.2.7.1.a	Structural steel component of lifting equipment	R	1.795.426.94		R	1.795.426.94	R	-	R	1.795.426.94	100%	1	R 1.795.426.94	R -	R -
M15.2.7.2.a	Structural steel component of lifting equipment	R	95.668.64		R	95.668.64	R	-	R	95.668.64	100%	1	R 95.668.64	R -	R -
M15.2.7.3.a	Structural steel component of lifting equipment	Included. Refer to 15.2.13					R	-	R	-	100%	1	Included. Refer to 15.2.13	Included. Refer to 15.2.13	Included. Refer to 15.2.13
M15.2.8.1.a	Structural steel component of lifting equipment	R	1.287.344.81		R	1.287.344.81	R	-	R	1.287.344.81	100%	1	R 1.287.344.81	R -	R -
M15.2.9.1.a	Structural steel component of lifting equipment	Refer to 15.2.7					R	-	R	-	100%	1	Refer to 15.2.7	Refer to 15.2.7	Refer to 15.2.7
M15.2.10.1	Structural steel component of lifting equipment	R	429.908.30		R	429.908.30	R	-	R	429.908.30	100%	1	R 429.908.30	R -	R -

M15.2.11.1	Structural steel component of lifting equipment	R	328.040.70		R	328.040.70	R	-	R	328.040.70	100%	1	R 328.040.70
M15.2.12.1	Structural steel component of lifting equipment	N/A							R	-		1	N/A
M15.2.13.1	Structural steel component of lifting equipment	R	228.340.00		R	228.340.00	R	-	R	228.340.00	100%	1	R 228.340.00
M15.2.14.1	Structural steel component of lifting equipment	R	358.846.40		R	358.846.40	R	-	R	358.846.40	100%	1	R 358.846.40
M15.2.15.1	Structural steel component of lifting equipment	R	1.071.108.00		R	1.071.108.00	R	-	R	1.071.108.00	100%	1	R 1.071.108.00
M15.2.16.1	Structural steel component of lifting equipment	R	463.840.00		R	463.840.00	R	-	R	463.840.00	100%	1	R 463.840.00
M15.2.17.1	Structural steel component of lifting equipment	R	293.684.00		R	293.684.00	R	-	R	293.684.00	100%	1	R 293.684.00
M15.2.18.1	Structural steel component of lifting equipment	R	83.986.10		R	83.986.10	R	-	R	83.986.10	100%	1	R 83.986.10
M15.2.19.1	Structural steel component of lifting equipment	R	50.656.00		R	50.656.00	R	-	R	50.656.00	100%	1	R 50.656.00
M15.2.20.1	Structural steel component of lifting equipment	R	110.390.00		R	110.390.00	R	-	R	110.390.00	100%	1	R 110.390.00
M15.2.21.1	Structural steel component of lifting equipment	R	301.313.00		R	301.313.00	R	-	R	301.313.00	100%	1	R 301.313.00
M15.2.22.1	Structural steel component of lifting equipment	Included in 15.2.25.1		R -			R	-	R	-	100%	1	Included in 15.2.25.1
M15.2.23.1	Structural steel component of lifting equipment	Included in 6.2.2		R -			R	-	R	-	100%	1	Included in 6.2.2
M15.2.24.1	Structural steel component of lifting equipment	R	135.811.00		R	135.811.00	R	-	R	135.811.00	100%	1	R 135.811.00
M15.2.25.1	Structural steel component of lifting equipment	R	152.266.00		R	152.266.00	R	-	R	152.266.00	100%	1	R 152.266.00
M15.2.26.1	Structural steel component of lifting equipment	R	251.678.00		R	251.678.00	R	-	R	251.678.00	100%	1	R 251.678.00
M15.2.27.1	Structural steel component of lifting equipment	R	125.839.00		R	125.839.00	R	-	R	125.839.00	100%	1	R 125.839.00
M15.2.28.1	Structural steel component of lifting equipment	Included in 15.2.28.1		R -			R	-	R	-	100%	1	Included in 15.2.28.1
M15.2.29.1	Structural steel component of lifting equipment	R	50.656.00		R	50.656.00	R	-	R	50.656.00	100%	1	R 50.656.00
M17.2.1.2.b	Pipe supports	R	395.283.90		R	395.283.90	R	-	R	395.283.90	100%	1	R 395.283.90
M17.2.2.2.b	Pipe supports	R	422.535.30		R	422.535.30	R	-	R	422.535.30	100%	1	R 422.535.30
M17.2.3.2.b	Pipe supports	R	661.026.30		R	661.026.30	R	-	R	661.026.30	100%	1	R 661.026.30
M17.2.4.2.a	Pipe supports	R	4.730.00		R	4.730.00	R	-	R	4.730.00	100%	1	R 4.730.00
M17.2.4.2.b	Pipe supports	R	4.730.00		R	4.730.00	R	-	R	4.730.00	100%	1	R 4.730.00
M17.2.4.2.c	Pipe supports	R	7.040.00		R	7.040.00	R	-	R	7.040.00	100%	1	R 7.040.00
M19.2.4.1	Weir plate	R	5.139.00		R	5.139.00	R	-	R	5.139.00	100%	1	R 5.139.00
M19.2.4.2	Weir plate	R	1.606.63		R	1.606.63	R	-	R	1.606.63	100%	4	R 6.426.52
M19.2.4.3	Weir plate	R	1.638.50		R	1.638.50	R	-	R	1.638.50	100%	1	R 1.638.50
M19.2.4.4	Weir plate	R	102.565.13		R	102.565.13	R	-	R	102.565.13	100%	4	R 410.260.52
M19.2.4.5	Weir plate	R	1.431.75		R	1.431.75	R	-	R	1.431.75	100%	2	R 2.863.50
M19.2.4.6	Weir plate	R	1.412.72		R	1.412.72	R	-	R	1.412.72	100%	16	R 22.603.52
M19.2.4.7	Weir plate	R	947.50		R	947.50	R	-	R	947.50	100%	12	R 11.370.00
M19.2.4.8	Weir plate	R	1.879.63		R	1.879.63	R	-	R	1.879.63	100%	8	R 15.037.04
M19.2.4.9	Weir plate	R	1.544.50		R	1.544.50	R	-	R	1.544.50	100%	1	R 1.544.50
M19.2.4.10	Weir plate	R	2.491.99		R	2.491.99	R	-	R	2.491.99	100%	16	R 39.871.84
M19.2.4.11	Weir plate	R	3.959.00		R	3.959.00	R	-	R	3.959.00	100%	2	R 7.918.00
M19.2.4.12	Weir plate	R	3.959.00		R	3.959.00	R	-	R	3.959.00	100%	2	R 7.918.00
M19.2.4.13	Weir plate	R	3.654.00		R	3.654.00	R	-	R	3.654.00	100%	2	R 7.308.00
M19.2.4.14	Weir plate	R	1.917.50		R	1.917.50	R	-	R	1.917.50	100%	1	R 1.917.50
M21.2.6.1	Structural steel	R	20.388.00		R	20.388.00	R	-	R	20.388.00	100%	1	R 20.388.00
M21.2.8.8	Pipe supports	R	9.786.00		R	9.786.00	R	-	R	9.786.00	100%	1	R 9.786.00
M21.2.10.5	Pipe supports	R	1.515.00		R	1.515.00	R	-	R	1.515.00	100%	1	R 1.515.00
M21.2.10.11	Access platform	R	12.582.00		R	12.582.00	R	-	R	12.582.00	100%	1	R 12.582.00

M21.2.11.5	Pipe supports	R	4,544.00		R	4,544.00	R	-	R	4,544.00	100%	1	R	4,544.00	R - R -
M21.2.11.8	Access platform	R	11,650.00		R	11,650.00	R	-	R	11,650.00	100%	1	R	11,650.00	R - R -
M21.2.12.5	Pipe supports	R	4,544.00		R	4,544.00	R	-	R	4,544.00	100%	1	R	4,544.00	R - R -
M21.2.12.9	Access platform	R	5,097.00		R	5,097.00	R	-	R	5,097.00	100%	1	R	5,097.00	R - R -
M21.2.13.5	Pipe supports	R	4,544.00		R	4,544.00	R	-	R	4,544.00	100%	1	R	4,544.00	R - R -
M21.2.13.9	Access platform	R	12,582.00		R	12,582.00	R	-	R	12,582.00	100%	1	R	12,582.00	R - R -
M21.2.14.5	Pipe supports	R	4,544.00		R	4,544.00	R	-	R	4,544.00	100%	1	R	4,544.00	R - R -
M21.2.14.9	Access platform	R	11,650.00		R	11,650.00	R	-	R	11,650.00	100%	1	R	11,650.00	R - R -
M21.2.15.2.a	Support members	R	4,078.00		R	4,078.00	R	-	R	4,078.00	100%	1	R	4,078.00	R - R -
M21.2.15.2.b	Support members	R	4,078.00		R	4,078.00	R	-	R	4,078.00	100%	1	R	4,078.00	R - R -
M21.2.15.2.c	Support members	R	4,078.00		R	4,078.00	R	-	R	4,078.00	100%	1	R	4,078.00	R - R -
M21.2.15.2.d	Support members	R	4,078.00		R	4,078.00	R	-	R	4,078.00	100%	1	R	4,078.00	R - R -
M21.2.15.2.e	Support members	R	4,078.00		R	4,078.00	R	-	R	4,078.00	100%	1	R	4,078.00	R - R -
M22.2.2	Access platform and walkways	R	48,833.00		R	48,833.00	R	-	R	48,833.00	100%	1	R	48,833.00	R - R -
M22.2.3.2.a	Support members	N/A							R	-	-	1	N/A		N/A N/A
M23.2.2.1.e	Pipe supports	R	101,341.00		R	101,341.00	R	-	R	101,341.00	100%	1	R	101,341.00	R - R -
M23.2.2.2.c	Pipe supports	R	34,347.00		R	34,347.00	R	-	R	34,347.00	100%	1	R	34,347.00	R - R -
M23.2.2.3.d	Pipe supports	R	235,506.00		R	235,506.00	R	-	R	235,506.00	100%	1	R	235,506.00	R - R -
M23.2.2.4.d	Pipe supports	R	28,410.00		R	28,410.00	R	-	R	28,410.00	100%	1	R	28,410.00	R - R -
M23.2.2.5.d	Pipe supports	R	75,771.00		R	75,771.00	R	-	R	75,771.00	100%	1	R	75,771.00	R - R -
M23.2.2.6.d	Pipe supports	R	349,038.00		R	349,038.00	R	-	R	349,038.00	100%	1	R	349,038.00	R - R -
M23.2.2.7.b	Pipe supports	R	57,158.00		R	57,158.00	R	-	R	57,158.00	100%	1	R	57,158.00	R - R -
M24A.2.10	Access and maintenance platform	R	181,956.00		R	181,956.00	R	-	R	181,956.00	100%	1	R	181,956.00	R - R -
M24B.2.9	Access and maintenance platform	R	205,722.00		R	205,722.00	R	-	R	205,722.00	100%	1	R	205,722.00	R - R -
M26.2.1.1	Structura steel component of lifting equipment	R	538,903.00		R	538,903.00	R	-	R	538,903.00	100%	1	R	538,903.00	R - R -
M26.2.2.1	Structura steel component of lifting equipment	R	471,114.00		R	471,114.00	R	-	R	471,114.00	100%	1	R	471,114.00	R - R -
M26.2.3.1	Structura steel component of lifting equipment	R	103,345.00		R	103,345.00	R	-	R	103,345.00	100%	1	R	103,345.00	R - R -
M26.2.4.1.a	Structura steel component of lifting equipment	R	708,969.00		R	708,969.00	R	-	R	708,969.00	100%	1	R	708,969.00	R - R -
M26.2.4.2.a	Structura steel component of lifting equipment	R	72,708.00		R	72,708.00	R	-	R	72,708.00	100%	1	R	72,708.00	R - R -
M26.2.5.1	Structura steel component of lifting equipment	R	40,368.00		R	40,368.00	R	-	R	40,368.00	100%	1	R	40,368.00	R - R -
M26.2.6.1	Structura steel component of lifting equipment	R	28,022.00		R	28,022.00	R	-	R	28,022.00	100%	1	R	28,022.00	R - R -
M.26.2.7.1	Structura steel component of lifting equipment	R	36,886.00		R	36,886.00	R	-	R	36,886.00	100%	1	R	36,886.00	R - R -
M26.2.8.1	Structura steel component of lifting equipment	R	36,886.00		R	36,886.00	R	-	R	36,886.00	100%	1	R	36,886.00	R - R -
M26.2.9.1	Structura steel component of lifting equipment	R	555,255.00		R	555,255.00	R	-	R	555,255.00	100%	1	R	555,255.00	R - R -
M27.2.2.1	Weirplates	R	5,574.00		R	5,574.00	R	-	R	5,574.00	100%	1	R	5,574.00	R - R -
M27.2.2.2	Weirplates	R	5,265.00		R	5,265.00	R	-	R	5,265.00	100%	1	R	5,265.00	R - R -
M27.2.2.3	Weirplates	R	4,834.00		R	4,834.00	R	-	R	4,834.00	100%	1	R	4,834.00	R - R -
M27.2.2.4	Weirplates	R	7,350.00		R	7,350.00	R	-	R	7,350.00	100%	1	R	7,350.00	R - R -
M27.2.2.5	Weirplates	R	5,574.00		R	5,574.00	R	-	R	5,574.00	100%	1	R	5,574.00	R - R -

(C20)	Total tender value	R	42,371,525.14
(C21)	Total exempt import content	R	-
(C22)	Total tender value net of exempt import content	R	42,371,525.14
(C23)	Total imported content	R	-
(C24)	Total local content	R	42,371,525.14
(C25)	Average local content % of tender		100%

[redacted]

[redacted]

CITY OF CAPE TOWN

WATER AND SANITATION

CONTRACT NO. 146Q/2021/22

DESIGN – BUILD OF MECHANICAL AND ELECTRICAL WORKS FOR THE UPGRADE AND EXPANSION OF POTSDAM WASTEWATER TREATMENT PLANT

SCHEDULE 22.4: DECLARATION CERTIFICATE FOR LOCAL PRODUCTION AND CONTENT FOR DESIGNATED SECTORS

This declaration is based on and replaces Municipal Bid Document 6.2 (MBD 6.2).
The amendments made to the MBD 6.2 document have been necessary to clarify this standard document as it relates to local production and content in the designated sector.

Before completing this declaration, bidders must study the General Conditions, Definitions, Directives applicable in respect of Local Content as prescribed in the Preferential Procurement Regulations, 2017 and the South African Bureau of Standards (SABS) approved technical specification number SATS 1286:2011 (Edition 1) and the Guidance on the Calculation of Local Content together with the Local Content Declaration Templates [Annex C (Local Content Declaration: Summary Schedule), D (Imported Content Declaration: Supporting Schedule to Annex C) and E (Local Content Declaration: Supporting Schedule to Annex C)].

Documents listed herein are downloadable from the dtic's official website, http://www.thedtic.gov.za.

This schedule must be completed by tenderers and returned with their tender at the closing date and time for this tender.

1. General Conditions

1.1 Preferential Procurement Regulations, 2017 (Regulation 8) makes provision for the promotion of local production and content.

1.2 Regulation 8(2) prescribes that in the case of designated sectors, organs of state must advertise such with the specific bidding condition that only locally produced goods with a stipulated minimum threshold for local production and content will be considered.

1.3 Where necessary, for tenders referred to in paragraph 1.2 above, a two stage bidding process may be followed, where the first stage involves a minimum threshold for local production and content and the second stage price and B-BBEE..

1.4 A person awarded a contract in relation to a designated sector, may not sub-contract in such a manner that the local production and content of the overall value of the contract is reduced to below the stipulated minimum threshold.

1.5 The local content (LC) expressed as a percentage of the bid price must be calculated in accordance with the SABS approved technical specification number SATS 1286: 2011 as follows:

$$LC = [1- x / y] *100$$

Where
x is the imported content in Rand
y is the bid price in Rand excluding value added tax (VAT)

Prices referred to in the determination of x must be converted to Rand (ZAR) by using the exchange rate published by Nedbank 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.thedtic.gov.za at no cost.

1.6 A bid may 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.

[redacted]

CITY OF CAPE TOWN

WATER AND SANITATION

CONTRACT NO. 146Q/2021/22

DESIGN – BUILD OF MECHANICAL AND ELECTRICAL WORKS FOR THE UPGRADE AND EXPANSION OF POTSDAM WASTEWATER TREATMENT PLANT

SCHEDULE 22.4: DECLARATION CERTIFICATE FOR LOCAL PRODUCTION AND CONTENT FOR DESIGNATED SECTORS (Cont'd)

2. **The stipulated minimum threshold(s) for local production and content (refer to Annex A of SATS 1286:2011) for this bid is/are as follows:**

Description of services, works or goods	Stipulated minimum threshold
Plastic pipes	**100%**

3. 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	✓

3.1 If yes, the rate(s) of exchange to be used in this bid to calculate the local content as prescribed in paragraph 1.5 of the above General Conditions must be the rate(s) published by [redacted] t close of business on the date of advertisement of the bid.

Indicate the rate(s) of exchange against the appropriate currency in the table below (refer to Annex A of SATS 1286:2011):

Currency	Rates of exchange
US Dollar	
Pound Sterling	
Euro	
Yen	
Other	

NB: Suppliers must submit proof of the [redacted] rate(s) of exchange used.

4. Where, after the award of a bid, challenges are experienced in meeting the stipulated minimum threshold for local content the dtic must be informed accordingly in order for the dtic to verify and in consultation with the CCT provide directives in this regard.

[redacted]

CITY OF CAPE TOWN

WATER AND SANITATION: BULK WATER

CONTRACT NO. 146Q/2021/22

DESIGN – BUILD OF MECHANICAL AND ELECTRICAL WORKS FOR THE REFURBISHMENT OF THREE RADIAL SPILLWAY GATES AT THE WEMMERSHOEK DAM

SCHEDULE 22.4: 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. 146Q/2021/2022

ISSUED BY: (Procurement Authority / Name of Municipality / Municipal Entity):
City of Cape Town - Water and Sanitation

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.thedtic.gov.za Bidders should first complete Declaration D. After completing Declaration D, bidders should complete Declaration E and then consolidate the information on Declaration C. **Declaration C should be submitted with the bid documentation at the closing date and time of the bid in order to substantiate the declaration made in paragraph (c) below.** Declarations D and E should be kept by the bidders for verification purposes for a period of at least 5 years. The successful bidder is required to continuously update Declarations C, D and E with the actual values for the duration of the contract.

I, the undersigned, [redacted] ..... (full names),
do hereby declare, in my capacity as ...Authorised Signatory..... .....
of ..PCI-INENZO-RAUBEX-DEVCOTECH Consortium.....(name of bidder entity), the following:

(a) The facts contained herein are within my own personal knowledge.
(b) I have satisfied myself that:
  (iv) the goods to be delivered in terms of the above-specified bid comply with the minimum local content requirements as specified in the bid, and as measured in terms of SATS 1286.2011,
(c) The local content percentages (%) indicated below has been calculated using the formula given in clause 3 of SATS 1286:2011, the rates of exchange indicated in paragraph 4.1 above and the information contained in Declaration D and E which has been consolidated in Declaration C;

Bid price, excluding VAT (y)	R 19 707 259.77
Imported content (x), as calculated in terms of SATS 1286:2011	R 0
Stipulated minimum threshold for local content (paragraph 2 above)	100 %
Local content %, as calculated in terms of SATS 1286:2011	100 %

If the bid is for more than one product, the local content percentages for each product contained in Declaration C shall be used instead of the table above. The local content percentages for each product has been calculated using the formula given in clause 3 of SATS 1286:2011, the rates of exchange indicated in paragraph 3.1 above and the information contained in Declaration D and E.

(d) I accept that the Procurement Authority / Municipality /Municipal Entity has the right to request that the local content be verified in terms of the requirements of SATS 1286:2011.
(e) I understand that the awarding of the bid is dependent on the accuracy of the information furnished in this application. I also understand that the submission of incorrect data, or data that are not verifiable as described in SATS 1286:2011, may result in the Procurement Authority / Municipal / Municipal Entity imposing any or all of the remedies as provided for in Regulation 14 of the Preferential Procurement Regulations, 2017 promulgated under the Preferential Policy Framework Act (PPPFA), 2000 (Act No. 5 of 2000).
(f)

SIGNATURE: [redacted] DATE: 28/04/2022

WITNESS No. 1 DATE: 28/04/2022

WITNESS No. 2 DATE: 28/04/2022

[redacted]

ANNEX C

LOCAL CONTENT DECLARATION-SUMMARY SCHEDULE

Note: VAT to be excluded from all calculations

(C1)	Tender No.	146Q/2021/22
(C2)	Tender description:	Design-build of upgrade and expansion of Potsdam WWTP
(C3)	Designated product(s)	Plastic pipes
(C4)	Tender Authority:	City of Cape Town
(C5)	Tendering Entity name	PCI-INENZO-RAUBEX-DEVCOTECH Consortium
(C6)	Tender exchange rate:	GBP R 20.49 USD 15.31 EURO 17.53 OTHER
(C7)	Specified local content %	100

Calculation of Local Content								Tender Summary			
Tender item numbers	List of items	Tender price- each	Exempted import value	Tender value net of exempted imported content	Imported value	Local value	Local content % (per item)	Tender quantity	Total tender value	Total exempted imported content	Total imported content
(C8)	(C9)	(C10)	(C11)	(C12)	(C13)	(C14)	(C15)	(C16)	(C17)	(C18)	(C19)
M8.2.3.1.a	Aeration grid pipes	R 721.153.64		R 721.153.64	R -	R 721.153.64	100%	1	R 721.153.64	R -	R -
M8.2.3.1.b	Aeration grid pipes	R 721.153.64		R 721.153.64	R -	R 721.153.64	100%	1	R 721.153.64	R -	R -
M8.2.3.1.c	Aeration grid pipes	R 721.153.64		R 721.153.64	R -	R 721.153.64	100%	1	R 721.153.64	R -	R -
M8.2.3.1.d	Aeration grid pipes	R 721.153.64		R 721.153.64	R -	R 721.153.64	100%	1	R 721.153.64	R -	R -
M8.2.3.2.a	Aeration grid pipes	R 82.394.00		R 82.394.00	R -	R 82.394.00	100%	1	R 82.394.00	R -	R -
M9.2.3.2	Chemical pipes	R 17.125.50		R 17.125.50	R -	R 17.125.50	100%	1	R 17.125.50	R -	R -
M9.2.3.3	Chemical pipes	R 4.077.50		R 4.077.50	R -	R 4.077.50	100%	1	R 4.077.50	R -	R -
M9.2.2.2	Chemical pipes	R 23.474.75		R 23.474.75	R -	R 23.474.75	100%	1	R 23.474.75	R -	R -
M9.2.2.3	Chemical pipes	R 4.077.50		R 4.077.50	R -	R 4.077.50	100%	1	R 4.077.50	R -	R -
M10.2 5.4	Chemical pipes	R 69.900.00		R 69.900.00	R -	R 69.900.00	100%	1	R 69.900.00	R -	R -
M10.2 5.6	Chemical pipes	R 152.458.89		R 152.458.89	R -	R 152.458.89	100%	1	R 152.458.89	R -	R -
M10.2 6.4	Chemical pipes	R 69.900.00		R 69.900.00	R -	R 69.900.00	100%	1	R 69.900.00	R -	R -
M10.2 6.6	Chemical pipes	R 152.458.89		R 152.458.89	R -	R 152.458.89	100%	1	R 152.458.89	R -	R -
M17.2 1.2.a	Air ducting	R 949.206.50		R 949.206.50	R -	R 949.206.50	100%	1	R 949.206.50	R -	R -
M17.2 2.2.a	Air ducting	R 483.369.70		R 483.369.70	R -	R 483.369.70	100%	1	R 483.369.70	R -	R -
M17.2 3.2.a	Air ducting	R 1.379.466.00		R 1.379.466.00	R -	R 1.379.466.00	100%	1	R 1.379.466.00	R -	R -
M21.2 2.1	Filter feed pipework	R 4.030.624.00		R 4.030.624.00	R -	R 4.030.624.00	100%	1	R 4.030.624.00	R -	R -
M21.2 2.2	Filtrate pipework	R 3.411.115.00		R 3.411.115.00	R -	R 3.411.115.00	100%	1	R 3.411.115.00	R -	R -
M21.2 2.3	Backwash pipework	R 3.181.904.00		R 3.181.904.00	R -	R 3.181.904.00	100%	1	R 3.181.904.00	R -	R -
M21.2 2.5	CIP pipework	R 2.223.042.00		R 2.223.042.00	R -	R 2.223.042.00	100%	1	R 2.223.042.00	R -	R -
M21.2 10.4	Chemical pipes	R 98.350.00		R 98.350.00	R -	R 98.350.00	100%	1	R 98.350.00	R -	R -
M21.2 10.6	Chemical pipes	R 4.544.00		R 4.544.00	R -	R 4.544.00	100%	1	R 4.544.00	R -	R -
M21.2 11.4	Chemical pipes	R 128.161.00		R 128.161.00	R -	R 128.161.00	100%	1	R 128.161.00	R -	R -
M21.2 12.4	Chemical pipes	R 91.744.00		R 91.744.00	R -	R 91.744.00	100%	1	R 91.744.00	R -	R -
M21.2 12.6	Chemical pipes	R 65.969.00		R 65.969.00	R -	R 65.969.00	100%	1	R 65.969.00	R -	R -
M21.2 13.4	Chemical pipes	R 58.456.00		R 58.456.00	R -	R 58.456.00	100%	1	R 58.456.00	R -	R -
M21.2 13.6	Chemical pipes	R 21.844.00		R 21.844.00	R -	R 21.844.00	100%	1	R 21.844.00	R -	R -
M21.2 14.4	Chemical pipes	R 63.014.00		R 63.014.00	R -	R 63.014.00	100%	1	R 63.014.00	R -	R -
M21.2 14.6	Chemical pipes	R 50.969.00		R 50.969.00	R -	R 50.969.00	100%	1	R 50.969.00	R -	R -

(C20)	Total tender value	R	19.702.259.79
(C21)	Total exempt import content	R	-
(C22)	Total tender value net of exempt import content	R	19.702.259.79
(C23)	Total imported content	R	-
(C24)	Total local content	R	19.702.259.79
(C25)	Average local content % of tender		100%

[redacted]

CITY OF CAPE TOWN

WATER AND SANITATION

CONTRACT NO. 146Q/2021/22

DESIGN – BUILD OF MECHANICAL AND ELECTRICAL WORKS FOR THE UPGRADE AND EXPANSION OF POTSDAM WASTEWATER TREATMENT PLANT

SCHEDULE 22.5: DECLARATION CERTIFICATE FOR LOCAL PRODUCTION AND CONTENT FOR DESIGNATED SECTORS

This declaration is based on and replaces Municipal Bid Document 6.2 (MBD 6.2).
The amendments made to the MBD 6.2 document have been necessary to clarify this standard document as it relates to local production and content in the designated sector.

Before completing this declaration, bidders must study the General Conditions, Definitions, Directives applicable in respect of Local Content as prescribed in the Preferential Procurement Regulations, 2017 and the South African Bureau of Standards (SABS) approved technical specification number SATS 1286:2011 (Edition 1) and the Guidance on the Calculation of Local Content together with the Local Content Declaration Templates [Annex C (Local Content Declaration: Summary Schedule), D (Imported Content Declaration: Supporting Schedule to Annex C) and E (Local Content Declaration: Supporting Schedule to Annex C)].

Documents listed herein are downloadable from the dtic's official website, http://www.thedti.gov.za.

This schedule must be completed by tenderers and returned with their tender at the closing date and time for this tender.

1. General Conditions

1.1 Preferential Procurement Regulations, 2017 (Regulation 8) makes provision for the promotion of local production and content.

1.2 Regulation 8(2) prescribes that in the case of designated sectors, organs of state must advertise such with the specific bidding condition that only locally produced goods with a stipulated minimum threshold for local production and content will be considered.

1.3 Where necessary, for tenders referred to in paragraph 1.2 above, a two stage bidding process may be followed, where the first stage involves a minimum threshold for local production and content and the second stage price and B-BBEE..

1.4 A person awarded a contract in relation to a designated sector, may not sub-contract in such a manner that the local production and content of the overall value of the contract is reduced to below the stipulated minimum threshold.

1.5 The local content (LC) expressed as a percentage of the bid price must be calculated in accordance with the SABS approved technical specification number SATS 1286: 2011 as follows:

$$LC = [1 - x / y] * 100$$

Where
- x is the imported content in Rand
- y is the bid price in Rand excluding value added tax (VAT)

Prices referred to in the determination of x must be converted to Rand (ZAR) by using the exchange rate published by Nedbank 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.thedtic.gov.za at no cost.

1.6 A bid may 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.

[redacted]

CITY OF CAPE TOWN

WATER AND SANITATION

CONTRACT NO. 146Q/2021/22

DESIGN – BUILD OF MECHANICAL AND ELECTRICAL WORKS FOR THE UPGRADE AND EXPANSION OF POTSDAM WASTEWATER TREATMENT PLANT

SCHEDULE 22.5: DECLARATION CERTIFICATE FOR LOCAL PRODUCTION AND CONTENT FOR DESIGNATED SECTORS (Cont'd)

2. **The stipulated minimum threshold(s) for local production and content (refer to Annex A of SATS 1286:2011) for this bid is/are as follows:**

Description of services, works or goods	Stipulated minimum threshold
Valve products and actuators	**70%**

3. 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	

3.1 If yes, the rate(s) of exchange to be used in this bid to calculate the local content as prescribed in paragraph 1.5 of the above General Conditions must be the rate(s) published by [redacted] 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	15,31
Pound Sterling	20,48
Euro	17,53
Yen	
Other	

NB: Suppliers must submit proof of the [redacted]ate(s) of exchange used.

4. Where, after the award of a bid, challenges are experienced in meeting the stipulated minimum threshold for local content the dtic must be informed accordingly in order for the dtic to verify and in consultation with the CCT provide directives in this regard.

[redacted]

CITY OF CAPE TOWN

WATER AND SANITATION

CONTRACT NO. 146Q/2021/22

DESIGN – BUILD OF MECHANICAL AND ELECTRICAL WORKS FOR THE UPGRADE AND EXPANSION OF POTSDAM WASTEWATER TREATMENT PLANT

SCHEDULE 22.5 : 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. 146Q/2021/2022

ISSUED BY: (Procurement Authority / Name of Municipality / Municipal Entity):
City of Cape Town - Water and Sanitation

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.thedtic.gov.za Bidders should first complete Declaration D. After completing Declaration D, bidders should complete Declaration E and then consolidate the information on Declaration C. **Declaration C should be submitted with the bid documentation at the closing date and time of the bid in order to substantiate the declaration made in paragraph (c) below.** Declarations D and E should be kept by the bidders for verification purposes for a period of at least 5 years. The successful bidder is required to continuously update Declarations C, D and E with the actual values for the duration of the contract.

I, the undersigned, [redacted] (full names),
do hereby declare, in my capacity as Authorised Signatory
of PCI-INENZO-RAUBEX-DEVCOTECH Consortium (name of bidder entity), the following:

(a) The facts contained herein are within my own personal knowledge.
(b) I have satisfied myself that:
(v) the goods 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)	R88 961 114,84
Imported content (x), as calculated in terms of SATS 1286:2011	R 9 113 022,76
Stipulated minimum threshold for local content (paragraph 2 above)	70 %
Local content %, as calculated in terms of SATS 1286:2011	89 %

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 3.1 above and the information contained in Declaration D and E.

(d) I accept that the Procurement Authority / Municipality /Municipal Entity has the right to request that the local content be verified in terms of the requirements of SATS 1286:2011.
(e) I understand that the awarding of the bid is dependent on the accuracy of the information furnished in this application. I also understand that the submission of incorrect data, or data that are not verifiable as described in SATS 1286:2011, may result in the Procurement Authority / Municipal / Municipal Entity imposing any or all of the remedies as provided for in Regulation 14 of the Preferential Procurement Regulations, 2017 promulgated under the Preferential Policy Framework Act (PPPFA), 2000 (Act No. 5 of 2000).
(f)

SIGNATURE [redacted] DATE: 28/04/2022

WITNESS No [redacted] DATE: 28/04/2022

WITNESS No [redacted] DATE: 28/04/2022

[redacted]

ANNEX C

LOCAL CONTENT DECLARATION-SUMMARY SCHEDULE

(C1,	Tender No.	1460/2021/22				
(C2,	Tender description:	Design-build of upgrade and expansion of Potsdam WWTP				
(C3,	Designated product(s)	Valves and actuators				
(C4,	Tender Authority:	City of Cape Town				
(C5,	Tendering Entity name.	PCI-INENZO-RAUBEX-DEYCOTECH Consortium				
(C6,	Tender exchange rate:	GBP	20.49 USD	11.31 EURO	17.53 OTHER	
(C7,	Specified local content %	70				

Note: VAT to be excluded from all calculations

Calculation of local content								Tender Summary			
Tender item numbers	List of items	Tender price- each	Exempted import value	Tender value net of exempted imported content	Imported value	Local value	Local content % (per item;	Tender quantity	Total tender value	Total exempted imported content	Total imported content
(C8)	(C9)	(C10)	(C11)	(C12)	(C13)	(C14)	(C15)	(C16)	(C17)	(C18)	(C19)
M3.2.12.3.a	Service water control equipment	N/A				R -	-	1	N/A	N/A	N/A
M3.2.12.3.b	Service water control equipment	N/A				R -	-	1	N/A	N/A	N/A
M3.2.12.3.c	Service water control equipment	R 44.959.68		R 44.959.68	R 9.262.68	R 35.697.60	79%	1	R 44.959.68	R -	R 9.262.08
M3.2.12.3.d	Service water control equipment	R 52.592.76		R 52.592.76	R 10.834.56	R 41.758.20	79%	1	R 52.592.76	R -	R 10.834.56
M3.2.12.3.e	Service water control equipment	R 14.986.56		R 14.986.56	R 3.473.28	R 11.513.28	77%	1	R 14.986.56	R -	R 3.473.28
M3.2.12.3.f	Service water control equipment	N/A				R -	-	1	N/A	N/A	N/A
M3.2.12.3.g	Service water control equipment	N/A				R -	-	1	N/A	N/A	N/A
M4.6.1.c	Valves as specified	R 1.821.678.10		R 1.821.678.10	R 331.214.20	R 1.490.463. 90	82%	1	R 1.821.678.10	R -	R 331.214.20
M8.2.8	V-port knife gate valve	R 86.268.64		R 86.268.64	R 14.643.40	R 71.625. 24	83%	12	R 1.035.223.68	R -	R 175.720.80
M8.2.9	Butterfly valve	R 5.825.00		R 5.825.00	R 1.350.00	R 4.475. 00	77%	4	R 23.300.00	R -	R 5.400.00
M9.2.1.4	Chemical valves	R 116.360.20		R 116.360.20	R 27.966.80	R 88.393. 80	76%	1	R 116.360.20	R -	R 27.966.40
M9.2.2.4	Chemical valves	R 188.573.89		R 188.573.89	R 45.322.48	R 143.251. 41	76%	1	R 188.573.89	R -	R 45.322.48
M9.2.3.3.a	Service water control equipment	R 171.771.10		R 171.771.10	R 41.284.04	R 130.487. 06	76%	1	R 171.771.10	R -	R 41.284.04
M9.2.3.3.b	Service water control equipment	R 343.541.03		R 343.541.03	R 82.567.80	R 260.973. 23	76%	1	R 343.541.03	R -	R 82.567.80
M11A.2.1.8	Valves	R 2.578.671.58		R 2.578.671.58	R 773.601.47	R 1 805.070. 11	70%	1	R 2.578.671.58	R -	R 773.601.47
M11B.2.1.7	Wall/channel gates	R 1.576.772.27		R 1.576.772.27	R 473.031.68	R 1 103.740. 59	70%	1	R 1.576.772.27	R -	R 473.031.68
M12.2.6.3.a	Service water control equipment	N/A				R -	-	1	N/A	N/A	N/A
M12.2.6.3.b	Service water control equipment	N/A				R -	-	1	N/A	N/A	N/A
M12.2.6.3.c	Service water control equipment	N/A				R -	-	1	N/A	N/A	N/A
M12.2.6.3.d	Service water control equipment	N/A				R -	-	1	N/A	N/A	N/A
M12.2.6.3.e	Service water control equipment	N/A				R -	-	1	N/A	N/A	N/A
M13.2.8.3.a	Service water control equipment	N/A				R -	-	1	N/A	N/A	N/A
M17.2.4.3.a	Service water control equipment	R 2.695.00		R 2.695.00	R -	R 2.695.00	100%	1	R 2.695.00	R -	R -
M17.2.4.3.b	Service water control equipment	R 2.695.00		R 2.695.00	R -	R 2.695.00	100%	1	R 2.695.00	R -	R -
M17.2.4.3.c	Service water control equipment	R 2.695.00		R 2.695.00	R -	R 2.695.00	100%	1	R 2.695.00	R -	R -
M19.2.1.1	Channel mounted sluice gate	R 144.691.00		R 144.691.00	R -	R 144.691.00	100%	2	R 289.382.00	R -	R -
M19.2.1.2	Channel mounted sluice gate	R 197.422.00		R 197.422.00	R -	R 197.422.00	100%	2	R 394.844.00	R -	R -
M19.2.1.3	Channel mounted sluice gate	R 234.805.00		R 234.805.00	R -	R 234.805.00	100%	24	R 5.635 320.00	R -	R -
M19.2.1.4	Channel mounted sluice gate	R 211.497.00		R 211.497.00	R -	R 211.497.00	100%	6	R 1.268 982.00	R -	R -
M19 2.1.5	Channel mounted sluice gate	R 139.923.00		R 139.923.00	R -	R 139.923.00	100%	8	R 1.119 384.00	R -	R -
M19.2.1.6	Channel mounted sluice gate	R 177.125.00		R 177.125.00	R -	R 177.125.00	100%	3	R 531 375.00	R -	R -
M19.2.1.7	Channel mounted sluice gate	R 88.540.56		R 88.540.56	R -	R 88.540.56	100%	4	R 354 162.24	R -	R -
M19.2.1.8	Channel mounted sluice gate	R 128.700.21		R 128.700.21	R -	R 128.700.21	100%	1	R 128 700.21	R -	R -

M19.2.1.9	Channel mounted sluice gate	R	102.202.35		R	102.202.35	R	-	R	102.202.35	100%	8	R	817.618.80	R	-	R	-
M19.2.1.10	~~Channel mounted sluice gate~~ Open close actuators (electric) for channel mounted sluice gates	R	77.573.84	R 66.302.43	R	11.271.41	R	-	R	11.271.41	100%	58	R	4.499.282.90	R	3.845.540.94	R	-
M19.2.2.1	Wall mounted sluice gate	R	83.911.03		R	83.911.03	R	-	R	83.911.03	100%	2	R	167.822.06	R	-	R	-
M19.2.2.2	Wall mounted sluice gate	R	92.600.30		R	92.600.30	R	-	R	92.600.30	100%	4	R	370.401.20	R	-	R	-
M19.2.2.3	Wall mounted sluice gate	R	236.088.35		R	236.088.35	R	-	R	236.088.35	100%	1	R	236.088.35	R	-	R	-
M19.2.2.4	Wall mounted sluice gate	R	117.772.66		R	117.772.66	R	-	R	117.772.66	100%	2	R	235.545.32	R	-	R	-
M19.2.2.5	Wall mounted sluice gate	R	69.705.14		R	69.705.14	R	-	R	69.705.14	100%	6	R	418.230.84	R	-	R	-
M19.2.2.6	Wall mounted sluice gate	R	115.351.12		R	115.351.12	R	-	R	115.351.12	100%	1	R	115.351.12	R	-	R	-
M19.2.2.7	Wall mounted sluice gate	R	72.371.62		R	72.371.62	R	-	R	72.371.62	100%	6	R	434.229.72	R	-	R	-
M19.2.2.8	Wall mounted sluice gate	R	86.932.67		R	86.932.67	R	-	R	86.932.67	100%	4	R	347.730.68	R	-	R	-
M19.2.2.9	Wall mounted sluice gate	R	115.351.12		R	115.351.12	R	-	R	115.351.12	100%	1	R	115.351.12	R	-	R	-
M19.2.2.10	Wall mounted sluice gate	R	94.617.37		R	94.617.37	R	-	R	94.617.37	100%	1	R	94.617.37	R	-	R	-
M19.2.2.11	Wall mounted sluice gate	R	116.487.76		R	116.487.76	R	-	R	116.487.76	100%	1	R	116.487.76	R	-	R	-
M19.2.2.12	Wall mounted sluice gate	R	147.943.29		R	147.943.29	R	-	R	147.943.29	100%	16	R	2.367.092.64	R	-	R	-
M19.2.2.13	Wall mounted sluice gate	R	116.487.76		R	116.487.76	R	-	R	116.487.76	100%	1	R	116.487.76	R	-	R	-
M19.2.2.14	Wall mounted sluice gate	R	130.013.35		R	130.013.35	R	-	R	130.013.35	100%	1	R	130.013.35	R	-	R	-
M19.2.2.15	Wall mounted sluice gate	R	116.094.76		R	116.094.76	R	-	R	116.094.76	100%	2	R	232.189.52	R	-	R	-
M19.2.2.16	Wall mounted sluice gate	R	98.459.13		R	98.459.13	R	-	R	98.459.13	100%	4	R	393.836.52	R	-	R	-
M19.2.3.1	Overflow weir gate	R	132.998.00		R	132.998.00	R	-	R	132.998.00	100%	1	R	132.998.00	R	-	R	-
M19.2.3.2	Overflow weir gate	R	203.208.04		R	203.208.04	R	-	R	203.208.04	100%	1	R	203.208.04	R	-	R	-
M19.2.3.3	Overflow weir gate	R	203.208.04		R	203.208.04	R	-	R	203.208.04	100%	1	R	203.208.04	R	-	R	-
M19.2.3.4	Overflow weir gate	R	104.868.54		R	104.868.54	R	-	R	104.868.54	100%	12	R	1.258.422.48	R	-	R	-
M19.2.3.5	Overflow weir gate	R	80.904.10		R	80.904.10	R	-	R	80.904.10	100%	4	R	323.616.40	R	-	R	-
M19.2.3.6	Overflow weir gate	R	82.179.88		R	82.179.88	R	-	R	82.179.88	100%	4	R	328.719.52	R	-	R	-
M19.2.3.7	Overflow weir gate	R	230.313.94		R	230.313.94	R	-	R	230.313.94	100%	2	R	460.627.88	R	-	R	-
M19.2.4.1	Weir plate	R	5.139.00		R	5.139.00	R	-	R	5.139.00	100%	1	R	5.139.00	R	-	R	-
M19.2.4.2	Weir plate	R	1.606.63		R	1.606.63	R	-	R	1.606.63	100%	4	R	6.426.52	R	-	R	-
M19.2.4.3	Weir plate	R	1.638.50		R	1.638.50	R	-	R	1.638.50	100%	1	R	1.638.50	R	-	R	-
M19.2.4.4	Weir plate	R	102.565.13		R	102.565.13	R	-	R	102.565.13	100%	4	R	410.260.52	R	-	R	-
M19.2.4.5	Weir plate	R	1.431.75		R	1.431.75	R	-	R	1.431.75	100%	2	R	2.863.50	R	-	R	-
M19.2.4.6	Weir plate	R	1.412.72		R	1.412.72	R	-	R	1.412.72	100%	16	R	22.603.52	R	-	R	-
M19.2.4.7	Weir plate	R	947.50		R	947.50	R	-	R	947.50	100%	12	R	11.370.00	R	-	R	-
M19.2.4.8	Weir plate	R	1.879.63		R	1.879.63	R	-	R	1.879.63	100%	8	R	15.037.04	R	-	R	-
M19.2.4.9	Weir plate	R	1.544.50		R	1.544.50	R	-	R	1.544.50	100%	1	R	1.544.50	R	-	R	-
M19.2.4.10	Weir plate	R	2.491.99		R	2.491.99	R	-	R	2.491.99	100%	16	R	39.871.84	R	-	R	-
M19.2.4.11	Weir plate	R	3.959.00		R	3.959.00	R	-	R	3.959.00	100%	2	R	7.918.00	R	-	R	-
M19.2.4.12	Weir plate	R	3.959.00		R	3.959.00	R	-	R	3.959.00	100%	2	R	7.918.00	R	-	R	-
M19.2.4.13	Weir plate	R	3.654.00		R	3.654.00	R	-	R	3.654.00	100%	2	R	7.308.00	R	-	R	-
M19.2.4.14	Weir plate	R	1.917.50		R	1.917.50	R	-	R	1.917.50	100%	1	R	1.917.50	R	-	R	-
M19.2.5.1.a	Isolation valves on air supply line	R	13.870.00		R	13.870.00	R	4.161.00	R	9.709.00	70%	4	R	55.480.00	R	-	R	16.644.00
M19.2.5.1.b	Isolation valves on classifier supply lines	R	12.193.00		R	12.193.00	R	3.657.90	R	8.535.10	70%	4	R	48.772.00	R	-	R	14.631.60
M19.2.5.2	Sum of all washwater connection valves	R	37.483.00		R	37.483.00	R	11.244.90	R	26.238.10	70%	1	R	37.483.00	R	-	R	11.244.90
M19.2.5.3.a	~~Sum of all washwater connection valves~~ a) Isolation valves (Discharge)	R	38.523.00		R	38.523.00	R	5.986.80	R	32.536.20	84%	2	R	77.046.00	R	-	R	11.973.60
M19.2.6.1.a	Isolation valves for pump suction	R	523.041.20		R	523.041.20	R	-	R	523.041.20	100%	4	R	2.092.164.80	R	-	R	-
M19.2.6.1.b	Isolation valves for pump discharge	R	380.727.60		R	380.727.60	R	-	R	380.727.60	100%	4	R	1.522.910.40	R	-	R	-
M19.2.6.1.c	Isolation valve for manifold drainage	R	7.104.90		R	7.104.90	R	-	R	7.104.90	100%	1	R	7.104.90	R	-	R	-
M19.2.6.1.d	Non return valves	R	636.875.80		R	636.875.80	R	-	R	636.875.80	100%	4	R	2.547.503.20	R	-	R	-
M19.2.6.1.e	Air release valve	R	14.582.70		R	14.582.70	R	3.579.39	R	11.003.31	75%	1	R	14.582.70	R	-	R	3.579.39
M19.2.6.2.a	Isolation valves for pump ~~discharge~~ suction	R	1.694.00		R	1.694.00	R	462.00	R	1.232.00	73%	1	R	1.694.00	R	-	R	462.00

M19.2.6.2.b	Non return valve	R	1.173.70		R	1.173.70	R	320.10	R	853.60	73%	1	R	1.173.70	R
M19.2.6.3.a	Isolation valves	R	277.697.20		R	277.697.20	R	-	R	277.697.20	100%	3	R	833.091.60	R
M19.2.6.4.a	Isolation valves (Scum discharge)	R	35.397.36		R	35.397.36	R	5.986.80	R	29.410.56	83%	4	R	141.589.44	R
M19.2.6.4.b	Isolation valves (Sludge discharge)	R	35.397.36		R	35.397.36	R	5.986.80	R	29.410.56	83%	4	R	141.589.44	R
M19.2.6.4.c	Isolation valve for high pressure air connection	R	4.183.52		R	4.183.52	R	942.30	R	3.241.22	77%	4	R	16.734.08	R
M19.2.6.5.a	Isolation valves for '24 PST sludge draw off	R	35.397.36		R	35.397.36	R	3.612.30	R	31.785.06	90%	8	R	283.178.88	R
M19.2.6.5.d	Isolation valves '08 PST sludge draw off	R	35.397.36		R	35.397.36	R	3.330.20	R	32.067.16	91%	2	R	70.794.72	R
M19.2.6.5.f	Isolation valves (pump suction)	R	25.971.00		R	25.971.00	R	4.351.00	R	21.620.00	83%	2	R	51.942.00	R
M19.2.6.5.g	Isolation valves (pump d scharge)	R	20.025.00		R	20.025.00	R	3.330.20	R	16.694.80	83%	2	R	40.050.00	R
M19.2.6.5.h	Non return valve (pump discharge)	R	33.741.00		R	33.741.00	R	5.685.00	R	28.056.00	83%	2	R	67.482.00	R
M19.2.6.5.j	Flow meter isolation valves	R	15.705.00		R	15.705.00	R	2.606.40	R	13.098.60	83%	3	R	47.115.00	R
M19.2.6.5.k	Isolation valves (pump suction)	R	25.971.00		R	25.971.00	R	4.351.00	R	21.620.00	83%	2	R	51.942.00	R
M19.2.6.5.l	Isolation valves (pump d scharge)	R	20.025.00		R	20.025.00	R	3.330.20	R	16.694.80	83%	2	R	40.050.00	R
M19.2.6.5.m	Non return valve (pump discharge)	R	33.741.00		R	33.741.00	R	5.685.00	R	28.056.00	83%	2	R	67.482.00	R
M19.2.6.5.o	Flow meter isolation valves	R	15.705.00		R	15.705.00	R	2.606.40	R	13.098.60	83%	3	R	47.115.00	R
M19.2.6.5.p	Isolation valves (pump suction)	R	35.499.00		R	35.499.00	R	5.986.80	R	29.512.20	83%	2	R	78.998.00	R
M19.2.6.5.q	Isolation valves (pump d scharge)	R	25.971.00		R	25.971.00	R	4.351.00	R	21.620.00	83%	2	R	51.942.00	R
M19.2.6.5.r	Non return valve (pump discharge)	R	52.568.00		R	52.568.00	R	8.917.00	R	43.651.00	83%	2	R	105.136.00	R
M19.2.6.5.t	Flow meter isolation valves	R	15.705.00		R	15.705.00	R	2.606.40	R	13.098.60	83%	3	R	47.115.00	R
M19.2.6.6.a	Isolation valves (strainpress)	R	25.971.00		R	25.971.00	R	7.791.30	R	18.179.70	70%	2	R	51.942.00	R
M19.2.6.7.a	Isolation valves (Hydro cyclone)	R	25.785.00		R	25.785.00	R	7.735.50	R	18.049.50	70%	5	R	128.925.00	R
M19.2.6.7.b	Isolation valves (slurry discharge)	R	25.799.00		R	25.799.00	R	7.739.70	R	18.059.30	70%	2	R	51.598.00	R
M19.2.6.7.c	Sum of all washwater valves required	R	3.507.00		R	3.507.00	R	1.052.10	R	2.454.90	70%	1	R	3.507.00	R
M19.2.6.8.a	Sum of all washwater valves required	R	144.408.74		R	144.408.74	R	27.393.12	R	117.015.62	81%	1	R	144.408.74	R
M19.2.8.1.a	Isolation valves (pump discharge)	R	20.147.60		R	20.147.60	R	-	R	20.147.60	100%	6	R	120.885.60	R
M19.2.8.1.b	Isolation valves (flow meter)	R	20.147.60		R	20.147.60	R	-	R	20.147.60	100%	9	R	181.328.40	R
M19.2.8.1.c	Non return valve	R	34.394.80		R	34.394.80	R	4.064.64	R	30.329.96	88%	6	R	206.368.80	R
M19.2.8.2.a	Isolation valves (per blower)	R	28.332.80		R	28.332.80	R	6.566.40	R	21.766.40	77%	5	R	141.664.00	R
M19.2.8.2.b	Isolation valves (common manifold)	R	176.377.51		R	176.377.51	R	40.877.19	R	135.500.32	77%	2	R	352.755.02	R
M19.2.8.3.a	Isolation valves (suction and discharge)	R	6.229.26		R	6.229.26	R	1.376.19	R	4.853.07	78%	32	R	199.336.32	R
M19.2.8.3.b	Safety relief valves	R	38.907.80		R	38.907.80	R	9.017.26	R	29.890.54	77%	32	R	1.245.049.60	R
M19.2.8.4.a	Isolation valves (membrane tank drainage)	R	35.164.36		R	35.164.36	R	5.986.80	R	29.177.56	83%	16	R	562.629.76	R
M19.2.8.4.b	Isolation valves (pump station)	R	35.164.36		R	35.164.36	R	5.986.80	R	29.177.56	83%	8	R	281.314.88	R
M19.2.8.4.c	Isolation valves (flow meter)	R	35.164.36		R	35.164.36	R	5.986.80	R	29.177.56	83%	6	R	210.986.16	R
M19.2.8.4.d	Non return valve (pump station)	R	86.135.44		R	86.135.44	R	14.737.20	R	71.398.24	83%	4	R	344.541.76	R
M19.2.8.5.a	Isolation valves (membrane tank inlet)	R	26.376.77		R	26.376.77	R	6.113.07	R	20.263.70	77%	16	R	421.028.32	R
M19.2.8.6.a	Isolation valves on main feeder line	R	15.570.81		R	15.570.81	R	3.355.56	R	12.215.25	78%	16	R	249.132.96	R
M19.2.8.6.c	Sum of all valves associated with scour air	R	689.512.24		R	689.512.24	R	143.601.12	R	545.911.12	79%	1	R	689.512.24	R
M19.2.8.6.d	Sum of all actuators (pneumatic)	R	93.200.00		R	93.200.00	R	24.000.00	R	69.200.00	74%	1	R	93.200.00	R
M19.2.8.7.a	Sum of all valves associated with process air	R	848.949.48		R	848.949.48	R	180.552.24	R	668.397.24	79%	1	R	848.949.48	R
M19.2.8.7.b	Sum of all actuators (pneumatic)	R	466.000.00		R	466.000.00	R	108.000.00	R	358.000.00	77%	1	R	466.000.00	R
M19.2.8.8.a	Sum of all valves associated with dosing system	R	162.004.90		R	162.004.90	R	34.736.80	R	127.268.10	79%	1	R	162.004.90	R
M19.2.8.9.a	Sum of all valves associated with dosing system	R	162.004.90		R	162.004.90	R	34.736.80	R	127.268.10	79%	1	R	162.004.90	R
M19.2.8.10.a	Sum of all valves associated with dosing system	R	162.004.90		R	162.004.90	R	34.736.80	R	127.268.10	79%	1	R	162.004.90	R
M19.2.8.11.a	Isolation valves (Pump suction)	R	19.870.00		R	19.870.00	R	3.330.20	R	16.539.80	83%	4	R	79.480.00	R
M19.2.8.11.b	Isolation valves (Pump discharge)	R	19.870.00		R	19.870.00	R	3.330.20	R	16.539.80	83%	4	R	79.480.00	R
M19.2.8.11.c	Isolation valves (flow meter)	R	19.819.00		R	19.819.00	R	3.330.20	R	16.488.80	83%	6	R	118.914.00	R
M19.2.8.11.d	Non return valve (pump station)	R	33.587.00		R	33.587.00	R	5.685.00	R	27.902.00	83%	4	R	134.348.00	R
M19.2.9.1.a	Isolation valves (pump section manifold)	R	7.174.07		R	7.174.07	R	1.541.16	R	5.632.91	79%	1	R	7.174.07	R
M19.2.9.1.b	Isolation valves (pump section and discharge)	Included under M4					R	-	R	-	20%	10	Included under M4		Included under M4
M19.2.9.1.c	Isolation valves (flow meter)	R	4.183.52		R	4.183.52	R	848.07	R	3.335.45	80%	3	R	12.550.56	R
M19.2.9.1.d	Isolation valves (potable water connection)	R	2.038.75		R	2.038.75	R	351.00	R	1.687.75	83%	1	R	2.038.75	R
M19.2.9.1.e	Non return valve	Included under M4					R	-	R	-	70%	5	Included under M4		Included under M4

1	R	320.10	R	-
3	R	833.091.60	R	-
4	R	141.589.44	R	23.947.20
4	R	141.589.44	R	23.947.20
4	R	16.734.08	R	3.769.20
8	R	283.178.88	R	28.898.40
2	R	70.794.72	R	6.660.40
2	R	51.942.00	R	8.702.00
2	R	40.050.00	R	6.660.40
2	R	67.482.00	R	11.370.00
3	R	47.115.00	R	7.819.20
2	R	51.942.00	R	8.702.00
2	R	40.050.00	R	6.660.40
2	R	67.482.00	R	11.370.00
3	R	47.115.00	R	7.819.20
2	R	78.998.00	R	11.973.50
2	R	51.942.00	R	8.702.00
2	R	105.136.00	R	17.834.00
3	R	47.115.00	R	7.819.20
2	R	51.942.00	R	15.582.60
5	R	128.925.00	R	38.677.50
2	R	51.598.00	R	15.479.40
1	R	3.507.00	R	1.052.10
1	R	144.408.74	R	27.393.12
6	R	120.885.60	R	-
9	R	181.328.40	R	-
6	R	206.368.80	R	24.389.04
5	R	141.664.00	R	32.832.00
2	R	352.755.02	R	81.754.38
32	R	199.336.32	R	44.038.08
32	R	1.245.049.60	R	288.552.32
16	R	562.629.76	R	95.788.80
8	R	281.314.88	R	47.894.40
6	R	210.986.16	R	35.920.80
4	R	344.541.76	R	58.948.80
16	R	421.028.32	R	97.809.12
16	R	249.132.96	R	53.688.96
1	R	689.512.24	R	143.601.12
1	R	93.200.00	R	24.000.00
1	R	848.949.48	R	180.552.24
1	R	466.000.00	R	108.000.00
1	R	162.004.90	R	34.736.80
1	R	162.004.90	R	34.736.80
1	R	162.004.90	R	34.736.80
4	R	79.480.00	R	13.320.80
4	R	79.480.00	R	13.320.80
6	R	118.914.00	R	19.981.20
4	R	134.348.00	R	22.740.00
1	R	7.174.07	R	1.541.16
10	Included under M4		Included under M4	Included under M4
3	R	12.550.56	R	2.544.21
1	R	2.038.75	R	351.00
5	Included under M4		Included under M4	Included under M4

M19.2.9.2.a	Isolation valves (pump suction manifold)	R	29.422.00		R	29.422.00	R	-	R	29.422.00	100%	1	R 29.422.00	R - R -
M19.2.9.2.b	Isolation valves (pump suction and discharge)	Included in M4							R	-	70%	8	Included in M4	Included in M4 Included in M4
M19.2.9.2.c	Isolation valves (flow meter)	R	24.226.00		R	24.226.00	R	-	R	24.226.00	100%	3	R 72.678.00	R - R -
M19.2.9.2.d	Isolation valves (potable water connection)	R	4.836.00		R	4.836.00	R	-	R	4.836.00	100%	1	R 4.836.00	R - R -
M19.2.9.2.e	Non return valve	Included in M4							R	-	70%	4	Included in M4	Included in M4 Included in M4
M19.2.9.3.a	Isolation valves	R	7.174.07		R	7.174.07	R	1.141.16	R	5.632.91	79%	4	R 28.696.28	R - R 6.164.64
M19.2.9.3.b	Non return valve	R	86.368.44		R	86.368.44	R	14.737.20	R	71.631.24	83%	2	R 172.736.88	R - R 29.474.40
M19.2.9.4.a	Isolation valves	R	7.174.07		R	7.174.07	R	1.141.16	R	5.632.91	79%	4	R 28.696.28	R - R 6.164.64
M19.2.9.4.b	Non return valve	R	86.368.44		R	86.368.44	R	14.737.20	R	71.631.24	83%	2	R 172.736.88	R - R 29.474.40
M19.2.9.5.a	Isolation valves (pump suction)	R	251.782.30		R	251.782.30	R	-	R	251.782.30	100%	6	R 1.510.693.80	R - R -
M19.2.9.5.b	Isolation valves (pump discharge)	R	155.436.60		R	155.436.60	R	14.130.60	R	141.306.00	91%	6	R 932.619.60	R - R 84.783.60
M19.2.9.5.c	Isolation valves (air valve)	R	5.446.10		R	5.446.10	R	1.485.30	R	3.960.80	73%	1	R 5.446.10	R - R 1.485.30
M19.2.9.5.d	Isolation valves (flow meter)	R	288.508.00		R	288.508.00	R	28.850.80	R	259.657.20	90%	3	R 865.524.00	R - R 86.552.40
M19.2.9.5.g	Air release valve	R	14.582.70		R	14.582.70	R	3.379.39	R	11.003.31	75%	1	R 14.582.70	R - R 3.379.39
M19.2.10.1.a	Isolation valves (discharge pipework)	R	26.324.10		R	26.324.10	R	4.786.20	R	21.537.90	82%	2	R 52.648.20	R - R 9.572.40
M19.2.10.1.b	Isolation valves (flow meter)	R	26.324.10		R	26.324.10	R	4.786.20	R	21.537.90	82%	3	R 78.972.30	R - R 14.358.60
M19.2.10.1.c	Isolation valves (sump inlet)	R	44.840.40		R	44.840.40	R	8.152.80	R	36.687.60	82%	6	R 269.042.40	R - R 48.916.80
M19.2.10.1.d	Non return valve	R	53.948.40		R	53.948.40	R	9.308.80	R	44.139.60	82%	2	R 107.896.80	R - R 19.617.60
M19.2.11.1.a	Overflow dam inlet isolation valves	R	10.591.00		R	10.591.00	R	1.737.20	R	8.853.80	84%	2	R 21.182.00	R - R 3.474.40
M19.2.11.1.b	'08 WAS inlet isolation valves	R	10.591.00		R	10.591.00	R	1.737.20	R	8.853.80	84%	2	R 21.182.00	R - R 3.474.40
M19.2.11.1.c	'24 WAS inlet isolation valves	R	10.591.00		R	10.591.00	R	1.737.20	R	8.853.80	84%	2	R 21.182.00	R - R 3.474.40
M19.2.11.1.d	WAS recycle isolation valves	R	10.591.00		R	10.591.00	R	1.737.20	R	8.853.80	84%	2	R 21.182.00	R - R 3.474.40
M19.2.11.1.e	WAS storage outlet valves	R	25.816.00		R	25.816.00	R	4.351.00	R	21.465.00	83%	2	R 51.632.00	R - R 8.702.00
M19.2.11.1.f	WAS ring main inlet isolation valves	R	26.924.00		R	26.924.00	R	4.532.40	R	22.391.60	83%	3	R 80.772.00	R - R 13.597.20
M19.2.11.1.g	Decant draw off isolation valves	R	10.488.00		R	10.488.00	R	1.737.20	R	8.750.80	83%	6	R 62.928.00	R - R 10.423.20
M19.2.11.2.a	Isolation valves (pump suction)	R	25.868.00		R	25.868.00	R	4.351.00	R	21.517.00	83%	3	R 77.604.00	R - R 13.053.00
M19.2.11.2.b	Isolation valves (pump discharge)	R	25.868.00		R	25.868.00	R	4.351.00	R	21.517.00	83%	3	R 77.604.00	R - R 13.053.00
M19.2.11.2.c	Isolation valves (flow meter)	R	19.922.00		R	19.922.00	R	3.330.20	R	16.591.80	83%	3	R 59.766.00	R - R 9.990.60
M19.2.11.2.d	Non return valve	R	52.465.00		R	52.465.00	R	8.917.00	R	43.548.00	83%	3	R 157.395.00	R - R 26.751.00
M19.2.11.3.a	Isolation valves	R	20.025.00		R	20.025.00	R	3.330.20	R	16.694.80	83%	2	R 40.050.00	R - R 6.660.40
M19.2.11.3.b	Non-return valves	R	33.741.00		R	33.741.00	R	5.685.00	R	28.056.00	83%	2	R 67.482.00	R - R 11.370.00
M19.2.11.4.a	Isolation valves	R	27.027.00		R	27.027.00	R	4.532.40	R	22.494.60	83%	2	R 54.054.00	R - R 9.064.80
M19.2.11.4.b	Isolation valves	R	25.971.00		R	25.971.00	R	4.351.00	R	21.620.00	83%	2	R 51.942.00	R - R 8.702.00
M19.2.11.5.a	Isolation valves	R	25.868.00		R	25.868.00	R	4.351.00	R	21.517.00	83%	3	R 77.604.00	R - R 13.053.00
M19.2.11.5.b	Isolation valves	R	25.868.00		R	25.868.00	R	4.351.00	R	21.517.00	83%	3	R 77.604.00	R - R 13.053.00
M19.2.11.5.c	Isolation valves	R	25.868.00		R	25.868.00	R	4.351.00	R	21.517.00	83%	3	R 77.604.00	R - R 13.053.00
M19.2.11.5.d	Non-return valves	R	52.465.00		R	52.465.00	R	8.917.00	R	43.548.00	83%	3	R 157.395.00	R - R 26.751.00
M19.2.11.6.a	Isolation valves (suction and discharge)	R	11.122.00		R	11.122.00	R	1.841.60	R	9.280.40	83%	16	R 177.952.00	R - R 29.465.60
M19.2.11.6.b	Pressure safety valve/burst disc	R	35.986.00		R	35.986.00	R	10.795.80	R	25.190.20	70%	8	R 287.888.00	R - R 86.366.40
M19.2.11.7.a	Sum of all valves associated with WAS dewatering system	R	209.759.00		R	209.759.00	R	32.186.10	R	177.572.90	85%	1	R 209.759.00	R - R 32.186.10
M19.2.11.8.a	Sum of all valves associated with WAS poly make-up system	NC			-				-		-	1	NC	NC NC
M19.2.11.9.a	Isolation valves (pump suction and discharge)	NC			-				-		-	24	NC	NC NC
M19.2.11.10.a	Sum of all valves associated with WAS poly lubrication system	NC			-				-		-	1	NC	NC NC
M19.2.11.11.a	Isolation valves (Silo bypass draw off)	R	53.274.00	R	45.324.00	R	7.950.00	R	-	R	7.950.00	100%	4	R 213.096.00	R 181.296.00 R -
M19.2.11.11.b	Isolation valves (Silo inlet)	R	53.274.00	R	45.324.00	R	7.950.00	R	-	R	7.950.00	100%	4	R 213.096.00	R 181.296.00 R -
M19.2.11.11.d	Isolation valves (Flushing port)	R	40.451.00	R	34.416.00	R	6.035.00	R	-	R	6.035.00	100%	8	R 323.608.00	R 275.328.00 R -
M19.2.11.12.a	Isolation valves (pump suction)	R	51.467.00			R	51.467.00	R	8.728.00	R	42.739.00	83%	2	R 102.934.00	R - R 17.456.00
M19.2.11.12.b	Isolation valves (pump discharge)	R	35.499.00			R	35.499.00	R	1.986.80	R	33.512.20	94%	2	R 70.998.00	R - R 3.973.60
M19.2.11.12.c	Isolation valves (flow meter)	R	35.396.00			R	35.396.00	R	5.986.80	R	29.409.20	83%	3	R 106.188.00	R - R 17.960.40
M19.2.11.12.d	Non return valve	R	86.316.00			R	86.316.00	R	14.737.20	R	71.578.80	83%	2	R 172.632.00	R - R 29.474.40
M19.2.11.13.a	Isolation valves ('08 & '24 WAS inlet)	R	25.971.00			R	25.971.00	R	4.351.00	R	21.620.00	83%	2	R 51.942.00	R - R 8.702.00
M19.2.11.13.b	Isolation valves (Primary sludge pump)	R	27.027.00			R	27.027.00	R	4.532.40	R	22.494.60	83%	2	R 54.054.00	R - R 9.064.80
M19.2.11.13.c	Isolation valves (Primary sludge storage)	R	35.499.00			R	35.499.00	R	5.986.80	R	29.512.20	83%	2	R 70.998.00	R - R 11.973.60
M19.2.11.13.d	Isolation valves (Primary sludge ring main)	R	25.971.00			R	25.971.00	R	4.351.00	R	21.620.00	83%	2	R 51.942.00	R - R 8.702.00
M19.2.11.13.e	Isolation valves (Decant draw-off)	R	25.816.00			R	25.816.00	R	4.351.00	R	21.465.00	83%	4	R 103.264.00	R - R 17.404.00
M19.2.11.14.a	Isolation valves (Suction side of pumps)	R	35.345.00			R	35.345.00	R	5.986.80	R	29.358.20	83%	4	R 141.380.00	R - R 23.947.20

M19.2.11.14 b	Isolation valves (Pump discharge)	R	25.815.00		R	25.816.00	R	4.351.00	R	21.465.00	83%	4	R	103.264.00	R	-	R	17.404.00
M19.2.11.14 c	Isolation valves (flow meter)	R	25.765.00		R	25.765.00	R	4.351.00	R	21.414.00	83%	6	R	154.590.00	R	-	R	26.106.00
M19.2.11.14 d	Non return valve	R	52.259.00		R	52.259.00	R	8.917.00	R	43.342.00	83%	4	R	209.036.00	R	-	R	35.668.00
M19.2.11.15 a	Isolation valves (pump suction	R	19.922.00		R	19.922.00	R	3.330.20	R	16.591.80	83%	3	R	59.766.00	R	-	R	9.990.60
M19.2.11.15 b	Isolation valves (pump discharge)	R	19.922.00		R	19.922.00	R	3.330.20	R	16.591.80	83%	3	R	59.766.00	R	-	R	9.990.60
M19.2.11.15 c	Isolation valves (flow meter)	R	19.922.00		R	19.922.00	R	3.330.20	R	16.591.80	83%	3	R	59.766.00	R	-	R	9.990.60
M19.2.11.15 d	Non return valve	R	33.638.00		R	33.638.00	R	5.685.00	R	27.953.00	83%	3	R	100.914.00	R	-	R	17.055.00
M19.2.11.16 a	Isolation valves (suction and discharge)	R	11.180.00		R	11.180.00	R	1.841.60	R	9.338.40	84%	16	R	178.880.00	R	-	R	29.465.60
M19.2.11.17 a	Sum of all valves associated with Primary dewatering	R	298.556.00		R	298.556.00	R	48.768.93	R	249.787.07	84%	1	R	298.556.00	R	-	R	48.768.93
M19.2.11.18 a	Sum of all valves associated with primary sludge poly make up	R	47.246.00		R	47.246.00	R	7.450.20	R	39.795.80	84%	1	R	47.246.00	R	-	R	7.450.20
M19.2.11.19 a	Isolation valves (suction and discharge)	NC			-				-		-	24	NC		NC		NC	
M19.2.11.20 a	Sum of all valves associated primary sludge poly lubrication system	NC			-				-		-	1	NC		NC		NC	
M19.2.11.21 a	Isolation valves (Silo bypass draw off)	R	53.274.00	R 45.324.00	R	7.950.00	R	-	R	7.950.00	100%	4	R	213.096.00	R	181.296.00	R	-
M19.2.11.21 b	Isolation valves (Silo inlet)	R	53.274.00	R 45.324.00	R	7.950.00	R	-	R	7.950.00	100%	4	R	213.096.00	R	181.296.00	R	-
M19.2.11.21 d	Isolation valves (Flushing port)	R	40.451.00	R 34.416.00	R	6.035.00	R	-	R	6.035.00	100%	8	R	323.608.00	R	275.328.00	R	-
M19.2.11.22 a	Isolation valves (pump suction)	R	25.971.00		R	25.971.00	R	4.351.00	R	21.620.00	83%	2	R	51.942.00	R	-	R	8.702.00
M19.2.11.22 b	Isolation valves (pump discharge)	R	20.025.00		R	20.025.00	R	3.330.20	R	16.694.80	83%	2	R	40.050.00	R	-	R	6.660.40
M19.2.11.22 c	Isolation valves (flow meter)	R	19.922.00		R	19.922.00	R	3.330.20	R	16.591.80	83%	3	R	59.766.00	R	-	R	9.990.60
M19.2.11.22 d	Non return valve	R	33.741.00		R	33.741.00	R	5.685.00	R	28.056.00	83%	2	R	67.482.00	R	-	R	11.370.00
M19.2.12.1	Valves	N/A							R	-	-	1	N/A		N/A		N/A	
M19.2.12.2	Valves	N/A							R	-	-	1	N/A		N/A		N/A	
M19.2.12.3	Valves	R	1.585.000.00		R	2.585.000.00	R	775.500.00	R	1.809.500.00	70%	1	R	2.585.000.00	R	-	R	775.500.00
M19.2.12.4	Valves	R	885.000.00		R	885.000.00	R	265.500.00	R	619.500.00	70%	1	R	885.000.00	R	-	R	265.500.00
M19.2.12.5	Valves	R	3.145.500.00		R	3.145.500.00	R	943.650.00	R	2.201.850.00	70%	1	R	3.145.500.00	R	-	R	943.650.00
M19.2.13.1.a	Isolation valves (new '08 WAS diversion chamber)	R	10.556.07		R	10.556.07	R	3.042.60	R	7.513.47	71%	2	R	21.112.14	R	-	R	6.085.20
M19.2.13.1.b	Isolation valves (RAS flowmeter chamber)	R	10.556.07		R	10.556.07	R	1.928.60	R	8.627.47	82%	2	R	21.112.14	R	-	R	3.857.20
M19.2.13.1.c	Isolation valves (pump discharge)	R	15.619.16		R	15.619.16	R	2.797.80	R	12.821.36	82%	2	R	31.238.32	R	-	R	5.595.60
M19.2.13.1.c	Isolation valves (flow meter)	R	15.473.53		R	15.473.53	R	2.797.80	R	12.675.73	82%	3	R	46.420.59	R	-	R	8.393.40
M19.2.13.1.e	Non return valve	R	19.929.66		R	19.929.66	R	3.346.40	R	16.583.26	83%	2	R	39.859.32	R	-	R	6.692.80
M23.2.15.3.a	Service water control equipment	R	5.243.00		R	5.243.00	R	1.350.00	R	3.893.00	74%	1	R	5.243.00	R	-	R	1.350.00
M23.2.15.3.b	Service water control equipment	R	5.243.00		R	5.243.00	R	1.350.00	R	3.893.00	74%	1	R	5.243.00	R	-	R	1.350.00
M23.2.15.3.c	Service water control equipment	R	5.243.00		R	5.243.00	R	1.350.00	R	3.893.00	74%	1	R	5.243.00	R	-	R	1.350.00
M23.2.15.3.d	Service water control equipment	R	5.243.00		R	5.243.00	R	1.350.00	R	3.893.00	74%	1	R	5.243.00	R	-	R	1.350.00
M23.2.15.3.e	Service water control equipment	R	5.243.00		R	5.243.00	R	1.350.00	R	3.893.00	74%	1	R	5.243.00	R	-	R	1.350.00
M22.2.2.3.a	Service water control equipment	N/A							R	-	-	1	N/A		N/A		N/A	
M24A.2.1.8	Valves	R	1.420.450.00		R	1.420.450.00	R	-	R	1.420.450.00	100%	1	R	1.420.450.00	R	-	R	-
M24B.2.1.7	Wall/channel gates	R	736.304.00		R	736.304.00	R	-	R	736.304.00	100%	1	R	736.304.00	R	-	R	-
M27.2.1.1	Wall-mounted sluice gate	R	120.756.00		R	120.756.00	R	-	R	120.756.00	100%	1	R	120.756.00	R	-	R	-
M27.2.1.2	Wall-mounted sluice gate	R	120.756.00		R	120.756.00	R	-	R	120.756.00	100%	1	R	120.756.00	R	-	R	-
M27.2.3.1.a	Sum of all valves associated with washwater supply	R	118.050.00		R	118.050.00	R	19.981.20	R	98.068.80	83%	1	R	118.050.00	R	-	R	19.981.20
M27.2.3.1.b	Isolation valves (in and outlet of screens)	R	134.161.00		R	134.161.00	R	22.941.40	R	111.219.60	83%	12	R	1.609.932.00	R	-	R	275.296.80
M27.2.3.2.a	Isolation valves (pump suction pipework)	R	116.441.00		R	116.441.00	R	19.895.80	R	96.545.20	83%	5	R	582.205.00	R	-	R	99.479.00
M27.2.3.2.b	Isolation valves (pump discharge pipework)	R	92.875.00		R	92.875.00	R	15.850.20	R	77.024.80	83%	5	R	464.375.00	R	-	R	79.251.00

[redacted]

M27.2.3.2.c	Isolation valves (flowmeter installation)	R	87.889.00		R	87.889.00	R	14.980.00	R	72.909.00	83%	3	R 263.667.00	R -	R 44.940.00
M27.2.3.2.d	Non return valve	R	377.166.00		R	377.166.00	R	64.655.40	R	312.510.60	83%	5	R 1.885.830.00	R -	R 323.277.00
M27.2.3.3.a	Isolation valves (pump suction pipework)	R	116.626.00		R	116.626.00	R	19.895.80	R	96.730.20	83%	2	R 233.252.00	R -	R 39.791.60
M27.2.3.3.b	Isolation valves (pump discharge pipework)	R	69.048.00		R	69.048.00	R	11.737.80	R	57.320.20	83%	2	R 138.096.00	R -	R 23.455.60
M27.2.3.3.c	Isolation valves (flowmeter installation)	R	64.289.00		R	64.289.00	R	10.928.60	R	53.360.40	83%	3	R 192.867.00	R -	R 32.785.80
M27.2.3.3.d	Non return valve	R	167.568.00		R	167.568.00	R	28.641.20	R	138.926.80	83%	2	R 335.136.00	R -	R 57.282.40
M27.2.3.4.a	Isolation valves	R	18.559.00		R	18.559.00	R	-	R	18.559.00	100%	8	R 148.472.00	R -	R -
M27.2.3.4.b	Sum of all other valves associated with air scour	Included in M21			-				-		70%	1	Included in M21	Included in M21	Included in M21
M27.2.3.5.a	Isolation valves	R	18.559.00		R	18.559.00	R	-	R	18.559.00	100%	8	R 148.472.00	R -	R -
M27.2.3.5.b	Sum of all other valves associated with process air	Included in M21			-				-		70%	1	Included in M21	Included in M21	Included in M21
M27.2.3.6.a	Isolation valves	R	65.982.00		R	65.982.00	R	-	R	65.982.00	100%	8	R 527.856.00	R -	R -
M27.2.3.6.b	Sum of all other valves associated with filter feed pipework	Included in M21			-				-		70%	1	Included in M21	Included in M21	Included in M21
M27.2.3.6.c	Sum of all actuators (pneumatic)	R	452.936.00		R	452.936.00	R	117.763.36	R	335.172.64	74%	1	R 452.936.00	R -	R 117.763.36
M27.2.3.7.a	Isolation valves	R	42.624.00		R	42.624.00	R	-	R	42.624.00	100%	8	R 340.992.00	R -	R -
M27.2.3.7.b	Sum of all other valves associated with filtrate	Included in M21			-				-		70%	1	Included in M21	Included in M21	Included in M21
M27.2.3.8.a	Isolation valves	R	82.574.00		R	82.574.00	R	-	R	82.574.00	100%	8	R 660.592.00	R -	R -
M27.2.3.8.b	Sum of all other valves associated with backwash pipework	Included in M21			-				-		70%	1	Included in M21	Included in M21	Included in M21
M27.2.3.8.c	Sum of all actuators (pneumatic)	R	452.936.00		R	452.936.00	R	117.763.36	R	335.172.64	74%	1	R 452.936.00	R -	R 117.763.36
M27.2.3.9.a	Isolation valves (to conditioning tank)	R	82.419.00		R	82.419.00	R	-	R	82.419.00	100%	8	R 659.352.00	R -	R -
M27.2.3.9.b	Isolation valves (to reject return sump)	R	82.419.00		R	82.419.00	R	-	R	82.419.00	100%	8	R 659.352.00	R -	R -
M27.2.3.9.c	Sum of all other valves associated with backwash discharge	Included in M21			-				-		70%	1	Included in M21	Included in M21	Included in M21
M27.2.3.10.a	Isolation valves	R	37.213.00		R	37.213.00	R	-	R	37.213.00	100%	16	R 595.408.00	R -	R -
M27.2.3.10.b	Sum of all other valves associated with CIP pipework	Included in M21			-				-		70%	1	Included in M21	Included in M21	Included in M21
M27.2.3.11.a	Isolation valves	R	18.559.00		R	18.559.00	R	-	R	18.559.00	100%	8	R 148.472.00	R -	R -
M27.2.3.11.b	Sum of all other valves associated with filtrate exhaust pipework	Included in M21			-				-		70%	1	Included in M21	Included in M21	Included in M21
M27.2.3.12.a	Sum of all valves associated with filtrate sampling and maintenance pipework	Included in M21			-				-		70%	1	Included in M21	Included in M21	Included in M21
M27.2.3.13.a	Isolation valves (pump suction pipework)	R	283.489.00		R	283.489.00	R	48.541.73	R	234.947.27	83%	2	R 566.978.00	R -	R 97.083.46
M27.2.3.13.b	Isolation valves (pump discharge	R	96.249.00		R	96.249.00	R	16.424.07	R	79.824.93	83%	4	R 384.996.00	R -	R 65.696.28
M27.2.3.13.c	Isolation valves (flowmeter installation)	R	68.945.00		R	68.945.00	R	11.727.80	R	57.217.20	83%	3	R 206.835.00	R -	R 35.183.40
M27.2.3.13.d	Non return valve	R	167.414.00		R	167.414.00	R	28.641.20	R	138.772.80	83%	2	R 334.828.00	R -	R 57.282.40
M27.2.3.13.e	Pressure safety valve	R	26.653.00	R 22.249.00	R	4.404.00	R	-	R	4.404.00	100%	1	R 26.653.00	R 22.249.00	R -
M27.2.3.14.a	Sum of all valves	R	31.975.00		R	31.975.00	R	9.592.50	R	22.382.50	70%	1	R 31.975.00	R -	R 9.592.50
M27.2.3.15.a	Sum of all valves	R	66.464.00		R	66.464.00	R	19.939.20	R	46.524.80	70%	1	R 66.464.00	R -	R 19.939.20
M27.2.3.16.a	Sum of all valves	R	50.857.00		R	50.857.00	R	15.257.10	R	35.599.90	70%	1	R 50.857.00	R -	R 15.257.10
M27.2.3.17.a	Sum of all valves	R	27.522.00		R	27.522.00	R	8.256.60	R	19.265.40	70%	1	R 27.522.00	R -	R 8.256.60
M27.2.3.18.a	Sum of all valves	R	38.545.00		R	38.545.00	R	11.563.50	R	26.981.50	70%	1	R 38.545.00	R -	R 11.563.50
M27.2.3.19.a	Isolation valves (UV bypass)	R	306.598.00		R	306.598.00	R	-	R	306.598.00	100%	1	R 306.598.00	R -	R -
M27.2.3.20.a	Isolation valves (pump suction)	R	89.943.00	R 76.751.40	R	13.191.60	R	-	R	13.191.60	100%	6	R 539.658.00	R 460.508.40	R -
M27.2.3.20.b	Isolation valves (pump discharge)	R	73.274.00	R 62.443.70	R	10.830.30	R	-	R	10.830.30	100%	6	R 439.644.00	R 374.662.20	R -
M27.2.3.20.c	Isolation valves (air valve)	R	17.342.00		R	17.342.00	R	2.851.20	R	14.490.80	84%	1	R 17.342.00	R -	R 2.851.20
M27.2.3.20.d	Isolation valves (flow meter)	R	165.149.00	R 141.306.00	R	23.843.00	R	-	R	23.843.00	100%	3	R 495.447.00	R 423.918.00	R -
M27.2.3.20.g	Air release valve	R	36.247.00		R	36.247.00	R	2.851.20	R	33.395.80	92%	1	R 36.247.00	R -	R 2.851.20
M27.2.3.20.k.i	Isolating valves	R	347.494.00		R	347.494.00	R	32.741.33	R	314.752.67	91%	2	R 694.988.00	R -	R 65.482.66
M27.2.3.20.k.ii	Isolating valve	R	476.560.00		R	476.560.00	R	-	R	476.560.00	100%	1	R 476.560.00	R -	R -
M27.2.3.20.k.iii	Isolating valve	R	93.774.00		R	93.774.00	R	-	R	93.774.00	100%	1	R 93.774.00	R -	R -
M27.2.3.20.k.iv	Isolating valves	R	347.339.00		R	347.339.00	R	32.741.33	R	314.597.67	91%	4	R 1.389.356.00	R -	R 130.965.32
M27.2.3.20.k.v	Isolating valve	R	165.663.00		R	165.663.00	R	-	R	165.663.00	100%	1	R 165.663.00	R -	R -
M27.2.3.20.k.vi	Isolating valve	R	347.308.00		R	347.308.00	R	32.741.33	R	314.566.67	91%	5	R 1.736.540.00	R -	R 163.706.65
M27.2.3.20.k.vii	Isolating valves	R	347.494.00		R	347.494.00	R	32.741.33	R	314.752.67	91%	2	R 694.988.00	R -	R 65.482.66

[redacted]

M27.2.3.20.k.viii	Isolating valve	R	11.161.00		R	11.161.00	R	1.737.20	R	9.423.80	84%	1	R 11.161.00	R -	R 1.737.20
M27.2.3.20.k.ix	Isolating valve	R	59.711.00		R	59.711.00	R	-	R	59.711.00	100%	1	R 59.711.00	R -	R -
M27.2.3.20.k.x	Isolating valve	R	69.276.00		R	69.276.00	R	-	R	69.276.00	100%	1	R 69.276.00	R -	R -
M27.2.3.20.k.xi	Isolating valves	R	10.750.00		R	10.750.00	R	1.737.20	R	9.012.80	84%	3	R 32.250.00	R -	R 5.211.60
M27.2.3.20.k.xii	Air release valves	R	26.919.00		R	26.919.00	R	4.513.00	R	22.406.00	83%	3	R 80.757.00	R -	R 13.539.00
M27.2.3.21.a	Isolation valves (pump suction & discharge)	R	29.529.00		R	29.529.00	R	-	R	29.529.00	100%	1	R 29.529.00	R -	R -
M27.2.3.21.b	Isolation valves (pump suction manifold)	Included in M23							R	-	70%	10	Included in M23	Included in M23	Included in M23
M27.2.3.21.c	Isolation valves (flow meter)	R	24.333.00		R	24.333.00	R	-	R	24.333.00	100%	3	R 72.999.00	R -	R -
M27.2.3.21.d	Non return valve	Included in M23							R	-	70%	5	Included in M23	Included in M23	Included in M23
M27.2.3.22.a	Isolation valves (pump suction & discharge)	R	110.565.00		R	110.565.00	R	18.872.93	R	91.692.07	83%	3	R 331.695.00	R -	R 56.618.78
M27.2.3.22.b	Isolation valves (flow meter)	R	51.471.00		R	51.471.00	R	8.728.00	R	42.743.00	83%	3	R 154.413.00	R -	R 26.184.00
M27.2.3.22.c	Non return valve	R	86.392.00		R	86.392.00	R	14.737.20	R	71.654.80	83%	5	R 431.960.00	R -	R 73.686.00

(C20) Total tender value R 88.967.114.84

(C21) Total exempt import content R 6.402.718.54

(C22) Total tender value net of exempt import content R 82.564.396.30

(C23) [redacted] Total imported content R 9.113.022.76

(C24) Total local content R 73.451.373.54

(C25) Average local content % of tender 89%

[redacted]

CITY OF CAPE TOWN

WATER AND SANITATION

CONTRACT NO. 146Q/2021/22

DESIGN – BUILD OF MECHANICAL AND ELECTRICAL WORKS FOR THE UPGRADE AND EXPANSION OF POTSDAM WASTEWATER TREATMENT PLANT

SCHEDULE 22.6: DECLARATION CERTIFICATE FOR LOCAL PRODUCTION AND CONTENT FOR DESIGNATED SECTORS

This declaration is based on and replaces Municipal Bid Document 6.2 (MBD 6.2).
The amendments made to the MBD 6.2 document have been necessary to clarify this standard document as it relates to local production and content in the designated sector.

Before completing this declaration, bidders must study the General Conditions, Definitions, Directives applicable in respect of Local Content as prescribed in the Preferential Procurement Regulations, 2017 and the South African Bureau of Standards (SABS) approved technical specification number SATS 1286:2011 (Edition 1) and the Guidance on the Calculation of Local Content together with the Local Content Declaration Templates [Annex C (Local Content Declaration: Summary Schedule), D (Imported Content Declaration: Supporting Schedule to Annex C) and E (Local Content Declaration: Supporting Schedule to Annex C)].

Documents listed herein are downloadable from the dtic's official website, http://www.thedtic.gov.za.

This schedule must be completed by tenderers and returned with their tender at the closing date and time for this tender.

1. General Conditions

1.1 Preferential Procurement Regulations, 2017 (Regulation 8) makes provision for the promotion of local production and content.

1.2 Regulation 8(2) prescribes that in the case of designated sectors, organs of state must advertise such with the specific bidding condition that only locally produced goods with a stipulated minimum threshold for local production and content will be considered.

1.3 Where necessary, for tenders referred to in paragraph 1.2 above, a two stage bidding process may be followed, where the first stage involves a minimum threshold for local production and content and the second stage price and B-BBEE..

1.4 A person awarded a contract in relation to a designated sector, may not sub-contract in such a manner that the local production and content of the overall value of the contract is reduced to below the stipulated minimum threshold.

1.5 The local content (LC) expressed as a percentage of the bid price must be calculated in accordance with the SABS approved technical specification number SATS 1286. 2011 as follows.

$$LC = [1- x / y] * 100$$

Where
- x is the imported content in Rand
- y is the bid price in Rand excluding value added tax (VAT)

Prices referred to in the determination of x must be converted to Rand (ZAR) by using the exchange rate published by Nedbank 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.thedtic.gov.za at no cost.

1.6 A bid may 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.

[redacted]

SCHEDULE 22.6: DECLARATION CERTIFICATE FOR LOCAL PRODUCTION AND CONTENT FOR DESIGNATED SECTORS (Cont'd)

2. **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
Air Insulated MV Switchgear	**50% [TOTAL]**
Instrument Transformers	**15%**
Busbars	**5%**
Housing	**25%**
Switching Devices	**5%**

3. 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	

3.1 If yes, the rate(s) of exchange to be used in this bid to calculate the local content as prescribed in paragraph 1.5 of the above General Conditions must be the rate(s) published by [redacted] 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	15,81
Pound Sterling	20.48
Euro	17,93
Yen	
Other	

NB: Suppliers must submit proof of the [redacted]te(s) of exchange used.

4. Where, after the award of a bid, challenges are experienced in meeting the stipulated minimum threshold for local content the dtic must be informed accordingly in order for the dtic to verify and in consultation with the CCT provide directives in this regard.

[redacted]

CITY OF CAPE TOWN

WATER AND SANITATION

CONTRACT NO. 146Q/2021/22

DESIGN – BUILD OF MECHANICAL AND ELECTRICAL WORKS FOR THE UPGRADE AND EXPANSION OF POTSDAM WASTEWATER TREATMENT PLANT

SCHEDULE 22.6: 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. 146Q/2021/2022

ISSUED BY: (Procurement Authority / Name of Municipality / Municipal Entity):
City of Cape Town - Water and Sanitation

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.thedtic.gov.za. Bidders should first complete Declaration D. After completing Declaration D, bidders should complete Declaration E and then consolidate the information on Declaration C. **Declaration C should be submitted with the bid documentation at the closing date and time of the bid in order to substantiate the declaration made in paragraph (c) below.** Declarations D and E should be kept by the bidders for verification purposes for a period of at least 5 years. The successful bidder is required to continuously update Declarations C, D and E with the actual values for the duration of the contract.

I, the undersigned, [redacted] (full names),
do hereby declare, in my capacity as Authorised Signatory
of PCJ-INENZO-RAUBEX-DEVCO JECH Consortium (name of bidder entity), the following:

(a) The facts contained herein are within my own personal knowledge.
(b) I have satisfied myself that:
  (vi) the goods to be delivered in terms of the above-specified bid comply with the minimum local content requirements as specified in the bid, and as measured in terms of SATS 1286:2011;
(c) The local content percentages (%) indicated below has been calculated using the formula given in clause 3 of SATS 1286:2011, the rates of exchange indicated in paragraph 4.1 above and the information contained in Declaration D and E which has been consolidated in Declaration C;

Bid price, excluding VAT (y)	R 31 123 371
Imported content (x), as calculated in terms of SATS 1286:2011	R 13 401 [illegible]
Stipulated minimum threshold for local content (paragraph 2 above)	50 %
Local content %, as calculated in terms of SATS 1286:2011	56.94%

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 3.1 above and the information contained in Declaration D and E.

(d) I accept that the Procurement Authority / Municipality /Municipal Entity has the right to request that the local content be verified in terms of the requirements of SATS 1286:2011.
(e) I understand that the awarding of the bid is dependent on the accuracy of the information furnished in this application. I also understand that the submission of incorrect data, or data that are not verifiable as described in SATS 1286:2011, may result in the Procurement Authority / Municipal / Municipal Entity imposing any or all of the remedies as provided for in Regulation 14 of the Preferential Procurement Regulations, 2017 promulgated under the Preferential Policy Framework Act (PPPFA), 2000 (Act No. 5 of 2000).
(f)

SIGNATURE: [redacted] DATE: 28/04/2022

WITNESS No. 1 DATE: 28/04/2022

WITNESS No. 2 DATE: 28/04/2022

[redacted]

Annex C

Local Content Declaration - Summary Schedule

(C1)	Tender No.	1460/2021/22
(C2)	Tender description:	Design-build of upgrade and expansion of Potsdam WWTP
(C3)	Designated product(s)	Air Insulated MV Switchgear
(C4)	Tender Authority:	City of Cape Town - Water and Sanitation
(C5)	Tendering Entity name:	PCI-INENZO-RAUBEX-DEVCOTECH Consortium
(C6)	Tender Exchange Rate:	USD ~~Rate~~ R 15-31 EU GBP
(C7)	Specified local content %	50%

Note: VAT to be excluded from all calculations

Calculation of local content								Tender summary			
Tender item no's	List of items	Tender price - each (excl VAT)	Exempted imported value	Tender value net of exempted imported content	Imported value	Local value	Local content % (per item)	Tender Qty	Total tender value	Total exempted imported content	Total imported content
(C8)	(C9)	(C10)	(C11)	(C12)	(C13)	(C14)	(C15)	(C16)	(C17)	(C18)	(C19)
E15.2.1	Supply and delivery to site of medium voltage accessories(Refer to project specification PSEMVS)	R -	R 0.00	R 0.00	R 0.00	R 0.00	100%	1	R 0.00	R 0	R 0
E.2.2.1	A/S DISTRIBUTION FEEDER PANEL (Items A1.1 (SAP 200010692), B1.1 (SAP Mat No TBA)) (6 + 2 spare)	R 472.117.75	R 0.00	R 472.117.75	R 325.761.24	R 146.356.51	31%	8.0	R 3.776.942.00	R 0	R 2.606.090
E.2.2.2	A/S MAIN SUBSTATION 1250 A INCOMER PANEL (Items A1.7 (SAP 200015074)	R 666.492.00	R 0.00	R 666.492.00	R 459.879.48	R 206.612.52	31%	3.0	R 1.999.476.00	R 0	R 1.379.638

		Calculation of local content						Tender summary			
Tender item no's	List of items	Tender price - each (excl VAT)	Exempted imported value	Tender value net of exempted imported content	Imported value	Local value	Local content % (per item)	Tender Qty	Total tender value	Total exempted imported content	Total imported content
(C8)	(C9)	(C10)	(C11)	(C12,	(C13)	(C14)	(C15)	(C16)	(C17)	(C18)	(C19)
E.2.2.3	AIS DISTRIBUTION BUS-SECTION PANEL (Items A1.3 (SAP Mat No 200010698), B1.3 (SAP Mat No TBA)	R 439.709.33	R 0.00	R 439.709.33	R 303.399.43	R 136.309.90	31%	3.0	R 1.319.127.99	R 0	R 910.198
E.2.2.4	AIS 1250 A BUSBAR RISER PANEL (Items A1.4 (SAP Mat No 200010700), B1.4 (SAP Mat No TBA))	R 211.865.33	R 0.00	R 211.865.33	R 129.237.85	R 82.627.48	39%	3	R 635.595.99	R 0	R 387.714
E.2.2.5	AIS 1250 A BUSBAR EARTHING PANEL (Items A1.5 (SAP Mat No 200010701), B1.5 (SAP Mat No TBA))	R 229.876.00	R 0.00	R 229.876.00	R 140.224.36	R 89.651.64	39%	1	R 229.876.00	R 0	R 140.224
E.2.2.6	AIS DISTRIBUTION FEEDER PANEL FOR GENERATOR INCOMER (Unigear ZS1 with D4G-25 circuit breaker)	R 542.086.50	R 0.00	R 542.086.50	R 374.039.68	R 168.046.82	31%	4	R 2.168.346.00	R 0	R 1.496.159
E.2.2.7	AIS DISTRIBUTION FEEDER PANEL FOR HARMONIC COMPENSATION	R 548.600.50	R 0.00	R 548.600.50	R 378.534.34	R 170.066.16	31%	2	R 1.097.201.00	R 0	R 757.069
E.2.2.8	VOLTAGE TRANSFORMERS FOR AIS SWITCHGEAR. 11000/V3//110/V3 V, 15 VA, Class 0,2 voltage transformers as specified for use with Main Substation Incomer panels. (SAP Mat No 200019591)	R 80.330.67	R 0.00	R 80.330.67	R 15.021.84	R 65.308.83	81%	3	R 240.992.01	R 0	R 45.066
E.7.2.1	Supply and delivery to site of medium voltage instrument transformers for Substation No.5 (refer to project specification PSEMV5)	R 29.590.00	R 0.00	R 29.590.00	R 14.203.20	R 15.386.80	52%	1	R 29.590.00	R 0	R 14.203
E.7.2.2	Supply and delivery to site of medium voltage Busbars for Substation No.5 (refer to project specification PSEMV5)	R -	R 0.00	R 0.00	R0.00	R 0.00	100%	1	R 0.00	R 0	R 0

		Calculation of local content						Tender summary			
Tender item no's	List of items	Tender price - each (excl VAT)	Exempted imported value	Tender value net of exempted imported content	Imported value	Local value	Local content % (per item)	Tender Qty	Total tender value	Total exempted imported content	Total imported content
(C8)	(C9)	(C10)	(C11)	(C12)	(C13)	(C14)	(C15)	(C16)	(C17)	(C18)	(C19)
E.7.2.3	Supply and delivery to site of medium voltage Housing for Substation No.5 (refer to project specification PSEMVS)	R 2.876.410.00	R 0.00	R 2.876.410.00	R 826.967.87	R 2.049.442.13	71%	1	R 2.876.410.00	R 0	R 826.968
E.7.2.4	Supply and delivery to site of medium voltage Switching Devices for Substation No.5 (refer to project specification PSEMVS)	R -	R 0.00	R 0.00	R 0.00	R 0.00	100%	1	R 0.00	R 0	R 0
E.15.2.2	Supply and delivery to site of medium voltage instrument transformers for Substation No.1 (refer to project specification PSEMVS)	R 29.590.00	R 0.00	R 29.590.00	R 14.203.20	R 15.386.80	52%	1	R 29.590.00	R 0	R 14.203
E.15.2.3	Supply and delivery to site of medium voltage Busbars for Substation No.1 (refer to project specification PSEMVS)	R -	R 0.00	R 0.00	R 0.00	R 0.00	100%	1	R 0.00	R 0	R 0
E.15.2.4	Supply and delivery to site of medium voltage Housing for Substation No.1 (refer to project specification PSEMVS)	R 2.876.410.00	R 0.00	R 2.876.410.00	R 826.967.87	R 2.049.442.13	71%	1	R 2.876.410.00	R 0	R 826.968
E.15.2.5	Supply and delivery to site of medium voltage Switching Devices for Substation No.1 (refer to project specification PSEMVS)	R -	R 0.00	R 0.00	R 0.00	R 0.00	100%	1	R 0.00	R 0	R 0
E.15.2.7	Supply and delivery to site of medium voltage instrument transformers for Substation No.2 (refer to project specification PSEMVS)	R 29.590.00	R 0.00	R 29.590.00	R 14.203.20	R 15.386.80	52%	1	R 29.590.00	R 0	R 14.203

Tender item no's	List of items	Calculation of local content						Tender summary			
		Tender price - each (excl VAT)	Exempted imported value	Tender value net of exempted imported content	Imported value	Local value	Local content % (per item)	Tender Qty	Total tender value	Total exempted imported content	Total imported content
(C8)	(C9)	(C10)	(C11)	(C12)	(C13)	(C14)	(C15)	(C16)	(C17)	(C18)	(C19)
E.15.2.8	Supply and delivery to site of medium voltage Busbars for Substation No.2 (refer to project specification PSEMVS)	R -	R 0.00	R 0.00	R 0.00	R 0.00	100%	1	R 0.00	R 0	R 0
E.15.2.9	Supply and delivery to site of medium voltage Housing for Substation No.2 (refer to project specification PSEMVS)	R 2.876.410.00	R 0.00	R 2.876.410.00	R 826.967.87	R 2.049.442.13	71%	1	R 2.876.410.00	R 0	R 826.968
E.15.2.10	Supply and delivery to site of medium voltage Switching Devices for Substation No.2 (refer to project specification PSEMVS)	R -	R 0.00	R 0.00	R 0.00	R 0.00	100%	1	R 0.00	R 0	R 0
E.15.2.12	Supply and delivery to site of medium voltage instrument transformers for Substation No.3 (refer to project specification PSEMVS)	R 29.590.00	R 0.00	R 29.590.00	R 14.203.20	R 15.386.80	52%	1	R 29.590.00	R 0	R 14.203
E.15.2.13	Supply and delivery to site of medium voltage Busbars for Substation No.3 (refer to project specification PSEMVS)	R -	R 0.00	R 0.00	R 0.00	R 0.00	100%	1	R 0.00	R 0	R 0
E.15.2.14	Supply and delivery to site of medium voltage Housing for Substation No.3 (refer to project specification PSEMVS)	R 3.240.065.00	R 0.00	R 3.240.065.00	R 931.518.68	R 2.308.546.32	71%	1	R 3.240.065.00	R 0	R 931.519
E.15.2.15	Supply and delivery to site of medium voltage Switching Devices for Substation No.3 (refer to project specification PSEMVS)	R -	R 0.00	R 0.00	R 0.00	R 0.00	100%	1	R 0.00	R 0	R 0
E.15.2.17	Supply and delivery to site of medium voltage instrument transformers for Substation No.4 (refer to project specification PSEMVS)	R 29.590.00	R 0.00	R 29.590.00	R 14.203.20	R 15.386.80	52%	1	R 29.590.00	R 0	R 14.203

[redacted]

Tender item no's	List of items	Calculation of local content: Tender price - each (excl VAT)	Exempted imported value	Tender value net of exempted imported content	Imported value	Local value	Local content % (per item)	Tender summary: Tender Qty	Total tender value	Total exempted imported content	Total imported content
(C8)	(C9)	(C10)	(C11)	(C12)	(C13)	(C14)	(C15)	(C16)	(C17)	(C18)	(C19)
E.15.2.18	Supply and delivery to site of medium voltage Busbars for Substation No.4 (refer to project specification PSEMVS)	R -	R 0.00	R 0.00	R 0.00	R 0.00	100%	1	R 0.00	R 0	R 0
E.15.2.19	Supply and delivery to site of medium voltage Housing for Substation No.4 (refer to project specification PSEMVS)	R 7.638.570.00	R 0.00	R 7.638.570.00	R 2.196.088.87	R 5.442.481.13	71%	1	R 7.538.570.00	R 0	R 2.196.089
E.15.2.20	Supply and delivery to site of medium voltage Switching Devices for Substation No.4 (refer to project specification PSEMVS)	0	R 0.00	R 0.00	R 0.00	R 0.00	100%	1	R 0.00	R 0	R 0

(C20) Total tender value	R 31.123.371.99	
(C21) Total Exempt imported content		R 0
(C22) Total Tender value net of exempt imported content		R 31.123.371.99
(C23) Total Imported content		R 13.401.684.64
(C24) Total local content		R 17.721.687.35
(C25) Average local content % of tender		56.94%

Signature of tenderer from Annex B

[redacted]

Date: 28/04/2022

CITY OF CAPE TOWN

WATER AND SANITATION

CONTRACT NO. 146Q/2021/22

DESIGN – BUILD OF MECHANICAL AND ELECTRICAL WORKS FOR THE UPGRADE AND EXPANSION OF POTSDAM WASTEWATER TREATMENT PLANT

SCHEDULE 22.7: DECLARATION CERTIFICATE FOR LOCAL PRODUCTION AND CONTENT FOR DESIGNATED SECTORS

This declaration is based on and replaces Municipal Bid Document 6.2 (MBD 6.2).
The amendments made to the MBD 6.2 document have been necessary to clarify this standard document as it relates to local production and content in the designated sector.

Before completing this declaration, bidders must study the General Conditions, Definitions, Directives applicable in respect of Local Content as prescribed in the Preferential Procurement Regulations, 2017 and the South African Bureau of Standards (SABS) approved technical specification number SATS 1286:2011 (Edition 1) and the Guidance on the Calculation of Local Content together with the Local Content Declaration Templates [Annex C (Local Content Declaration: Summary Schedule), D (Imported Content Declaration: Supporting Schedule to Annex C) and E (Local Content Declaration: Supporting Schedule to Annex C)].

Documents listed herein are downloadable from the dtic's official website, http://www.thedtic.gov.za.

This schedule must be completed by tenderers and returned with their tender at the closing date and time for this tender.

1. General Conditions

1.1 Preferential Procurement Regulations, 2017 (Regulation 8) makes provision for the promotion of local production and content.

1.2 Regulation 8(2) prescribes that in the case of designated sectors, organs of state must advertise such with the specific bidding condition that only locally produced goods with a stipulated minimum threshold for local production and content will be considered.

1.3 Where necessary, for tenders referred to in paragraph 1.2 above, a two stage bidding process may be followed, where the first stage involves a minimum threshold for local production and content and the second stage price and B-BBEE..

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 [redacted] 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.thedtic.gov.za at no cost.

1.6 A bid may 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.

[redacted]

SCHEDULE 22.7: DECLARATION CERTIFICATE FOR LOCAL PRODUCTION AND CONTENT FOR DESIGNATED SECTORS (Cont'd)

2. **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 Cable Products	**90% [TOTAL]**
Low Voltage	90%
Low Cost Reticulation	90%
Medium Voltage	90%
ACR	90%
Optical Fibre Cables	90%
Copper Telecom Cables	90%

3. 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	

3.1 If yes, the rate(s) of exchange to be used in this bid to calculate the local content as prescribed in paragraph 1.5 of the above General Conditions must be the rate(s) published by [redacted] 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	15,31
Pound Sterling	20,48
Euro	17,58
Yen	
Other	

NB: Suppliers must submit proof of the [redacted] rate(s) of exchange used.

4. Where, after the award of a bid, challenges are experienced in meeting the stipulated minimum threshold for local content the dtic must be informed accordingly in order for the dtic to verify and in consultation with the CCT provide directives in this regard.

[redacted]

CITY OF CAPE TOWN

WATER AND SANITATION

CONTRACT NO. 146Q/2021/22

DESIGN – BUILD OF MECHANICAL AND ELECTRICAL WORKS FOR THE UPGRADE AND EXPANSION OF POTSDAM WASTEWATER TREATMENT PLANT

SCHEDULE 22.7 : 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. 146Q/2021/2022

ISSUED BY: (Procurement Authority / Name of Municipality / Municipal Entity):
City of Cape Town - Water and Sanitation
NB

1 The obligation to complete, duly sign and submit this declaration cannot be transferred to an external authorized representative, auditor or any other third party acting on behalf of the bidder.
2 Guidance on the Calculation of Local Content together with Local Content Declaration Templates (Annex C, D and E) is accessible on http://www.thedti.gov.za/industrial_development/ip.jsp. Bidders should first complete Declaration D. After completing Declaration D, bidders should complete Declaration E and then consolidate the information on Declaration C. **Declaration C should be submitted with the bid documentation at the closing date and time of the bid in order to substantiate the declaration made in paragraph (c) below.** Declarations D and E should be kept by the bidders for verification purposes for a period of at least 5 years. The successful bidder is required to continuously update Declarations C, D and E with the actual values for the duration of the contract.

I, the undersigned, [redacted] (full names),
do hereby declare, in my capacity as Authorised Signatory
of PCI-INENZO-RAUBEX-DEVCOTECH Consortium (name of bidder entity), the following:

(a) The facts contained herein are within my own personal knowledge.
(b) I have satisfied myself that:
(vii) the goods to be delivered in terms of the above-specified bid comply with the minimum local content requirements as specified in the bid, and as measured in terms of SATS 1286:2011;
(c) The local content percentages (%) indicated below has been calculated using the formula given in clause 3 of SATS 1286:2011, the rates of exchange indicated in paragraph 4.1 above and the information contained in Declaration D and E which has been consolidated in Declaration C;

Bid price, excluding VAT (y)	R 258 839 265.00
Imported content (x), as calculated in terms of SATS 1286:2011	R 25 361 915
Stipulated minimum threshold for local content (paragraph 2 above)	40 %
Local content %, as calculated in terms of SATS 1286:2011	90.20 %

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 3.1 above and the information contained in Declaration D and E.

(d) I accept that the Procurement Authority / Municipality /Municipal Entity has the right to request that the local content be verified in terms of the requirements of SATS 1286:2011.
(e) I understand that the awarding of the bid is dependent on the accuracy of the information furnished in this application. I also understand that the submission of incorrect data, or data that are not verifiable as described in SATS 1286:2011, may result in the Procurement Authority / Municipal / Municipal Entity imposing any or all of the remedies as provided for in Regulation 14 of the Preferential Procurement Regulations, 2017 promulgated under the Preferential Policy Framework Act (PPPFA), 2000 (Act No. 5 of 2000).
(f)

SIGNATURE: [redacted] DATE: 28/04/2022

WITNESS No [redacted] DATE: 28/04/2022

WITNESS No [redacted] DATE: 28/04/2022

[redacted]

Annex C

Local Content Declaration - Summary Schedule

(C1)	Tender No.	146Q/2021/22
(C2)	Tender description:	Design-build of upgrade and expansion of Potsdam WWTP
(C3)	Designated product(s)	Electrical Cable Products
(C4)	Tender Authority:	City of Cape Town - Water and Sanitation
(C5)	Tendering Entity name:	PCI-INENZO-RAUBEX-DEVCOTECH Consortium
(C6)	Tender Exchange Rate:	Pula P - EU R 17.93 GBP R -
(C7)	Specified local content %	90%

Note: VAT to be excluded from all calculations

Calculation of local content								Tender summary			
Tender item no's	List of Items	Tender price - each (excl VAT)	Exempted imported value	Tender value net of exempted imported content	Imported value	Local value	Local content % (per item)	Tender Qty	Total tender value	Total exempted imported content	Total imported content
(C8)	(C9)	(C10)	(C11)	(C12)	(C13)	(C14)	(C15)	(C16)	(C17)	(C18)	(C19)
E.1.2.10	4-Core, 2.5mm2 (No. 1) Armoured	R 65.00	R 0.00	R 65.00	R 6.50	R 58.50	90%	25	R 1.625.00	R 0	R 163
E.1.2.11	4-Core, 4mm2 (No. 1) Armoured	R 90.00	R 0.00	R 90.00	R 9.00	R 81.00	90%	30.0	R 2.700.00	R 0	R 270
E.1.2.12	12-Core, 2.5mm2 (No. 2) Armoured	R 160.00	R 0.00	R 160.00	R 16.00	R 144.00	90%	30.0	R 4.800.00	R 0	R 480
E.1.2.21	300mm2 11kV Copper PILC Cable (SAP:0171311)	R 3.400.00	R 0.00	R 3.400.00	R 340.00	R 3.060.00	90%	1.900.0	R 6.460.000.00	R 0	R 646.000
E.1.2.25	24-Core Fibre Optic Single Mode – 24-C/125 µm/1310nm wavelength, installed in 32mmØ sleeve as per Eskom requirements	R 80.00	R 0.00	R 80.00	R 7.00	R 73.00	91%	1.900	R 152.000.00	R 0	R 13.300

[redacted]

		Calculation of local content						Tender summary			
Tender item no's	List of items	Tender price - each (excl VAT)	Exempted imported value	Tender value net of exempted imported content	Imported value	Local value	Local content % (per item)	Tender Qty	Total tender value	Total exempted imported content	Total imported content
(C8)	(C9)	(C10)	(C11)	(C12)	(C13)	(C14)	(C15)	(C16)	(C17)	(C18)	(C19)
E.14.2.1.1	4000Amp (Red Phase, Blue Phase, White Phase, Black Phase) and 50% internal earth (Green/Yellow Phase) IP65 enclosed in non-ventilated copper Busbar Trunking from each transformer to each incomer. Busbars shall conform to the latest IEC 61439 (1 & 6) IS 8623 (1-2) and shall be certified. Thermoset blu-E-Coat epoxy insulation shall be used. One bus bar for each transformer.	R 22.800.00	R 0.00	R 22.800.00	R 1.824.00	R 20.976.00	92%	200	R 4.560.000.00	R 0	R 364.800
E.14.2.1.2	240mm² 4C PVC SWA PVC Cu Cable	R 2.520.00	R 0.00	R 2.520.00	R 252.00	R 2.268.00	90%	2.300	R 5.796.000.00	R 0	R 579.600
E.14.2.1.3	185mm² 4C PVC SWA PVC Cu Cable	R 2.220.00	R 0.00	R 2.220.00	R 222.00	R 1.998.00	90%	260	R 577.200.00	R 0	R 57.720
E.14.2.1.4	120mm² 4C PVC SWA PVC Cu Cable	R 1.475.00	R 0.00	R 1.475.00	R 147.50	R 1.327.50	90%	250	R 368.750.00	R 0	R 36.875
E.14.2.1.5	35mm² 4C PVC SWA PVC Cu Cable	R 450.00	R 0.00	R 450.00	R 45.00	R 405.00	90%	1.260	R 567.000.00	R 0	R 56.700
E.14.2.1.6	25mm² 4C PVC SWA PVC Cu Cable	R 320.00	R 0.00	R 320.00	R 32.00	R 288.00	90%	400	R 128.000.00	R 0	R 12.800
E.14.2.1.7	10mm² 4C PVC SWA PVC Cu Cable	R 150.00	R 0.00	R 150.00	R 15.00	R 135.00	90%	260	R 39.000.00	R 0	R 3.900
E.14.2.1.8	6mm² 4C PVC SWA PVC Cu Cable	R 100.00	R 0.00	R 100.00	R 10.00	R 90.00	90%	8.100	R 810.000.00	R 0	R 81.000
E.14.2.1.9	4mm² 4C PVC SWA PVC Cu Cable	R 75.00	R 0.00	R 75.00	R 7.50	R 67.50	90%	1.780	R 133.500.00	R 0	R 13.350
E.14.2.1.10	2.5mm² 4C PVC SWA PVC Cu Cable	R 55.00	R 0.00	R 55.00	R 5.50	R 49.50	90%	4.550	R 250.250.00	R 0	R 25.025

		Calculation of local content						Tender summary			
Tender item no's	List of items	Tender price - each (excl VAT)	Exempted Imported value	Tender value net of exempted imported content	Imported value	Local value	Local content % (per item)	Tender Qty	Total tender value	Total exempted imported content	Total imported content
(C8)	(C9)	(C10)	(C11)	(C12)	(C13)	(C14)	(C15)	(C16)	(C17)	(C18)	(C19)
E.14.2.1.11	2.5mm² 3C PVC SWA PVC Cu Cable	R 46.00	R 0.00	R 46.00	R 4.60	R 41.40	90%	26.000	R 1.196.000.00	R 0	R 119.600
E.14.2.1.12	1.5mm² 3C PVC SWA PVC Cu Cable	R 35.00	R 0.00	R 35.00	R 3.50	R 31.50	90%	4.550	R 159.250.00	R 0	R 15.925
E.14.2.1.13	70mm² Kwena Earth Cable	R 340.00	R 0.00	R 340.00	R 34.00	R 306.00	90%	2.810	R 955.400.00	R 0	R 95.540
E.14.2.1.14	10mm² Kwena Earth Cable	R 80.00	R 0.00	R 80.00	R 8.00	R 72.00	90%	18.100	R 1.448.000.00	R 0	R 144.800
E.14.2.1.15	1.5mm² x 4pr twisted PVC SWA PVC (Individually and overall screened)	R 115.00	R 0.00	R 115.00	R 11.50	R 103.50	90%	42.580	R 4.896.700.00	R 0	R 489.670
E.14.2.1.16	1.5mm² x 2pr twisted PVC SWA PVC (Individually and overall screened)	R 80.00	R 0.00	R 80.00	R 8.00	R 72.00	90%	350	R 28.000.00	R 0	R 2.800
E.14.2.1.17	1.5mm² x 12pr twisted PVC SWA PVC (Individually and overall screened)	R 310.00	R 0.00	R 310.00	R 31.00	R 279.00	90%	1.360	R 421.600.00	R 0	R 42.160
E.14.2.1.18	1.5mm² 3C PVC ALU PVC [Round Surfix] Cu Cable	R 20.00	R 0.00	R 20.00	R 2.00	R 18.00	90%	600	R 12.000.00	R 0	R 1.200
E.14.2.1.19	2.5mm² 3C PVC ALU PVC [Round Surfix] Cu Cable	R 35.00	R 0.00	R 35.00	R 3.50	R 31.50	90%	600	R 21.000.00	R 0	R 2.100
E.26.2.1.1	4000Amp [Red Phase, Blue Phase, White Phase, Black Phase] and 50% internal earth [Green/Yellow Phase] IP65 enclosed in non-ventilated copper Busbar Trunking from each transformer to each incomer. Busbars shall conform to the latest IEC 61439 (1 & 6) IS 8623 (1-2) and shall be certified. Thermoset blu-E-Coat epoxy insulation shall be used.	R 22.800.00	R 0.00	R 22.800.00	R 1.824.00	R 20.976.00	92%	420	R 9.576.000.00	R 0	R 766.080

624

		Calculation of local content						Tender summary			
Tender item no's	List of items	Tender price - each (excl VAT)	Exempted imported value	Tender value net of exempted imported content	Imported value	Local value	Local content % (per item)	Tender Qty	Total tender value	Total exempted imported content	Total imported content
(C8)	(C9)	(C10)	(C11)	(C12)	(C13)	(C14)	(C15)	(C16)	(C17)	(C18)	(C19)
E.26.2.1.2	3000Amp [Red Phase, Blue Phase, White Phase, Black Phase] and 50% interral earth [Green/Yellow Phase] IP65 enclosed in non-ventilated copper Busbar Trunking from each transformer to each Incomer. Busbars shall conform to the latest IEC 61439 (1 & 6) IS 8623 (1-2) and shall be certified. Thermoset blu-E-Coat epoxy insulation shall be used. One busbar for each transformer.	R 20.660.00	R 0.00	R 20.660.00	R 1.652.80	R 19.007.20	92%	560	R 11.569.600.00	R 0	R 925.568
E.26.2.1.3	185mm² 3C 11kV/11kV PILC SWA PVC (Table 18) Cable	R 1.860.00	R 0.00	R 1.860.00	R 186.00	R 1.674.00	90%	12.200	R 22.692.000.00	R 0	R 2.269.200
E.26.2.1.4	120mm² 3C 11kV/11kV PILC SWA PVC (Table 18) Cable	R 1.640.00	R 0.00	R 1.640.00	R 164.00	R 1.476.00	90%	600	R 984.000.00	R 0	R 98.400
E.26.2.1.5	70mm² 3C 11kV/11kV PILC SWA PVC (Table 18) Cable	R 1.410.00	R 0.00	R 1.410.00	R 141.00	R 1.269.00	90%	2.200	R 3.102.000.00	R 0	R 310.200
E.26.2.1.6	240mm² 4C PVC SWA PVC Cu Cable	2520	R 0.00	R 2.520.00	R 252.00	R 2.268.00	90%	1.500	R 3.780.000.00	R 0	R 378.000
E.26.2.1.7	185mm² 4C PVC SWA PVC Cu Cable	1915	R 0.00	R 1.915.00	R 191.50	R 1.723.50	90%	1.760	R 3.370.400.00	R 0	R 337.040
E.26.2.1.8	150mm² 4C PVC SWA PVC Cu Cable	1500	R 0.00	R 1.500.00	R 150.00	R 1.350.00	90%	4.150	R 6.225.000.00	R 0	R 622.500
E.26.2.1.9	120mm² 4C PVC SWA PVC Cu Cable	1255	R 0.00	R 1.255.00	R 125.50	R 1.129.50	90%	0	R 0.00	R 0	R 0
E.26.2.1.10	95mm² 4C PVC SWA PVC Cu Cable	1000	R 0.00	R 1.000.00	R 100.00	R 900.00	90%	9.000	R 9.000.000.00	R 0	R 900.000
E.26.2.1.11	70mm² 4C PVC SWA PVC Cu Cable	745	R 0.00	R 745.00	R 74.50	R 670.50	90%	4.740	R 3.531.300.00	R 0	R 353.130

		Calculation of local content						Tender summary			
Tender item no's	List of items	Tender price - each (excl VAT)	Exempted imported value	Tender value net of exempted imported content	Imported value	Local value	Local content % (per item)	Tender Qty	Total tender value	Total exempted imported content	Total imported content
(C8)	(C9)	(C10)	(C11)	(C12)	(C13)	(C14)	(C15)	(C16)	(C17)	(C18)	(C19)
E.26.2.1.12	50mm² 4C PVC SWA PVC Cu Cable	525	R 0.00	R 525.00	R 52.50	R 472.50	90%	17.680	R 9.282.000.00	R 0	R 928.200
E.26.2.1.13	35mm² 4C PVC SWA PVC Cu Cable	390	R 0.00	R 390.00	R 39.00	R 351.00	90%	3.560	R 1.388.400.00	R 0	R 138.840
E.26.2.1.14	25mm² 4C PVC SWA PVC Cu Cable	320	R 0.00	R 320.00	R 32.00	R 288.00	90%	5.930	R 1.897.600.00	R 0	R 189.760
E.26.2.1.15	25mm² 3C PVC SWA PVC Cu Cable	260	R 0.00	R 260.00	R 26.00	R 234.00	90%	500	R 130.000.00	R 0	R 13.000
E.26.2.1.16	16mm² 4C PVC SWA PVC Cu Cable	200	R 0.00	R 200.00	R 20.00	R 180.00	90%	5.000	R 1.000.000.00	R 0	R 100.000
E.26.2.1.17	10mm² 4C PVC SWA PVC Cu Cable	135	R 0.00	R 135.00	R 13.50	R 121.50	90%	16.080	R 2.170.800.00	R 0	R 217.080
E.26.2.1.18	10mm² 3C PVC SWA PVC Cu Cable	140	R 0.00	R 140.00	R 14.00	R 126.00	90%	15.250	R 2.135.000.00	R 0	R 213.500
E.26.2.1.19	6mm² 4C PVC SWA PVC Cu Cable	92	R 0.00	R 92.00	R 9.20	R 82.80	90%	154.300	R 14.195.600.00	R 0	R 1.419.560
E.26.2.1.20	6mm² 3C PVC SWA PVC Cu Cable	85	R 0.00	R 85.00	R 8.50	R 76.50	90%	900	R 76.500.00	R 0	R 7.650
E.26.2.1.21	4mm² 4C PVC SWA PVC Cu Cable	75	R 0.00	R 75.00	R 7.50	R 67.50	90%	1.560	R 117.000.00	R 0	R 11.700
E.26.2.1.22	2.5mm² 3C PVC SWA PVC Cu Cable	90	R 0.00	R 90.00	R 9.00	R 81.00	90%	900	R 81.000.00	R 0	R 8.100
E.26.2.1.23	2.5mm² 4C PVC SWA PVC Cu Cable	55	R 0.00	R 55.00	R 5.50	R 49.50	90%	61.030	R 3.356.650.00	R 0	R 335.665
E.26.2.1.24	2.5mm² 3C PVC SWA PVC Cu Cable	34	R 0.00	R 34.00	R 3.40	R 30.60	90%	367.410	R 12.491.940.00	R 0	R 1.249.194
E.26.2.1.25	1.5mm² 3C PVC SWA PVC Cu Cable	30	R 0.00	R 30.00	R 3.00	R 27.00	90%	56.850	R 1.705.500.00	R 0	R 170.550
E.26.2.1.26	70mm² Kwena Earth Cable	340	R 0.00	R 340.00	R 34.00	R 306.00	90%	44.850	R 15.249.000.00	R 0	R 1.524.900
E.26.2.1.27	16mm² Kwena Earth Cable	80	R 0.00	R 80.00	R 8.00	R 72.00	90%	3.090	R 247.200.00	R 0	R 24.720
E.26.2.1.28	10mm² Kwena Earth Cable	78	R 0.00	R 78.00	R 7.80	R 70.20	90%	321.110	R 25.046.580.00	R 0	R 2.504.658

		Calculation of local content						Tender summary			
Tender item no's	List of items	Tender price - each (excl VAT)	Exempted imported value	Tencer value net of exempted imported content	Imported value	Local value	Local content % (per item)	Tender Qty	Total tender value	Total exempted imported content	Total imported content
(C8)	(C9)	(C10)	(C11)	(C12)	(C13)	(C14)	(C15)	(C16)	(C17)	(C18)	(C19)
E.26.2.1.29	12C PVC SST PVC Heavy Duty Fibre Optic Cable Multimode	36	R 0.00	R 36.00	R 3.60	R 32.40	90%	82.650	R 2.975.400.00	R 0	R 297.540
E.26.2.1.30	1.5mm² x 4pr twisted PVC SWA PVC (individually and overall screened)	115	R 0.00	R 115.00	R 11.50	R 103.50	90%	466.140	R 53.606.100.00	R 0	R 5.360.610
E.26.2.1.31	1.5mm² x 2pr twisted PVC SWA PVC (individually and overall screened)	80	R 0.00	R 80.00	R 8.00	R 72.00	90%	10.000	R 800.000.00	R 0	R 80.000
E.26.2.1.32	1.5mm² x 6pr twisted PVC SWA PVC (individually and overall screened)	370	R 0.00	R 370.00	R 37.00	R 333.00	90%	300	R 111.000.00	R 0	R 11.100
E.26.2.1.33	1.5mm² x 12pr twisted PVC SWA PVC (individually and overall screened)	282	R 0.00	R 282.00	R 28.20	R 253.80	90%	20.060	R 5.656.920.00	R 0	R 565.692
E.26.2.1.34	4pr twisted PVC, Non-Woven Tape + alu Foil (Industrial CAT6)	25	R 0.00	R 25.00	R 2.50	R 22.50	90%	86.500	R 2.162.500.00	R 0	R 216.250
E.26.2.1.35	1.5mm² 3C PVC ALU PVC [Round Surfix] Cu Cable	20	R 0.00	R 20.00	R 2.00	R 18.00	90%	2.500	R 50.000.00	R 0	R 5.000
E.26.2.1.36	2.5mm² 3C PVC ALU PVC [Round Surfix] Cu Cable	35	R 0.00	R 35.00	R 3.50	R 31.50	90%	2.500	R 87.500.00	R 0	R 8.750

(C20) Total tender value	R 258.839.265.00
(C21) Total Exempt imported content	R 0
(C22) Total Tender value net of exempt imported content	R 258.839.265.00
(C23) Total Imported content	R 23.367.915
(C24) Total local content	R 233.471.350.50
(C25) Average local content % of tender	90.20%

Signature of tenderer from Annex B

[redacted]

Date: 25/04/2022

627

CITY OF CAPE TOWN

WATER AND SANITATION

CONTRACT NO. 146Q/2021/22

DESIGN – BUILD OF MECHANICAL AND ELECTRICAL WORKS FOR THE UPGRADE AND EXPANSION OF POTSDAM WASTEWATER TREATMENT PLANT

SCHEDULE 22.8: DECLARATION CERTIFICATE FOR LOCAL PRODUCTION AND CONTENT FOR DESIGNATED SECTORS

This declaration is based on and replaces Municipal Bid Document 6.2 (MBD 6.2).
The amendments made to the MBD 6.2 document have been necessary to clarify this standard document as it relates to local production and content in the designated sector.

Before completing this declaration, bidders must study the General Conditions, Definitions, Directives applicable in respect of Local Content as prescribed in the Preferential Procurement Regulations, 2017 and the South African Bureau of Standards (SABS) approved technical specification number SATS 1286:2011 (Edition 1) and the Guidance on the Calculation of Local Content together with the Local Content Declaration Templates [Annex C (Local Content Declaration: Summary Schedule), D (Imported Content Declaration: Supporting Schedule to Annex C) and E (Local Content Declaration: Supporting Schedule to Annex C)].

Documents listed herein are downloadable from the dtic's official website, http://www.thedtic.gov.za.

This schedule must be completed by tenderers and returned with their tender at the closing date and time for this tender.

1. General Conditions

1.1 Preferential Procurement Regulations, 2017 (Regulation 8) makes provision for the promotion of local production and content.

1.2 Regulation 8(2) prescribes that in the case of designated sectors, organs of state must advertise such with the specific bidding condition that only locally produced goods with a stipulated minimum threshold for local production and content will be considered.

1.3 Where necessary, for tenders referred to in paragraph 1.2 above, a two stage bidding process may be followed, where the first stage involves a minimum threshold for local production and content and the second stage price and B-BBEE..

1.4 A person awarded a contract in relation to a designated sector, may not sub-contract in such a manner that the local production and content of the overall value of the contract is reduced to below the stipulated minimum threshold.

1.5 The local content (LC) expressed as a percentage of the bid price must be calculated in accordance with the SABS approved technical specification number SATS 1286: 2011 as follows:

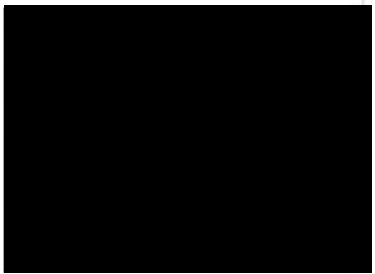
$$LC = [1- x / y] * 100$$

Where
- x is the imported content in Rand
- y is the bid price in Rand excluding value added tax (VAT)

Prices referred to in the determination of x must be converted to Rand (ZAR) by using the exchange rate published by Nedbank 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.thedtic.gov.za at no cost.

1.6 A bid may 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.



CITY OF CAPE TOWN

WATER AND SANITATION

CONTRACT NO. 146Q/2021/22

DESIGN – BUILD OF MECHANICAL AND ELECTRICAL WORKS FOR THE UPGRADE AND EXPANSION OF POTSDAM WASTEWATER TREATMENT PLANT

SCHEDULE 22.8: DECLARATION CERTIFICATE FOR LOCAL PRODUCTION AND CONTENT FOR DESIGNATED SECTORS (Cont'd)

2. **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
Transformers, Shunt Reactors and Associated Equipment	**80% [Total Minimum]**
Fabrication of the tank and parts	100%
Fabrication of the core	100%
Fabrication of the windings and assembly	100%
Oil (i.e blending, processing and handling)	100%
Accessories Category A:	100%
Radiators	
Fans	
Klosks	
Oil conservator	
Breather canisters	
Accessories Category B:	
Valves	70%
Cables	90%
Assembly and Testing	100%

3. 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	

3.1 If yes, the rate(s) of exchange to be used in this bid to calculate the local content as prescribed in paragraph 1.5 of the above General Conditions must be the rate(s) published by [redacted] 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	15.31
Pound Sterling	20.48
Euro	17.53
Yen	
Other	

NB: Suppliers must submit proof of the [redacted]ate(s) of exchange used.

4. Where, after the award of a bid, challenges are experienced in meeting the stipulated minimum threshold for local content the dtic must be informed accordingly in order for the dtic to verify and in consultation with the CCT provide directives in this regard.

[redacted]

CITY OF CAPE TOWN

WATER AND SANITATION

CONTRACT NO. 146Q/2021/22

DESIGN – BUILD OF MECHANICAL AND ELECTRICAL WORKS FOR THE UPGRADE AND EXPANSION OF POTSDAM WASTEWATER TREATMENT PLANT

SCHEDULE 22.8 : 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. 146Q/2021/2022

ISSUED BY: (Procurement Authority / Name of Municipality / Municipal Entity):
City of Cape Town - Water and Sanitation

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.thedtic.gov.za. 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, J.A.M. Cloete (full names),
do hereby declare, in my capacity as Authorised Signatory
of PCI-INENZO-RAUBEX-DEVCOTECH Consortium (name of bidder entity), the following:

(a) The facts contained herein are within my own personal knowledge.
(b) I have satisfied myself that:
(viii) the goods to be delivered in terms of the above-specified bid comply with the minimum local content requirements as specified in the bid, and as measured in terms of SATS 1286:2011;
(c) The local content percentages (%) indicated below has been calculated using the formula given in clause 3 of SATS 1286:2011, the rates of exchange indicated in paragraph 4.1 above and the information contained in Declaration D and E which has been consolidated in Declaration C;

Bid price, excluding VAT (y)	R 12 040 886
Imported content (x), as calculated in terms of SATS 1286:2011	R 2 254 457
Stipulated minimum threshold for local content (paragraph 2 above)	80 %
Local content %, as calculated in terms of SATS 1286:2011	81,28 %

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 3.1 above and the information contained in Declaration D and E.

(d) I accept that the Procurement Authority / Municipality /Municipal Entity has the right to request that the local content be verified in terms of the requirements of SATS 1286:2011.
(e) I understand that the awarding of the bid is dependent on the accuracy of the information furnished in this application. I also understand that the submission of incorrect data, or data that are not verifiable as described in SATS 1286:2011, may result in the Procurement Authority / Municipal / Municipal Entity imposing any or all of the remedies as provided for in Regulation 14 of the Preferential Procurement Regulations, 2017 promulgated under the Preferential Policy Framework Act (PPPFA), 2000 (Act No. 5 of 2000).
(f)

SIGNATURE: DATE: 28/04/2022

WITNESS No. 1 DATE: 28/04/2022

WITNESS No. 2 DATE: 28/04/2022

[redacted]

Annex C

Local Content Declaration - Summary Schedule

(C1)	Tender No.	146Q/2021/22
(C2)	Tender description:	Design-build of upgrade and expansion of Potsdam WWTP
(C3)	Designated product(s)	Transformers and Shunt Reactors
(C4)	Tender Authority:	City of Cape Town - Water and Sanitation
(C5)	Tendering Entity name:	PCI-INENZO-RAUBEX-DEVCOTECH Consortium
(C6)	Tender Exchange Rate:	USD Rate R 15 -31 EU R - GBP R -
(C7)	Specified local content %	80%

Note: VAT to be excluded from all calculations

Calculation of local content							Tender summary			
Tender item no's	List of Items	Tender price - each (excl VAT)	Exempted imported value	Tender value net of exempted imported content	Imported value	Local value	Local content % (per item)	Tender Qty	Total tender value	Total exempted imported content	Total imported content
(C8)	(C9)	(C10)	(C11)	(C12)	(C13)	(C14)	(C15)	(C16)	(C17)	(C18)	(C19)
E.17.2.1	Supply and deliver of all Substation No.1 transformers accessories (refer to project specification PSEPPT)	R 1.794.960.00	R 0.00	R 1.794.960.00	R 341.042.40	R 1.453.917.60	81%	1	R 1.794.960.00	R 0	R 341.042
E.8.2.1	Supply and deliver of all Substation No.5 transformers accessories (refer to project specification PSEPPT)		R 0.00	R 0.00	R 0.00	R 0.00	100%	1.0	R 0.00	R 0	R 0
E.8.2.2	Supply and deliver of Substation No.5 transformer tank and parts (refer to project specification		R 0.00	R 0.00	R 0.00	R 0.00	100%	1.0	R 0.00	R 0	R 0

		Calculation of local content					
Tender item no's	List of items	Tender price per UoM (excl VAT)	Exempted imported value	Tender value net of exempted imported content	Imported value	Local value	Local content % (per item)
(C8)	(C9)	(C10)	(C11)	(C12)	(C13)	(C14)	(C
E.8.2.1	Supply and deliver of all Substation No.5 transformers accessories (refer to project specification PSEPPT)	2 750 000,00	0,00	2 750 000,00	536 250,00	2 213 750,00	81%

Tender summary			
Anticipated Annual Tender Qty	Total tender value	Total exempted imported content	Total Imported content
(C	(C17)	(C18)	(C19)
1	2 750 000,00	2 750 000,00	536 250,00

		Calculation of local content						Tender summary			
Tender item no's	List of items	Tender price - each (excl VAT)	Exempted imported value	Tender value net of exempted imported content	Imported value	Local value	Local content % (per item)	Tender Qty	Total tender value	Total exempted imported content	Total imported content
(C8)	(C9)	(C10)	(C11)	(C12)	(C13)	(C14)	(C15)	(C16)	(C17)	(C18)	(C19)
E.8.2.3	Supply and deliver of Substation No.5 transformer core and parts (refer to project specification PSEPPT)		R 0.00	R 0.00	R 0.00	R 0.00	100%	1	R 0.00	R 0	R 0
E.17.2.2	Supply and deliver of Substation No.1 transformer tank and parts (refer to project specification PSEPPT)	R -	R 0.00	R 0.00	R 0.00	R 0.00	100%	1	R 0.00	R 0	R 0
E.17.2.3	Supply and deliver of Substation No.1 transformer core and parts (refer to project specification PSEPPT)	R -	R 0.00	R 0.00	R 0.00	R 0.00	100%	1	R 0.00	R 0	R 0
E.17.2.4	Supply and deliver of all Substation No.2 transformers accessories (refer to project specification PSEPPT)	R 1.794.960.00	R 0.00	R 1.794.960.00	R 341.042.40	R 1.453.917.60	81%	1	R 1.794.960.00	R 0	R 341.042
E.17.2.5	Supply and deliver of Substation No.2 transformer tank and parts (refer to project specification PSEPPT)	R -	R 0.00	R 0.00	R 0.00	R 0.00	100%	1	R 0.00	R 0	R 0
E.17.2.6	Supply and deliver of Substation No.2 transformer core and parts (refer to project specification PSEPPT)	R -	R 0.00	R 0.00	R 0.00	R 0.00	100%	1	R 0.00	R 0	R 0
E.17.2.7	Supply and deliver of all Substation No.3 transformers accessories (refer to project specification PSEPPT)	R 1.794.960.00	R 0.00	R 1.794.960.00	R 341.042.40	R 1.453.917.60	81%	1	R 1.794.960.00	R 0	R 341.042
E.17.2.8	Supply and deliver of Substation No.3 transformer tank and parts (refer to project specification	R -	R 0.00	R 0.00	R 0.00	R 0.00	100%	1	R 0.00	R 0	R 0

[redacted]

		Calculation of local content						Tender summary			
Tender item no's	List of items	Tender price - each (excl VAT)	Exempted imported value	Tender value net of exempted imported content	Imported value	Local value	Local content % (per item)	Tender Qty	Total tender value	Total exempted imported content	Total imported content
(C8)	(C9)	(C10)	(C11)	(C12)	(C13)	(C14)	(C15)	(C16)	(C17)	(C18)	(C19)
E.17.2.9	Supply and deliver of Substation No.3 transformer core and parts (refer to project specification PSEPPT)	R -	R 0.00	R 0.00	R 0.00	R 0.00	100%	1	R 0.00	R 0	R 0
E.17.2.10	Supply and deliver of all Substation No.4 transformers accessories (refer to project specification PSEPPT)	R 6.656.000.00	R 0.00	R 6.656.000.00	R 1.231.360.00	R 5.424.640.00	82%	1	R 6.656.000.00	R 0	R 1.231.360
E.17.2.11	Supply and deliver of Substation No.4 transformer tank and parts (refer to project specification PSEPPT)	R -	R 0.00	R 0.00	R 0.00	R 0.00	100%	1	R 0.00	R 0	R 0
E 17.2.12	Supply and deliver of Substation No.4 transformer core and parts (refer to project specification PSEPPT)	R -	R 0.00	R 0.00	R 0.00	R 0.00	100%	1	R 0.00	R 0	R 0

(C20) Total tender value	R 12.040.880.00	
(C21) Total Exempt imported content		R 0
(C22) Total Tender value net of exempt imported content		R 12.040.880.00
(C23) Total imported content		R 2.254.487
(C24) Total local content		R 9.786.392.80
(C25) Average local content % of tender		81.28%

Signature of tenderer from Annex B

[redacted]

Date: 28/04/2022

CITY OF CAPE TOWN

WATER AND SANITATION

CONTRACT NO. 146Q/2021/22

DESIGN – BUILD OF MECHANICAL AND ELECTRICAL WORKS FOR THE UPGRADE AND EXPANSION OF POTSDAM WASTEWATER TREATMENT PLANT

SCHEDULE 22.9: DECLARATION CERTIFICATE FOR LOCAL PRODUCTION AND CONTENT FOR DESIGNATED SECTORS

This declaration is based on and replaces Municipal Bid Document 6.2 (MBD 6.2).
The amendments made to the MBD 6.2 document have been necessary to clarify this standard document as it relates to local production and content in the designated sector.

Before completing this declaration, bidders must study the General Conditions, Definitions, Directives applicable in respect of Local Content as prescribed in the Preferential Procurement Regulations, 2017 and the South African Bureau of Standards (SABS) approved technical specification number SATS 1286:2011 (Edition 1) and the Guidance on the Calculation of Local Content together with the Local Content Declaration Templates [Annex C (Local Content Declaration: Summary Schedule), D (Imported Content Declaration: Supporting Schedule to Annex C) and E (Local Content Declaration: Supporting Schedule to Annex C)].

Documents listed herein are downloadable from the dtic's official website, http://www.thedtic.gov.za.

This schedule must be completed by tenderers and returned with their tender at the closing date and time for this tender.

1. General Conditions

1.1 Preferential Procurement Regulations, 2017 (Regulation 8) makes provision for the promotion of local production and content.

1.2 Regulation 8(2) prescribes that in the case of designated sectors, organs of state must advertise such with the specific bidding condition that only locally produced goods with a stipulated minimum threshold for local production and content will be considered.

1.3 Where necessary, for tenders referred to in paragraph 1.2 above, a two stage bidding process may be followed, where the first stage involves a minimum threshold for local production and content and the second stage price and B-BBEE..

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 [redacted] 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.thedtic.gov.za at no cost.

1.6 A bid may 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.

[redacted]

SCHEDULE 22 : DECLARATION CERTIFICATE FOR LOCAL PRODUCTION AND CONTENT FOR DESIGNATED SECTORS (Cont'd)

2. **The stipulated minimum threshold(s) for local production and content (refer to Annex A of SATS 1286:2011) for this bid is/are as follows:**

Description of services, works or goods	Stipulated minimum threshold
Steel Power Pylons	**100% [TOTAL]**
Steel Power Pylons	100%
Monopole Pylons	100%
Steel Substation Structures	100%
Powerline Hardware	100%
Street Lighting Steel Poles	100%
Steel Lattice Towers and Masts	100%

3. 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	✓

3.1 If yes, the rate(s) of exchange to be used in this bid to calculate the local content as prescribed in paragraph 1.5 of the above General Conditions must be the rate(s) published by [redacted] 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	n/a
Pound Sterling	
Euro	
Yen	
Other	

NB: Suppliers must submit proof of the [redacted] rate(s) of exchange used.

4. Where, after the award of a bid, challenges are experienced in meeting the stipulated minimum threshold for local content the dtic must be informed accordingly in order for the dtic to verify and in consultation with the CCT provide directives in this regard.

[redacted]

CITY OF CAPE TOWN

WATER AND SANITATION

CONTRACT NO. 146Q/2021/22

DESIGN – BUILD OF MECHANICAL AND ELECTRICAL WORKS FOR THE UPGRADE AND EXPANSION OF POTSDAM WASTEWATER TREATMENT PLANT

SCHEDULE 22.9 : 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. 146Q/2021/2022

ISSUED BY: (Procurement Authority / Name of Municipality / Municipal Entity):
City of Cape Town - Water and Sanitation
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.thedtic.gov.za. Bidders should first complete Declaration D. After completing Declaration D, bidders should complete Declaration E and then consolidate the information on Declaration C. **Declaration C should be submitted with the bid documentation at the closing date and time of the bid in order to substantiate the declaration made in paragraph (c) below**. Declarations D and E should be kept by the bidders for verification purposes for a period of at least 5 years. The successful bidder is required to continuously update Declarations C, D and E with the actual values for the duration of the contract.

I, the undersigned, [redacted] (full names),
do hereby declare, in my capacity as Authorised Signatory
of PCI-INENZO-RAUBEX-DEVCOTECH Consortium (name of bidder entity), the following:

(a) The facts contained herein are within my own personal knowledge.
(b) I have satisfied myself that:
(ix) the goods to be delivered in terms of the above-specified bid comply with the minimum local content requirements as specified in the bid, and as measured in terms of SATS 1286:2011,
(c) The local content percentages (%) indicated below has been calculated using the formula given in clause 3 of SATS 1286:2011, the rates of exchange indicated in paragraph 4.1 above and the information contained in Declaration D and E which has been consolidated in Declaration C;

Bid price, excluding VAT (y)	R [illegible]
Imported content (x), as calculated in terms of SATS 1286:2011	R 0
Stipulated minimum threshold for local content (paragraph 2 above)	100 %
Local content %, as calculated in terms of SATS 1286:2011	100 %

If the bid is for more than one product, the local content percentages for each product contained in Declaration C shall be used instead of the table above. The local content percentages for each product has been calculated using the formula given in clause 3 of SATS 1286:2011, the rates of exchange indicated in paragraph 3.1 above and the information contained in Declaration D and E.

(d) I accept that the Procurement Authority / Municipality /Municipal Entity has the right to request that the local content be verified in terms of the requirements of SATS 1286:2011.
(e) I understand that the awarding of the bid is dependent on the accuracy of the information furnished in this application. I also understand that the submission of incorrect data, or data that are not verifiable as described in SATS 1286:2011, may result in the Procurement Authority / Municipal / Municipal Entity imposing any or all of the remedies as provided for in Regulation 14 of the Preferential Procurement Regulations, 2017 promulgated under the Preferential Policy Framework Act (PPPFA), 2000 (Act No. 5 of 2000).
(f)

SIGNATURE: [redacted] DATE: 28/04/2022

WITNESS No. 1 [redacted] DATE: 28/04/2022

WITNESS No. 2 [redacted] DATE: 28/04/2022

[redacted]

Annex C

Local Content Declaration - Summary Schedule

(C1)	Tender No.	146Q/2021/22
(C2)	Tender description:	Design-build of upgrade and expansion of Potsdam WWTP
(C3)	Designated product(s)	Steel Power Pylons
(C4)	Tender Authority:	City of Cape Town - Water and Sanitation
(C5)	Tendering Entity name:	PCI-INENZO-RAUBEX-DEVCOTECH Consortium
(C6)	Tender Exchange Rate:	Pula R - EU R - GBP R -
(C7)	Specified local content %	100%

Note: VAT to be excluded from all calculations

Calculation of local content							Tender summary			
Tender item no's	List of items	Tender price - each (excl VAT)	Exempted imported value	Tender value net of exempted imported content	Imported value	Local value	Local content % (per item)	Tender Qty	Total tender value	Total exempted imported content	Total imported content
(C8)	(C9)	(C10)	(C11)	(C12)	(C13)	(C14)	(C15)	(C16)	(C17)	(C18)	(C19)
E.25.2.1	Supply and delivery to site of complete mast as specified (refer to project specification PSESLS-2)	R 102.400.00	R 0.00	R 102.400.00	R 0.00	R 102.400.00	100%	30	R 3.072.000.00	R 0	R 0
E.25.2.2	Supply and delivery to site of complete streetlight pole as specified (refer to COT)	R 77.105.00	R 0.00	R 77.105.00	R 0.00	R 77.105.00	100%	50.0	R 3.855.250.00	R 0	R 0

639

[redacted]

Calculation of local content							
Tender item no's	List of items	Tender price - each (excl VAT)	Exempted imported value	Tender value net of exempted imported content	Imported value	Local value	Local content % (per item)
(C8)	(C9)	(C10)	(C11)	(C12)	(C13)	(C14)	(C15)

Tender summary			
Tender Qty	Total tender value	Total exempted imported content	Total imported content
(C16)	(C17)	(C18)	(C19)

(C20) Total tender value R 6.927.250.00

(C21) Total Exempt imported content R 0

(C22) Total Tender value net of exempt imported content R 6.927.250.00

(C23) Total Imported content R 0

(C24) Total local content R 6.927.250.00

(C25) Average local content % of tender 100.00%

Signature of tenderer from Annex B

[redacted]

Date: 25/04/2022.

5.5 Price Basis for Resources

[redacted]

PRICE BASIS FOR RESOURCES

REFER TO ATTACHED

[redacted]

Schedule 21: Price basies for imported plant & materials

Item Nr	Description	Value in foreign currency	Foreign currency	ROE at base date	Value in Rand	Customs Surcharge	Customs Duty	Total
1.2.1	Dissolved oxygen sensors & swivel-type fixing arrangement, including common controller w	31 605,04	EUR	17,3346	547 860,72	-	-	547 860,72
1.2.2	1. Total suspended solids sensors & swivel-	25 559,25	EUR	17,3346	443 059,30	-	-	443 059,30
3.2.4	New perforated drum ultra-fine screens	692 000,00	EUR	17,3346	11 995 543,20	-	-	11 995 543,20
3.2.5	Screening press units	63 000,00	EUR	17,3346	1 092 079,80	-	-	1 092 079,80
3.5.1.3	Fine screens spares	165 000,00	EUR	17,3346	2 860 209,00	-	-	2 860 209,00
4.2.1.2	b.Drainage sump pump (complete unit)	1 063,66	EUR	17,3346	18 438,17	-	-	18 438,17
4.2.1.6	a.'24 Biological reactor A-recycle pumps	146 412,76	USD	16,0092	2 343 951,13	-	-	2 343 951,13
4.2.1.7	a.'24 Biological reactor R-recycle pumps	146 308,18	USD	16,0092	2 342 276,96	-	-	2 342 276,96
4.2.1.8	a.'24 Scum and drainage pumps	15 600,00	EUR	17,3346	270 419,76	-	-	270 419,76
4.2.1.9	a.'24 MBR tank feed pumps	348 980,00	EUR	17,3346	6 049 428,71	-	-	6 049 428,71
4.2.1.10	a.'24 MBR tank drainage pumps	48 078,90	USD	16,0092	769 704,70	-	-	769 704,70
4.2.1.12	a.'24 MBR permeate pumps	395 294,12	EUR	17,3346	6 852 265,41	-	-	6 852 265,41
4.2.1.13	a.'24 MBR service water supply pumps	117 422,71	EUR	17,3346	2 035 475,64	-	-	2 035 475,64
4.2.1.15	a.'24 MBR permeate recycle pumps	6 806,19	EUR	17,3346	117 982,51	-	-	117 982,51
4.2.1.16	b.Drainage sump pump (complete unit)	1 063,66	EUR	17,3346	18 438,17	-	-	18 438,17
4.2.1.17	a.Overflow dam recycle pumps	17 284,19	EUR	17,3346	299 614,45	-	-	299 614,45
4.2.1.31	General drainage sump pumps as per	30 971,74	EUR	17,3346	536 882,80	-	-	536 882,80
4.2.1.32	Groundwater drainage pumps as per	4 424,53	EUR	17,3346	76 697,54	-	-	76 697,54
5.2.1	.1.'24 Anaerobic zone mixers complete with motor	226 530,67	EUR	17,3346	3 926 818,49	-	-	3 926 818,49
5.2.1	.2.'24 Anoxic zone mixers complete with motor	181 276,67	EUR	17,3346	3 142 358,51	-	-	3 142 358,51
Section M6	Drywell on mixers output shaft as specified	76 772,00	EUR	17,3346	1 330 811,91	-	-	1 330 811,91
7.2.1	.3.Air pipework inside blower house	464 000,00	GDP	20,6356	9 574 918,40	-	-	9 574 918,40
7.2.1	.1.Air blower complete as per specification	114 614,00	USD	16,0092	1 834 878,45	-	-	1 834 878,45
7.2.1	.1.Air blower complete as per specification	12 305,00	EUR	17,3346	213 302,25	-	-	213 302,25
7.5.1	and/or are required for the proper, safe and effective	28 000,00	GDP	20,6360	577 808,00	-	-	577 808,00
8.2.2	.1.Fine bubble diffused aeration system	290 449,00	EUR	17,3346	5 034 817,29	-	-	5 034 817,29
8.2.8	actuator with modulating function for feeder line.,	27 898,65	USD	16,0092	446 634,99	-	-	446 634,99
8.2.10	Air flow meters with integrated display.,	9 192,07	EUR	17,3346	159 340,81	-	-	159 340,81
8.2.13	Dissolved oxygen sensors & swivel-type fixing.,	37 924,29	EUR	17,3346	657 402,41	-	-	657 402,41
9.2.1.1	.'08 Ferric chloride dosing pumps	6 489,37	EUR	17,3346	112 490,66	-	-	112 490,66
9.2.2.1	.'24 Ferric chloride dosing pumps	8 652,43	EUR	17,3346	149 986,49	-	-	149 986,49
10.1.1	MBR system design	260 000,00	EUR	17,3346	4 506 996,00	-	-	4 506 996,00
10.1.2	MBR system commissioning	183 253,00	EUR	17,3346	3 176 617,45	-	-	3 176 617,45
10.2.1.1	Membrane tank filtration trains	4 903 570,67	EUR	17,3346	85 001 436,14	-	-	85 001 436,14
10.2.1.3	Membrane integrity testing equipment	4 000,00	EUR	17,3346	69 338,40	-	-	69 338,40
10.2.1.4	On-line performance and process monitoring	65 000,00	EUR	17,3346	1 126 749,00	-	-	1 126 749,00
10.2.2.1	Air blower complete as per specification	448 000,00	GBP	20,6356	9 244 748,80	-	-	9 244 748,80
10.2.2.1	Air blower complete as per specification	81 055,00	USD	16,0092	1 297 625,71	-	-	1 297 625,71
10.2.2.1	Air blower complete as per specification	12 305,00	EUR	17,3346	213 302,25	-	-	213 302,25
10.2.3.1	Compressors	73 183,49	EUR	17,3346	1 268 606,55	-	-	1 268 606,55
10.2.5.1	Sodium Hypo dosing pumps	35 798,13	EUR	17,3346	620 546,19	-	-	620 546,19
10.2.6.1	Citric Acid dosing pumps	11 932,62	EUR	17,3346	206 847,15	-	-	206 847,15
10.5.1.2	Air scour blower spares	26 000,00	GBP	20,6356	536 525,60	-	-	536 525,60
11.2.1	1. Closed vessel UV disinfection reactors	1 533 944,07	USD	16,0092	24 557 217,41	-	-	24 557 217,41
11.2.1	1. Open Channel UV disinfection reactors	1 351 433,39	USD	16,0092	21 635 367,48	-	-	21 635 367,48
19.2.1	.10.Open close actuators (electric) for channel-	168 585,65	GBP	20,6356	3 478 866,14	-	-	3 478 866,14
19.2.2	.17.Open close actuators (electric) for channel-	134 793,04	GBP	20,6356	2 781 535,25	-	-	2 781 535,25
19.2.3	.8.Modulating actuators (electric) for overflow	84 204,90	GBP	20,6356	1 737 618,65	-	-	1 737 618,65
19.2.8	.c) Actuators for valves 19.2.8.2.a and 19.2.8.2.b	26 121,95	GBP	20,6356	539 042,14	-	-	539 042,14
19.2.8	.d) Actuators (electric)	62 673,94	GBP	20,6356	1 293 314,39	-	-	1 293 314,39
19.2.8	.f) Actuators (electric)	34 876,08	GBP	20,6356	719 688,85	-	-	719 688,85
19.2.8	.b) Actuators (electric)	31 336,97	GBP	20,6356	646 657,19	-	-	646 657,19
Section 22	Instruments	1 370 735,66	EUR	17,3346	23 761 171,68	-	-	23 761 171,68
	All E&H flowmeters in BOC	178 946,78	CHF	17,0940	3 058 916,29	-	-	3 058 916,29
	Shipping overseas - 40x40ft containers	413 793,10	USD	16,0092	6 624 496,55	-	-	6 624 496,55
	Total				263 935 127,85			263 935 127,85

FILL IN THE ROE AS PER BELOW	
RATE OF EXCHANGE 7 DAYS BEFORE TENDER CLOSING (Normally)	
USD	R 15.16
EURO	R 16.65
CHF	R 17.09
GBP	R 19.93

VALUES OF IMPORTED EQUIPMENT as Sub-Clause 13.8.1.3.2 of the Particular Conditions., to be adjusted in terms of Sub-Clauses 13.8.1.3.4 and 13.8.2							CUSTOMS DUTY		SURCHARGE		
Schedule of quantities item	Description of equipment	Value in Foreign Currency (A)	Currency	Rate of exchange (B)		Value in Rand (A) x (B) (C)	%	Rand (D)	%	Rand (E)	Total in Rand of (C) + (D) + (E) included in Bill of Quantities item (F)
1.2.12	Screen Spares	4589.57	EURO	17.3346	R	79.558.43					R 79.558.43
1.4.13	Belt press spares	393568.07	EURO	17.3346	R	6.822.345.00					R 6.822.345.00
1.4.13	Strain Press Spares	2109.31	Euro	17.3346	R	36.564.00					R 36.564.00
1.4.13	Dewatering Wash water supply pumps spares	106.63	EURO	17.3346	R	1.848.36					R 1.848.36
1.4.13	.22 WAS Dewatering feed pumps spares	63615.83	EURO	17.3346	R	1.102.754.96					R 1.102.754.96
1.4.13	.23 Primary sludge dewatering feed pumps spares	31639.62	EURO	17.3346	R	548.460.14					R 548.460.14
1.4.13	.24 Primary sludge cake pumps spares	81456.33	EURO	17.3346	R	1.412.012.84					R 1.412.012.84
1.4.13	.25 WAS cake pump spares	81456.33	EURO	17.3346	R	1.412.012.84					R 1.412.012.84
1.4.13	.26 WAS poly dosing pumps spares	9124.36	EURO	17.3346	R	158.167.20					R 158.167.20
1.4.13	.27 Primary sludge poly dosing pumps spares	9124.36	EURO	17.3346	R	158.167.20					R 158.167.20
1.4.15	Belt press spares	161424.15	EURO	17.3346	R	2.798.223.00					R 2.798.223.00
1.4.15	Dewatering Wash water supply pumps spares	1451.38	EURO	17.3346	R	25.159.06					R 25.159.06
3.2.3	New mechanical perforated plate screen, including control panel and electrical connection	340530.21	EURO	17.3346	R	5.902.954.97					R 5.902.954.97
3.2.10	Bonfiglioli Gearbox C 36 2 UFB 14.8 P90 V1	5000.68	EURO	17.3346	R	86.684.79					R 86.684.79
3.2.10	Busch Blower	36981.16	EURO	17.3346	R	641.053.60					R 641.053.60
3.5.1	.2 Perforated plate conveyor screens operational spares	73316.24	EURO	17.3346	R	1.270.907.67					R 1.270.907.67
4.2.1	.1 .a Emergency overflow recycle pumps	16898.76	USD	16.0092	R	270.535.62					R 270.535.62
4.2.1	.b Motors associated with pumps	3616.38	USD	16.0092	R	57.895.33					R 57.895.33
4.2.1	.a Primary sludge storage tank feed pumps	30570.06	USD	16.0092	R	489.402.20					R 489.402.20
4.2.1	.b Drainage sump pump (complete unit)	918.21	EURO	17.3346	R	15.916.87					R 15.916.87
4.2.1	.c Motors associated with pumps	3616.38	USD	16.0092	R	57.895.33					R 57.895.33
4.2.1	.11 .a '24 WAS pumps	9959.74	USD	16.0092	R	159.447.42					R 159.447.42
4.2.1	.b Motors associated with pumps	1808.19	USD	16.0092	R	28.947.66					R 28.947.66
4.2.1	.14 .a 24 Dewatering wash water supply pumps	87524.96	EURO	17.3346	R	1.517.210.09					R 1.517.210.09
4.2.1	.18. a '24 WAS recycle pumps	51985.35	USD	16.0092	R	832.243.91					R 832.243.91
4.2.1	.b Motors associated with pumps	4702.96	USD	16.0092	R	75.290.65					R 75.290.65
4.2.1	.19.a WAS ring main pumps	45858.46	USD	16.0092	R	734.157.21					R 734.157.21
4.2.1	.b Motors associated with pumps	7153.00	USD	16.0092	R	114.513.76					R 114.513.76
4.2.1	.20. a Primary sludge storage tank mixing pumps	45858.46	USD	16.0092	R	734.157.21					R 734.157.21
4.2.1	.b Motors associated with pumps	10357.02	USD	16.0092	R	165.807.60					R 165.807.60
4.2.1	.21. a Primary sludge dewatering ring main pumps	47004.55	USD	16.0092	R	752.505.22					R 752.505.22
4.2.1	.b Motors associated with pumps	7153.00	USD	16.0092	R	114.513.76					R 114.513.76
4.2.1	.22. a WAS dewatering feed pumps	218488.95	EURO	17.3346	R	3.787.418.47					R 3.787.418.47
4.2.1	.23. a Primary sludge dewatering feed pumps	103001.61	EURO	17.3346	R	1.785.491.65					R 1.785.491.65
4.2.1	.24.a. Primary sludge cake pumps	474555.62	EURO	17.3346	R	8.226.231.92					R 8.226.231.92
4.2.1	.25.a. WAS cake pumps	474555.62	EURO	17.3346	R	8.226.231.92					R 8.226.231.92
4.2.1	.26.a. WAS poly dosing pumps complete as per	46113.06	EURO	17.3346	R	799.351.48					R 799.351.48
4.2.1	.27.a. Primary sludge poly dosing pumps complete	46113.06	EURO	17.3346	R	799.351.48					R 799.351.48

4.2.1	.28.a. WAS filtrate return pumps	30572.30	USD	16.0092	R	489.438.14				R	489.438.14
4.2.1	.b Motors associated with pumps	4614.67	USD	16.0092	R	73.877.12				R	73.877.12
4.2.1	.29 .a Primary sludge filtrate return pumps	30572.30	USD	16.0092	R	489.438.14				R	489.438.14
4.2.1	.b Motors associated with pumps	3135.31	USD	16.0092	R	50.193.77				R	50.193.77
4.2.1	.30 .a '08 WAS pumps as per specification	20848.92	USD	16.0092	R	333.774.53				R	333.774.53
4.2.1	.b Motors associated with pumps	1675.53	USD	16.0092	R	26.823.86				R	26.823.86
4.2.1	.31 General drainage sump pumps as per- 1.5lps	459.11	EURO	17.3346	R	7.958.43				R	7.958.43
4.2.1	.32 Groundwater drainage pumps as per- 8 lps	2258.91	EURO	17.3346	R	39.157.31				R	39.157.31
	b) '08 RAS flowmeter chamber connection										
4.2.2	Suspended solids meter & transmitter (as per spec 54.2)- TBC if PCI to allow for	15881.41	USD	16.0092	R	254.248.65				R	254.248.65
4.5.1	.1 Emergency overflow recycle pump station spares	2703.81	USD	16.0092	R	43.285.80				R	43.285.80
4.5.1	.5 Primary sludge storage tank feed pump spares	1872.67	USD	16.0092	R	29.980.01				R	29.980.01
4.5.1	.11 '24 WAS pump stations spares	2485.01	USD	16.0092	R	39.782.98				R	39.782.98
4.5.1	.14 24 Dewatering wash water supply pump spares	3969.04	EURO	17.3346	R	68.801.71				R	68.801.71
4.5.1	.18 '24 WAS recycle pump station spares	7711.71	USD	16.0092	R	123.458.24				R	123.458.24
4.5.1	.19 WAS dewatering ring main pump station spares	3827.67	USD	16.0092	R	61.277.86				R	61.277.86
4.5.1	.20 Primary sludge storage tank mixing pump spares	3827.67	USD	16.0092	R	61.277.86				R	61.277.86
4.5.1	.21 Primary sludge dewatering ring main spares	4821.72	USD	16.0092	R	77.191.85				R	77.191.85
4.5.1	.22 WAS Dewatering feed pumps spares	71380.18	EURO	17.3346	R	1.237.346.89				R	1.237.346.89
4.5.1	.23 Primary sludge dewatering feed pumps spares	38562.49	EURO	17.3346	R	668.465.36				R	668.465.36
4.5.1	.24 Primary sludge cake pumps spares	53081.42	EURO	17.3346	R	920.145.18				R	920.145.18
4.5.1	.25 WAS cake pumps spares	53081.42	EURO	17.3346	R	920.145.18				R	920.145.18
4.5.1	.26 WAS poly dosing pumps spares	6891.03	EURO	17.3346	R	119.453.29				R	119.453.29
4.5.1	.27 Primary sludge poly dosing pumps spares	11386.12	EURO	17.3346	R	197.373.90				R	197.373.90
4.5.1	.28 WAS filtrate return pump station spares	1872.67	USD	16.0092	R	29.980.01				R	29.980.01
4.5.1	.29 Primary filtrate return pump station spares	14981.39	USD	16.0092	R	239.840.04				R	239.840.04
4.5.1	.30 '08 WAS draw-off pump station spares	3550.15	USD	16.0092	R	56.835.12				R	56.835.12
7.2.2	Coarse air blower	46281.29	EURO	17.3346	R	802.267.73				R	802.267.73
7.5.1	Blower Spares	4956.36	EURO	17.3346	R	85.916.56				R	85.916.56
8.2.1	Helical Gearunit	29135.41	EURO	17.3346	R	505.050.62				R	505.050.62
8.2.1	Mineral oil	660.48	EURO	17.3346	R	11.449.21				R	11.449.21
8.2.1	Torque tube half coupling	10315.48	EURO	17.3346	R	178.814.79				R	178.814.79
8.2.1	Motor canopy	442.17	EURO	17.3346	R	7.664.89				R	7.664.89
8.2.2	Aeration Grids -including diffusers, membranes,	7410.35	EURO	17.3346	R	128.455.54				R	128.455.54
8.2.3	Aeration Grids -Plastic pipes	3475.74	EURO	17.3346	R	60.250.49				R	60.250.49
8.2.4	Course Bubble Pipework	2833.20	EURO	17.3346	R	49.112.43				R	49.112.43
	FAT testing	36249.52	EURO	17.3346	R	628.371.00				R	628.371.00
12.2.1	.1 Sludge feed in-line solids density meters	3170.69	EURO	17.3346	R	54.962.65				R	54.962.65
12.2.1	.2 Filtrate solids density meters	3170.69	EURO	17.3346	R	54.962.65				R	54.962.65
12.2.1	Primary Belt Press	1380209.75	EURO	17.3346	R	23.925.384.00				R	23.925.384.00
12.2.1	Odour hood assembly	56477.80	EURO	17.3346	R	979.020.00				R	979.020.00
12.2.1	Valmet Bridge	11101.03	EURO	17.3346	R	192.432.00				R	192.432.00
12.2.1	Valmet TS TB Sensor	56557.73	EURO	17.3346	R	980.405.57				R	980.405.57
12.2.1	Process Coupling SS	2689.37	EURO	17.3346	R	46.619.15				R	46.619.15
12.2.1	Freight packing	1733.10	EURO	17.3346	R	30.042.61				R	30.042.61
12.2.2	.1 Sludge feed in-line solids density meters	3170.69	EURO	17.3346	R	54.962.65				R	54.962.65
12.2.2	.2 Filtrate solids density meters	3170.69	EURO	17.3346	R	54.962.65				R	54.962.65
12.2.2	Linear Screen	610190.72	EURO	17.3346	R	10.577.412.00				R	10.577.412.00
12.2.2	odour hood assembly	40802.33	EURO	17.3346	R	707.292.00				R	707.292.00
12.2.2	WAS Belt Press	1843174.00	EURO	17.3346	R	31.950.684.00				R	31.950.684.00
12.2.2	odour hood assembly	95973.83	EURO	17.3346	R	1.663.668.00				R	1.663.668.00
12.2.2	Valmet Bridge	11101.03	EURO	17.3346	R	192.432.00				R	192.432.00
12.2.2	Valmet TS TB Sensor	56557.73	EURO	17.3346	R	980.405.57				R	980.405.57
12.2.2	Process Coupling SS	2689.37	EURO	17.3346	R	46.619.15				R	46.619.15

12.2.2	Freight packing	1733.10	EURO	17.3346	R	30.042.61					R	30.042.61
12.2.3	Poly Dosing Pumps incl motor	46113.06	EURO	17.3346	R	799.351.48					R	799.351.48
12.2.3	Lubrication Pumps	26511.14	EURO	17.3346	R	459.560.08					R	459.560.08
12.2.4	Poly Dosing Pumps incl motor	46113.06	EURO	17.3346	R	799.351.48					R	799.351.48
12.2.4	Lubrication Pumps	26511.14	EURO	17.3346	R	459.560.08					R	459.560.08
12.2.1	PS train Spares	192462.05	EURO	17.3346	R	3.336.252.66					R	3.336.252.66
12.2.1	WAS train Spares	288289.89	EURO	17.3346	R	4.997.389.86					R	4.997.389.86
13.2.1	Channel Grinder	53719.46	USD	16.0092	R	860.005.64					R	860.005.64
13.2.6	Strain Press unt	233592.72	EURO	17.3346	R	4.049.236.36					R	4.049.236.36
13.2.1	Sludge Grinder spares	5819.16	USD	16.0092	R	93.160.12					R	93.160.12
13.2.1	Strain Press Spares	912.29	EURO	17.3346	R	15.814.18					R	15.814.18
15.2.1	Lifting Equipment, Crawler Hoist etc	4298.23	EURO	17.3346	R	74.508.08					R	74.508.08
15.2.2	Lifting Equipment, Crawler Hoist etc	54971.20	EURO	17.3346	R	952.903.73					R	952.903.73
15.2.16	Lifting Equipment, Crawler Hoist etc	19774.39	EURO	17.3346	R	342.781.21					R	342.781.21
15.2.17	Lifting Equipment, Crawler Hoist etc	2664.80	EURO	17.3346	R	46.193.23					R	46.193.23
15.2.19	Lifting Equipment, Crawler Hoist etc	666.20	EURO	17.3346	R	11.548.31					R	11.548.31
15.2.20	Lifting Equipment, Crawler Hoist etc	1332.40	EURO	17.3346	R	23.096.61					R	23.096.61
15.2.21	Lifting Equipment, Crawler Hoist etc	7853.03	EURO	17.3346	R	136.129.10					R	136.129.10
15.2.24	Lifting Equipment, Crawler Hoist etc	666.20	EURO	17.3346	R	11.548.31					R	11.548.31
15.2.25	Lifting Equipment, Crawler Hoist etc	820.56	EURO	17.3346	R	14.224.13					R	14.224.13
15.2.26	Lifting Equipment, Crawler Hoist etc	1641.13	EURO	17.3346	R	28.448.26					R	28.448.26
15.2.27	Lifting Equipment, Crawler Hoist etc	820.56	EURO	17.3346	R	14.224.13					R	14.224.13
19.2.1	Channel-Mounted Sluice Gate Summary	0.00	GBP	20.636								
19.2.1	.10 Open close actuators (electric) for channel-	138426.04	GBP	20.636	R	2.856.559.77					R	2.856.559.77
19.2.3	Overflow weir gates				R	-					R	-
19.2.3	.8 Modulating actuators (electric) for overflow	3687.21	GBP	20.636	R	76.089.28					R	76.089.28
19.2.5	Valves associated with inlet works system				R	-					R	-
19.2.5	c) Actuators (electric)	8308.41	GBP	20.636	R	171.452.33					R	171.452.33
19.2.5	b) Sum of all wash water connection actuators and/or solenoids required for operation as per intended use	4116.88	GBP	20.636	R	84.955.89					R	84.955.89
19.2.5	24 primary sludge recycle pump station				R	-					R	-
19.2.5	i) magnetic flow meter	3064.36	CHF	17.094	R	52.382.09					R	52.382.09
19.2.5	Strain press feed pump				R	-					R	-
19.2.5	i) magnetic flow meter	3064.36	CHF	17.094	R	52.382.09					R	52.382.09
19.2.5	24 Primary sludge storage feed pump				R	-					R	-
19.2.5	i) magnetic flow meter	4178.40	CHF	17.094	R	71.425.53					R	71.425.53
19.2.6	.5 '24 Primary sludge hydro cyclone system	6660.91	GBP	20.636	R	137.454.45					R	137.454.45
19.2.6	d) Sum of all wash water connection actuators and/or solenoids required for operation as per intended use	2424.04	GBP	20.636	R	50.022.52					R	50.022.52
19.2.6	.11 "24 MBR WAS pump station Actuators (electric)	14122.16	GBP	20.636	R	291.424.86					R	291.424.86
19.2.8	.1 '24 Biological reactor											
19.2.8	i) magnetic flow meter	7082.29	CHF	17.094	R	121.064.66					R	121.064.66
19.2.11	Valves associated with sludge management facility											
19.2.11	h) Actuators (electric)	41965.74	GBP	20.636	R	866.004.95					R	866.004.95
19.2.11	.2 WAS Ring main Pump Station				R	-					R	-
19.2.11	f) Actuators (electric)	7077.26	GBP	20.636	R	146.046.32					R	146.046.32
19.2.11	e) Modulating actuators (electric)	4757.87	GBP	20.636	R	98.183.41					R	98.183.41
19.2.11	.4'24 Emergency WAS Storage tanks				R	-					R	-
19.2.11	c) Actuators (electric)	14154.52	GBP	20.636	R	292.092.64					R	292.092.64
19.2.11	.5 '24 Emergency WAS recycle pump station				R	-					R	-
19.2.11	f) Actuators (electric)	7077.26	GBP	20.636	R	146.046.32					R	146.046.32
19.2.11	.7 '24 WAS Dewatering system				R	-					R	-
19.2.11	b) Sum of all wash water connection actuators and/or solenoids required for operation as per intended use	55480.96	GBP	20.636	R	1.144.905.01					R	1.144.905.01
19.2.11	.8 '24 WAS Poly make-up system				R	-					R	-

19.2.11	b) Sum of all wash water connection actuators and/or solenoids required for operation as per intended use	46337.31	GBP	20.636	R	956.216.71				R	956.216.71
19.2.11	.9'24 WAS Poly dosing system				R	-				R	-
19.2.6	b)actuator (electric)	20305.94	GBP	20.636	R	419.033.40				R	419.033.40
19.2.11	Magnetic flow meter	19875.61	CHF	17.094	R	339.753.66				R	339.753.66
19.2.11	.10 '24 WAS Poly lubrication system				R	-				R	-
19.2.11	c) Sum of all wash water connection actuators and/or solenoids required for operation as per intended use	12822.49	GBP	20.636	R	264.604.86				R	264.604.86
19.2.11	.11 '24 WAS sludge cake pump station				R	-				R	-
19.2.11	c) Actuators (electric)	28333.12	GBP	20.636	R	584.682.24				R	584.682.24
19.2.11	.12 '24 WAS filtrate return pump station				R	-				R	-
19.2.11	e) Magnetic flow meter	4813.78	CHF	17.094	R	82.286.70				R	82.286.70
19.2.11	.13 24 Primary sludge storage tanks				R	-				R	-
19.2.11	f) Actuators (electric)	28166.80	GBP	20.636	R	581.250.15				R	581.250.15
19.2.11	.15 '24 Primary sludge ring main pump station				R	-				R	-
19.2.11	e Modulating Actuators (electric)	4788.96	GBP	20.636	R	98.824.99				R	98.824.99
19.2.11	f) Magnetic flow meter	3541.14	CHF	17.094	R	60.532.33				R	60.532.33
19.2.11	.16 Primary sludge dewatering feed pump station				R	-				R	-
19.2.11	c) Magnetic flow meter	21436.40	CHF	17.094	R	366.433.90				R	366.433.90
19.2.11	.17 '24 Primary sludge dewatering system				R	-				R	-
19.2.11	b) Sum of all actuators and/or solenoids required for operation as per intended use	58062.85	GBP	20.638	R	1.198.184.91				R	1.198.184.91
19.2.11	.18 '24 Primary sludge poly make-up system				R	-				R	-
19.2.11	b) Sum of all actuators and/or solenoids required for operation as per intended use	55443.94	GBP	20.636	R	1.144.141.13				R	1.144.141.13
19.2.11	.19 '24 Primary sludge poly dosing system				R	-				R	-
19.2.11	b) Actuators (electric)	28700.37	GBP	20.636	R	592.260.79				R	592.260.79
19.2.11	.20 '24 Primary sludge poly lubrication system				R	-				R	-
19.2.11	b) Sum of all actuators and/or solenoids required for operation as per intended use	21776.40	GBP	20.636	R	449.377.70				R	449.377.70
19.2.11	.21 '24 Primary sludge cake pump station				R	-				R	-
19.2.11	c) Actuators (electric)	33463.69	GBP	20.636	R	690.556.79				R	690.556.79
19.2.11	.22 '24 Primary sludge filtrate return pump station				R	-				R	-
19.2.11	e) Magnetic flow meter	3541.14	CHF	17.094	R	60.532.33				R	60.532.33
21.2.1	Membrane module filtration racks	3322660.57	USD	16.0092	R	53.193.137.57				R	53.193.137.57
21.2.8	.1 Air blower complete as per specification	22803.35	EURO	17.3346	R	395.287.00				R	395.287.00
21.2.9	.1 Compressors	25172.89	EURO	17.3346	R	436.362.00				R	436.362.00
21.2.9	.2 Refrigerant driers complete	3343.60	EURO	17.3346	R	57.960.00				R	57.960.00
21.2.9	.3 Air receiver	13931.67	EURO	17.3346	R	241.500.00				R	241.500.00
21.2.9	.4 Condensate management system	680.03	EURO	17.3346	R	11.788.00				R	11.788.00
21.2.9	.6 Separator units and filter sets	4283.34	EURO	17.3346	R	74.250.00				R	74.250.00
21.2.9	.7 Pressure and air regulating equipment as	4153.54	EURO	17.3346	R	72.000.00				R	72.000.00
21.5.1	Membrane spares	27595.23	USD	16.0092	R	441.777.52				R	441.777.52
21.5.1	Air Scour equipment spares	4233.85	EURO	17.3346	R	73.392.17				R	73.392.17
21.5.1	Compressor spares	3927.43	EURO	17.3346	R	68.080.47				R	68.080.47
22.2.1	New sintered wire mesh disc micro screens including control panel and electrical connections	2034479.28	EURO	17.3346	R	35.266.884.55				R	35.266.884.55
22.5.1	Micro screens Spares	27891.67	EURO	17.3346	R	483.490.91				R	483.490.91
23.2.1	.1 .a '24 Tertiary treatment service water supply pumps	20608.03	EURO	17.3346	R	357.231.90				R	357.231.90
23.2.1	.a '24 Pressurised UF feed pumps	140844.96	USD	16.0092	R	2.254.815.08				R	2.254.815.08
23.2.1	.b Drainage sump pump (complete unit)	459.11	EURO	17.3346	R	7.958.43				R	7.958.43
23.2.1	.3 .a '24 Pressurisec UF backwash pumps	40746.06	USD	16.0092	R	652.311.79				R	652.311.79
23.2.1	.b Motors associated with pumps	13388.91	USD	16.0092	R	214.345.72				R	214.345.72
23.2.1	.b Drainage sump pump	459.11	EURO	17.3346	R	7.958.43				R	7.958.43
23.2.1	.c Motors associated with pumps	19884.50	USD	16.0092	R	318.334.88				R	318.334.88
23.2 1	.6 .a '24 Reject Return pumps	15403.75	USD	16 0092	R	246.601.69				R	246.601.69

[redacted]

23.5.1	.1 '24 Tertiary treatment service water supply spares	5494.44	EURO	17.3346	R	95.243.92				R	95.243.92
23.5.1	.2 '24 Pressurised UF feed pump station spares	50461.28	USD	16.0092	R	807.844.78				R	807.844.78
23.5.1	.6 '24 Pressurised UF reject return pump station spares	9132.40	USD	16.0092	R	146.202.37				R	146.202.37
24.2.1	1 Closed UV disinfection reactors (complete with lamps, cleaning devices, mounting, craining, valves, connections, etc.)	444669.41	USD	16.0092	R	7.118.801.54				R	7.118.801.54
24.2.1	.2 UV Panels complete with power distribution centre and system control centre	183977.31	USD	16.0092	R	2.945.329.47				R	2.945.329.47
24.2.1	.3 Equipment associated with closed vessel UV reactor	91988.65	USD	16.0092	R	1.472.664.74				R	1.472.664.74
24.2.1	.4 Automatic chemical / mechanical cleansing equipment	49060.61	USD	16.0092	R	785.421.19				R	785.421.19
24.2.1	.5 Online monitoring equipment required for dose adjustment (e.g. UVt, Temp, etc.)	61325.77	USD	16.0092	R	981.776.49				R	981.776.49
24.2.1	.6 Operator safety equipment as per manufactures recommendations	12265.15	USD	16.0092	R	196.355.30				R	196.355.30
24.2.1	Actuators (Discharge)	6396.76	GBP	20.636	R	132.003.48				R	132.003.48
24.2.1	.11 Drainage sump pump system complete with	459.11	EURO	17.3346	R	7.958.43				R	7.958.43
24.3.1	Installation .1 For item 24.2.1.1 above	3017.55	USD	16.0092	R	48.308.49				R	48.308.49
24.3.1	Installation .2 For item 24.2.1.2 above	2586.47	USD	16.0092	R	41.407.29				R	41.407.29
24.3.1	Installation .3 For item 24.2.1.3 above	1293.23	USD	16.0092	R	20.703.60				R	20.703.60
24.3.1	Installation .4 For item 24.2.1.4 above	689.73	USD	16.0092	R	11.041.99				R	11.041.99
24.3.1	Installation .5 For item 24.2.1.5 above	862.16	USD	16.0092	R	13.802.45				R	13.802.45
24.3.1	Installation .6 For item 24.2.1.6 above	172.43	USD	16.0092	R	2.760.46				R	2.760.46
24.4.1	Testing .1 For item 24.2.1.1 above	11945.40	USD	16.0092	R	191.236.27				R	191.236.27
24.4.1	Testing .2 For item 24.2.1.2 above	10238.91	USD	16.0092	R	163.916.81				R	163.916.81
24.4.1	Testing .3 For item 24.2.1.3 above	5119.46	USD	16.0092	R	81.958.40				R	81.958.40
24.4.1	Testing .4 For item 24.2.1.4 above	2730.38	USD	16.0092	R	43.711.21				R	43.711.21
24.4.1	Testing .5 For item 24.2.1.5 above	3412.97	USD	16.0092	R	54.638.94				R	54.638.94
24.4.1	Testing .6 For item 24.2.1.6 above	682.59	USD	16.0092	R	10.927.73				R	10.927.73
24.5.1	.1 For item 24.2.1.1 Spares	6202.79	USD	16.0092	R	99.301.72				R	99.301.72
24.5.1	.1 For item 24.2.1.1 Spares 3rd year	89441.20	USD	16.0092	R	1.431.882.09				R	1.431.882.09
24.5.1	.2 For item 24.2.1.2 spares	17242.17	USD	16.0092	R	276.033.37				R	276.033.37
24.5.1	.3 For item 24.2.1.3 spares	9813.63	USD	16.0092	R	157.108.45				R	157.108.45
24.5.1	.4 For item 24.2.1.4 spares	4995.43	USD	16.0092	R	79.972.76				R	79.972.76
24.5.1	.5 For item 24.2.1.5 spares	8927.52	USD	16.0092	R	142.922.49				R	142.922.49
24.5.1	.6 For item 24.2.1.6 spares	354.45	USD	16.0092	R	5.674.44				R	5.674.44
24B.1.1	Provision of designs drawings and technical information for the '24 UF UV disinfection system				R	-				R	-
24B.2.1	.1 Open Channel UV disinfection reactors (complete with lamps, cleaning devices, mounting, connections, etc.)	359622.25	USD	16.0092	R	5.757.264.52				R	5.757.264.52
24B.2.1	.2 UV Panels complete with power distribution centre and system control centre	146295.78	USD	16.0092	R	2.342.078.34				R	2.342.078.34
24B.2.1	.3 Equipment associated with open channel UV reactor system	73147.89	USD	16.0092	R	1.171.039.17				R	1.171.039.17
24B.2.1	.4 Automatic chemical / mechanical cleansing equipment	39012.21	USD	16.0092	R	624.554.23				R	624.554.23
24B.2.1	Yearly chemical cleaning costs (Acticlean gel- 0.06m3/year as per technical data sheet)				R	-				R	-
24B.2.1	.5 Online monitoring equipment required for dose adjustment (e.g. UVt, Temp, etc.)	48765.26	USD	16.0092	R	780.692.78				R	780.692.78
24B.2.1	.6 Operator safety equipment as per manufactures recommendations	9753.05	USD	16.0092	R	156.138.56				R	156.138.56
24B.2.1	Actuators inlet & outlet	12793.51	GBP	20.636	R	264.006.96				R	264.006.96
24B.3.1	Installation.1 For item 24.2.1.1 above	3191.14	USD	16.0092	R	51.087.63				R	51.087.63
24B.3.1	Installation.2 For item 24.2.1.2 above	2735.27	USD	16.0092	R	43.789.44				R	43.789.44
24B.3.1	Installation .3 For item 24.2.1.3 above	1367.63	USD	16.0092	R	21.894.72				R	21.894.72
24B.3.1	Installation.4 For item 24.2.1.4 above	729.41	USD	16.0092	R	11.677.25				R	11.677.25
24B.3.1	Installation.5 For item 24.2.1.5 above	911.76	USD	16.0092	R	14.596.53				R	14.596.53
24B.3.1	Installation .6 For item 24.2.1.6 above	182.35	USD	16.0092	R	2.919.28				R	2.919.28

24B.4.1	Testing.1 For item 24.2.1.1 above	9265.77	USD	16.0092	R	148.337.53				R	148.337.53
24B.4.1	Testing.2 For item 24.2.1.2 above	7942.09	USD	16.0092	R	127.146.45				R	127.146.45
24B.4.1	Testing.3 For item 24.2.1.3 above	3971.04	USD	16.0092	R	63.573.23				R	63.573.23
24B.4.1	Testing.4 For item 24.2.1.4 above	2117.89	USD	16.0092	R	33.905.78				R	33.905.78
24B.4.1	Testing.5 For item 24.2.1.5 above	2647.36	USD	16.0092	R	42.382.15				R	42.382.15
24B.4.1	Testing.6 For item 24.2.1.6 above	529.47	USD	16.0092	R	8.476.37				R	8.476.37
24B.5.1	.1 For item 24.2.1.1 Spares	13911.58	USD	16.0092	R	222.713.34				R	222.713.34
24B.5.1	.1 For item 24.2.1.1 Spares 3rd year	73941.41	USD	16.0092	R	1.183.742.87				R	1.183.742.87
24B.5.1	.2 For item 24.2.1.2 spares	21783.07	USD	16.0092	R	348.729.55				R	348.729.55
24B.5.1	.3 For item 24.2.1.3 spares	11877.42	USD	16.0092	R	190.147.94				R	190.147.94
24B.5.1	.4 For item 24.2.1.4 spares	6137.45	USD	16.0092	R	98.255.59				R	98.255.59
24B.5.1	.5 For item 24.2.1.5 spares	9890.05	USD	16.0092	R	158.331.77				R	158.331.77
24B.5.1	.6 For item 24.2.1.6 spares	794.95	USD	16.0092	R	12.726.47				R	12.726.47
24B.6	In situ chemical cleaning requirements as per DMS 26.4.5.1 (from TOP to 12 months after the DLP) Acticlean gel- 0.08m3/year as per technical data sheet	795.44	USD	16.0092	R	12.734.40				R	12.734.40
26 2.2	Lifting Equipment, Crawler Hoist etc	20333.87	EURO	17.3346	R	352.479.49				R	352.479.49
26 2.3	Lifting Equipment, Crawler Hoist etc	666.20	EURO	17.3346	R	11.548.31				R	11.548.31
26 2.4	Lifting Equipment, Crawler Hoist etc	26898.86	EURO	17.3346	R	466.280.93				R	466.280.93
26 2.4	Lifting Equipment, Crawler Hoist etc	653.75	EURO	17.3346	R	11.332.51				R	11.332.51
26 2.5	Lifting Equipment, Crawler Hoist etc	1332.40	EURO	17.3346	R	23.096.61				R	23.096.61
26 2.6	Lifting Equipment, Crawler Hoist etc	871.41	EURO	17.3346	R	15.105.47				R	15.105.47
26 2.7	Lifting Equipment, Crawler Hoist etc	871.41	EURO	17.3346	R	15.105.47				R	15.105.47
26 2.8	Closed Channel	666.20	EURO	17.3346	R	11.548.31				R	11.548.31
26 2.8	Open Channel				R	-				R	-
26 2.9	Lifting Equipment, Crawler Hoist etc	21197.16	EURO	17.3346	R	367.444.36				R	367.444.36
27 2.1	.3 Open close actuators (electric) for channel-	6060.99	GBP	20.636	R	125.074.54				R	125.074.54
27 2.3	c) Actuators (electric)	66241.71	GBP	20.636	R	1.366.963.98				R	1.366.963.98
27 2.3	f) Actuators (electric)	55264.20	GBP	20.636	R	1.140.432.07				R	1.140.432.07
27 2.3	e) Magnetic flow meter	8140.80	CHF	17.094	R	139.158.85				R	139.158.85
27 2.3	.3 '24 Pressurised UF backwash pump station				R	-				R	-
27 2.3	e) Magnetic flow meter	5366.67	GBP	20.636	R	110.746.53				R	110.746.53
27 2.3	h) Actuators (electric)	3105.49	GBP	20.636	R	64.084.87				R	64.084.87
27 2.3	e) Magnetic flow meter	6743.50	GBP	20.636	R	139.158.85				R	139.158.85
27 2.3	Actuators for sluice gates (1.2mx1.2m x 2m pressure)	3030.49	GBP	20.636	R	62.537.27				R	62.537.27

[redacted]

CITY OF CAPE TOWN

WATER AND SANITATION

CONTRACT NO. 146Q/2021/22

DESIGN - BUILD OF MECHANICAL AND ELECTRICAL WORKS FOR THE UPGRADE AND EXPANSION OF POTSDAM WASTEWATER TREARMENT PLANT

SCHDULE 23: PRICE BASIS FOR IMPORTED RESOURCES

VALUE OF IMPORTED RESOURCES TO BE ADJUSTED					Customs Surcharge		Customs Duty		Total in Rand of (C) + (D) + (E) included in Schedules of Quantities Items
Schedules of Quanties Item No.	Description of Resources	Value in Foreign Currency	Rate of Exchange as at BASE DATE	Value in Rands (A) * (B)	%	Rands	%	Rands	
		(A)	(B)	(C)		(D)		(E)	(F)
E.19.2	SCHEDULE E.19.2 - SUPPLY AND DELIVERY TO SITE								
.1	Supply and delivery to site complete MCC refer to project specification PSEMCC-6.A)	€ 217 624.56	R17.33	R3 772 434.67					R3 772 434.67
.2	Supply and delivery to site complete VFD Panel (refer to project specification PSEMCC-6.B)	€ 73 230.03	R17.33	R1 269 413.30					R1 269 413.30
.3	Supply and delivery to site complete MCC (refer to project specification PSEMCC-6.C)	€ 488 955.97	R17.33	R8 475 856.14					R8 475 856.14
.4	Supply and delivery to site complete MCC (refer to project specification PSEMCC-6.D)	€ 475 625.14	R17.33	R8 244 771.51					R8 244 771.51
.5	Supply and delivery to site complete MCC (refer to project specification PSEMCC-6.E)	€ 500 159.81	R17.33	R8 670 070.18					R8 670 070.18
.6	Supply and delivery to site complete VFD Panel (refer to project specification PSEMCC-6.F)	€ 105 960.54	R17.33	R1 836 783.61					R1 836 783.61
7	Supply and delivery to site complete VFD Panel (refer to project specification PSEMCC-6.G)	€ 136 774.12	R17.33	R2 370 924.67					R2 370 924.67
.8	Supply and delivery to site complete VFD Panel (refer to project specification PSEMCC-6.H)	€ 169 890.67	R17.33	R2 944 986.83					R2 944 986.83
.9	Supply and delivery to site complete VFD Panel (refer to project specification PSEMCC-6.I)	€ 195 083.22	R17.33	R3 381 689.62					R3 381 689.62
.10	Supply and delivery to site complete MCC (refer to project specification PSEMCC-6.J)	€ 155 949.12	R17.33	R2 703 315.57					R2 703 315.57
.11	Supply and delivery to site complete Combined Active Harmonic Filtering and Reactive Current Compensation Tier (refer to project specification PSEMCC-6.N)	€ 1 330 900.41	R17.33	R23 070 626.18					R23 070 626.18

[redacted]

VALUE OF IMPORTED RESOURCES TO BE ADJUSTED					Customs Surcharge		Customs Duty		Total in Rand of (C) + (D) + (E) included in Schedules of Quantities items
Schedules of Quanties Item No.	Description of Resources	Value in Foreign Currency	Rate of Exchange as at BASE DATE	Value in Rands (A) * (B)	%	Rands	%	Rands	
		(A)	(B)	(C)		(D)		(E)	(F)
E.9.2	SCHEDULE E.9.2 - SUPPLY AND DELIVERY TO SITE								
.1	Supply and delivery to site complete MCC (refer to project specification PSEMCC-6.K)	€ 391 001.00	R17.33	R6 777 845.93					R6 777 845.93
.2	Supply and delivery to site complete VFD Panel (refer to project specification PSEMCC-6.L)	€ 177 707.03	R17.33	R3 080 480.27					R3 080 480.27
.3	Supply and delivery to site complete VFD Panel (refer to project specification PSEMCC-6.M)	€ 63 989.79	R17.33	R1 109 237.37					R1 109 237.37
E.20.2	SCHEDULE E.20.2- SUPPLY AND DELIVERY TO SITE								
.1	Supply and delivery to site complete PLC and peripheral equipment installed in or other specified enclosures, all as specified [refer to PSEPLC-6.A]	€ 29 305.61	R17.33	R508 001.06					R508 001.06
.3	Supply and delivery to site complete HMI as specified [refer to PSEPLC-6.A]	€ 2 368.33	R17.33	R41 054.08					R41 054.08
.4	Supply and delivery to site complete PLC and peripheral equipment installed in or other specified enclosures, all as specified [refer to PSEPLC-6.B]	€ 21 606.02	R17.33	R374 531.77					R374 531.77
.6	Supply and delivery to site complete HMI as specified [refer to PSEPLC-6.B]	€ 7 822.45	R17.33	R135 598.97					R135 598.97
.7	Supply and delivery to site complete PLC and peripheral equipment installed in or other specified enclosures, all as specified [refer to PSEPLC-6.C]	€ 71 023.73	R17.33	R1 231 167.97					R1 231 167.97
.9	Supply and delivery to site complete HMI as specified [refer to PSEPLC-6.C]	€ 2 368.33	R17.33	R41 054.08					R41 054.08
.10	Supply and delivery to site complete PLC and peripheral equipment installed in or other specified enclosures, all as specified [refer to PSEPLC-6.D]	€ 73 088.86	R17.33	R1 266 966.07					R1 266 966.07
.12	Supply and delivery to site complete HMI as specified [refer to PSEPLC-6.D]	€ 2 368.33	R17.33	R41 054.08					R41 054.08
.13	Supply and delivery to site complete PLC and peripheral equipment installed in or other specified enclosures, all as specified [refer to PSEPLC-6.E]	€ 66 334.92	R17.33	R1 149 889.36					R1 149 889.36
.15	Supply and delivery to site complete HMI as specified [refer to PSEPLC-6.E]	€ 2 368.33	R17.33	R41 054.08					R41 054.08
.16	Supply and delivery to site complete PLC and peripheral equipment installed in or other specified enclosures, all as specified [refer to PSEPLC-6.F]	€ 125 300.86	R17.33	R2 172 040.36					R2 172 040.36
.18	Supply and delivery to site complete HMI as specified [refer to PSEPLC-6.F]	€ 31 289.78	R17.33	R542 395.87					R542 395.87
.19	Supply and delivery to site complete PLC and peripheral equipment installed in or other specified enclosures, all as specified [refer to PSEPLC-6.G]	€ 57 702.46	R17.33	R1 000 249.00					R1 000 249.00

[redacted]

VALUE OF IMPORTED RESOURCES TO BE ADJUSTED					Customs Surcharge		Customs Duty		Total in Rand of (C) + (D) + (E) included in Schedules of Quantities Items
Schedules of Quantities Item No.	Description of Resources	Value in Foreign Currency	Rate of Exchange as at BASE DATE	Value in Rands (A) * (B)	%	Rands	%	Rands	
		(A)	(B)	(C)		(D)		(E)	(F)
.21	Supply and delivery to site complete HMI as specified [refer to PSEPLC-6.G]	€ 2 368.33	R17.33	R41 054.08					R41 054.08
.22	Supply and delivery to site complete PLC and peripheral equipment installed in or other specified enclosures, all as specified [refer to PSEPLC-6.H]	€ 41 073.45	R17.33	R711 991.77					R711 991.77
.24	Supply and delivery to site complete HMI as specified [refer to PSEPLC-6.H]	€ 11 733.67	R17.33	R203 398.45					R203 398.45
.31	Supply and delivery to site complete Wireless Enclosure and peripheral equipment installed in or other specified enclosures, all as specified [refer to PSEPLC-6.K]	€ 193 099.65	R17.33	R3 347 305.28					R3 347 305.28
.32	Supply and delivery to site complete PLC and peripheral equipment installed in or other specified enclosures, all as specified [refer to PSEPLC-6.L]	€ 14 280.91	R17.33	R247 553.82					R247 553.82
.34	Supply and delivery to site complete HMI as specified [refer to PSEPLC-6.L]	€ 1 986.41	R17.33	R34 433.65					R34 433.65
E.10.2	SCHEDULE E.10.2- SUPPLY AND DELIVERY TO SITE								
.1	Supply and delivery to site complete PLC and peripheral equipment installed in or other specified enclosures, all as specified [refer to PSEPLC-6.I]	€ 60 526.44	R17.33	R1 049 201.68					R1 049 201.68
.3	Supply and delivery to site complete HMI as specified [refer to PSEPLC-6.I]	€ 2 368.33	R17.33	R41 054.08					R41 054.08
.4	Supply and delivery to site complete PLC and peripheral equipment installed in or other specified enclosures, all as specified [refer to PSEPLC-6.J]	€ 40 786.06	R17.33	R707 010.11					R707 010.11
.6	Supply and delivery to site complete HMI as specified [refer to PSEPLC-6.J]	€ 7 822.45	R17.33	R135 598.97					R135 598.97

*State Customs Duty Traiff Referance for each item

Note

Note that any Resources not inserted in the schedule
shall be deemed to be manufatured / supplied in South Africa for the purposes of Contract Price Adjustment.
The BASE DATE referred to in colum (B) will be 7 calendar days before tender closing

SIGNED ON BEHALF OF TENDERER: .....

[redacted]

CITY OF CAPE TOWN

WATER AND SANITATION

CONTRACT NO. 146Q/2021/22

DESIGN – BUILD OF MECHANICAL AND ELECTRICAL WORKS FOR THE UPGRADE AND EXPANSION OF POTSDAM WASTEWATER TREATMENT PLANT

SCHEDULE 23: PRICE BASIS FOR IMPORTED RESOURCES

VALUE OF IMPORTED RESOURCES TO BE ADJUSTED					Customs Surcharge		Customs Duty*		Total in Rand of (C) + (D) + (E) included in Schedules of Quantities Item
Schedules of Quantities Item No.	Description of Resources	Value in Foreign Currency (A)	Rate of Exchange as at BASE DATE (B)	Value in Rand (A) x (B) (C)	%	RAND (D)	%	RAND (E)	(F)
M14	SCHEDULE NO. M14 HEATING, VENTILATION AND AIR CONDITIONING								
14.2.1	.1 '24 MCC substation No.1	$ 30 982.19	R 16.0092	R 496 000.00		-		-	R 496 000.00
	.2 '24 MCC substation No.2	$ 27 484.20	R 16.0092	R 440 000.00		-		-	R 440 000.00
	.3 '24 MCC substation No.3	$ 24 485.92	R 16.0092	R 392 000.00		-		-	R 392 000.00
	.4 '24 MCC substation No.4	$ 21 737.59	R 16.0092	R 348 000.00		-		-	R 348 000.00
14.2.2	Forced ventilation systems					-		-	R -
	.1 "24 MBR Blower room	$ 36 229.17	R 16.0092	R 580 000.00		-		-	R 580 000.00
	.2 "24 Raw sewage pump station mechanical room	$ 22 986.78	R 16.0092	R 368 000.00		-		-	R 368 000.00
	.3 "24 Primary sludge pump station	$ 21 487.64	R 16.0092	R 344 000.00		-		-	R 344 000.00
	.4 "24 MBR mechanical room(s)	$ 21 837.44	R 16.0092	R 349 600.00		-		-	R 349 600.00
	.5 '24 Dewatering building	$ 30 982.19	R 16.0092	R 496 000.00		-		-	R 496 000.00
	.6 '24 Poly dosing and storage room	$ 2 161.26	R 16.0092	R 34 600.00		-		-	R 34 600.00
	.7 '24 MBR Reuse pump station	$ 32 981.04	R 16.0092	R 528 000.00		-		-	R 528 000.00
	.8 '24 MBR control room	$ 799.54	R 16.0092	R 12 800.00		-		-	R 12 800.00
	.9 '24 Dewatering building control room	$ 1 124.35	R 16.0092	R 18 000.00		-		-	R 18 000.00
	.10 '24 MCC substation No.1	$ 1 024.41	R 16.0092	R 16 400.00		-		-	R 16 400.00
	.11 '24 MCC substation No.2	$ 1 124.35	R 16.0092	R 18 000.00		-		-	R 18 000.00
	.12 '24 MCC substation No.3	$ 749.57	R 16.0092	R 12 000.00		-		-	R 12 000.00
	.13 '24 MCC substation No.4	$ 699.60	R 16.0092	R 11 200.00		-		-	R 11 200.00
14.2.3	Dehumidification systems					-		-	R -
	.1 '24 MCC substation No.1	$ 1 424.18	R 16.0092	R 22 800.00		-		-	R 22 800.00
	.2 '24 MCC substation No.2	$ 1 124.35	R 16.0092	R 18 000.00		-		-	R 18 000.00

[redacted]

VALUE OF IMPORTED RESOURCES TO BE ADJUSTED					Customs Surcharge		Customs Duty*		Total in Rand of (C) + (D) + (E) included in Schedules of Quantities Item
Schedules of Quantities Item No.	Description of Resources	Value in Foreign Currency (A)	Rate of Exchange as at BASE DATE (B)	Value in Rand (A) x (B) (C)	%	RAND (D)	%	RAND (E)	(F)
						-		-	R -
	.3 '24 MCC substation No.3	$ 1 124.35	R 16.0092	R 18 000.00		-		-	R 18 000.00
						-		-	R -
	.4 '24 MCC substation No.4	$ 1 124.35	R 16.0092	R 18 000.00		-		-	R 18 000.00
						-		-	R -
						-		-	R -
14.5.1	Provision of spare parts for:					-		-	R -
						-		-	R -
	.1 Item 14.2.1 above	$ 10 493.97	R 16.0092	R 168 000.00		-		-	R 168 000.00
						-		-	R -
	.2 Item 14.2.2 above	$ 9 444.57	R 16.0092	R 151 200.00		-		-	R 151 200.00
						-		-	R -
	.3 Item 14.2.3 above	$ 2 448.59	R 16.0092	R 39 200.00		-		-	R 39 200.00
						-		-	R -
M20	SCHEDULE NO. M20					-		-	R -
	HEATING, VENTILATION AND AIR					-		-	R -
	CONDITIONING EQUIPMENT					-		-	R -
						-		-	R -
20.2	MANUFACTURE, FACTORY ACCEPTANCE TEST, TRANSPORT AND DELIVERY TO SITE					-		-	R -
						-		-	R -
20.2.1	Air conditioning systems					-		-	R -
						-		-	R -
	.1 '24 Management Building	$ 40 195.64	R 16.0092	R 643 500.00		-		-	R 643 500.00
						-		-	R -
20.2.2	Forced ventilation systems					-		-	R -
						-		-	R -
	.1 "24 Management Building	$ 11 805.71	R 16.0092	R 189 000.00		-		-	R 189 000.00
						-		-	R -
20.3	INSTALLATION					-		-	R -
						-		-	R -
20.3.1	Air conditioning systems					-		-	R -
						-		-	R -
	.1 '24 Management Building	$ 33 730.60	R 16.0092	R 540 000.00		-		-	R 540 000.00
						-		-	R -
20.3.2	Forced ventilation systems					-		-	R -
						-		-	R -
	.1 '24 Management Building	$ 8 432.65	R 16.0092	R 135 000.00		-		-	R 135 000.00
						-		-	R -
20.5.1	Provision of spare parts for:					-		-	R -
						-		-	R -
	.1 Item 20.2.1 above	$ 182.71	R 16.0092	R 2 925.00		-		-	R 2 925.00
						-		-	R -
	.2 Item 20.2.2 above	$ 98.38	R 16.0092	R 1 575.00		-		-	R 1 575.00
						-		-	R -
				R -		-		-	R -
M25	SCHEDULE NO. M25			R -		-		-	R -
				R -		-		-	R -
25.2	MANUFACTURE, FACTORY ACCEPTANCE TEST, TRANSPORT AND DELIVERY TO SITE								
				R -		-		-	R -
25.2.1	Air conditioning systems			R -		-		-	R -
				R -		-		-	R -
	.1 '24 MCC substation No.5	$ 19 114.01	R 16.0092	R 306 000.00		-		-	R 306 000.00
				R -		-		-	R -
25.2.2	Forced ventilation systems			R -		-		-	R -
						-		-	R -

[redacted]

VALUE OF IMPORTED RESOURCES TO BE ADJUSTED					Customs Surcharge		Customs Duty*		Total in Rand of (C) + (D) + (E) included in Schedules of Quantities Item
Schedules of Quantities Item No.	Description of Resources	Value in Foreign Currency (A)	Rate of Exchange as at BASE DATE (B)	Value in Rand (A) x (B) (C)	%	RAND (D)	%	RAND (E)	(F)
	.1 '24 Tertiary treatment ultra-filtration feed pump	$ 5 059.59	R 16.0092	R 81 000.00		-		-	R 81 000.00
						-		-	R -
	.2 '24 Tertiary treatment ultra-filtration building	$ 5 902.86	R 16.0092	R 94 500.00		-		-	R 94 500.00
						-		-	R -
	.3 '24 Tertiary treatment UF Air scour blower room	$ 17 989.66	R 16.0092	R 288 000.00		-		-	R 288 000.00
						-		-	R -
	.4 '24 Tertiary treatment reuse pump station	$ 6 183.94	R 16.0092	R 99 000.00		-		-	R 99 000.00
						-		-	R -
	.5 '24 MCC substation No.5	$ 1 264.90	R 16.0092	R 20 250.00		-		-	R 20 250.00
						-		-	R -
25.5	SPARE PARTS AND SERVICING					-		-	R -
				R -		-		-	R -
25.5.1	Provision of spare parts for:			R -		-		-	R -
				R -		-		-	R -
	.1Item 25.2.1 above	$ 599.66	R 16.0092	R 9 600.00		-		-	R 9 600.00
						-		-	R -
	.2 Item 25.2.2 above	$ 499.71	R 16.0092	R 8 000.00		-		-	R 8 000.00
						-		-	R -
	.3 Item 25.2.3 above	$ 499.71	R 16.0092	R 8 000.00		-		-	R 8 000.00
						-		-	R -
25.5.2	Servicing of equipment at the end of the defects and liability period.					-		-	R -
						-		-	R -
	.1 Item 25.2.1 above	$ 624.64	R 16.0092	R 10 000.00		-		-	R 10 000.00
						-		-	R -
	.2 Item 25.2.2 above	$ 624.64	R 16.0092	R 10 000.00		-		-	R 10 000.00
						-		-	R -
	.3 Item 25.2.3 above	$ 624.64	R 16.0092	R 10 000.00		-		-	R 10 000.00
				R -		-		-	R -
				R -		-		-	R -
				R -		-		-	R -
				R -		-		-	R -

* State Customs Duty Tariff Reference for each item

Note:

Note that any Resources not inserted in this schedule shall be deemed to be manufactured / supplied in South Africa for the purposes of Contract Price Adjustment. The BASE DATE referred to in column (B) will be7 calendar days before tender closing.

SIGNED ON BEHALF OF TENDERER: .....

[redacted]

5.6 Preference Schedule

[redacted]

CITY OF CAPE TOWN

WATER AND SANITATION

CONTRACT NO. 146Q/2021/22

DESIGN – BUILD OF MECHANICAL AND ELECTRICAL WORKS FOR THE UPGRADE AND EXPANSION OF POTSDAM WASTEWATER TREATMENT PLANT

SCHEDULE 25: PREFERENCE SCHEDULE TO BE USED IN TERMS OF THE AMENDED CODES FOR MEASURING BROAD-BASED BLACK ECONOMIC EMPOWERMENT IN THE CONSTRUCTION SECTOR (2017)

Preference 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 of an entity in terms of a code 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.

Black Designated Groups: The meaning assigned to it in the codes of good practice issued in terms of section 9(1) of the Broad-Based Black Economic Empowerment Act, 2003, (Act 53 of 2003).

Black People: The meaning assigned to it in section 1 of the Broad-Based Black Economic Empowerment Act.

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

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.

Co-operative: A co-operative registered in terms of section 7 of the Co-operatives Act, 2005 (Act no. 14 of 2005).

Designated Group: Black designated groups, black people, women, people with disabilities or small enterprises as defined in section 1 of the National Small Enterprises Act, 1996 (act no. 102 of 1996)

Designated Sector: A sector, sub-sector or industry or product that has been designated in terms of any relevant regulation of the Preferential Procurement Regulations, 2017.

Exempted Micro Enterprise (EME): An exempted micro enterprise in terms of a code of good practice on black economic empowerment issued in terms of section 9(1) of the Broad-Based Black Economic Empowerment Act.

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 ability of a tenderer to provide goods or services in accordance with specifications as set out in the tender documents.

Military Veteran: The meaning assigned to it in section 1 of the Military Veterans Act, 2011 (Act No. 18 of 2011).

National Treasury: The meaning assigned to it in section 1 of the Public Finance Management Act, 1999 (Act No. 18 of 1999.

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

Person: Includes a juristic person.

People with disabilities: The meaning assigned to it in section 1 of the Employment Equity Act, 1998 (Act No. 55 of 1998).

Price: Includes all applicable taxes less unconditional discounts.

Proof of B-BBEE status level of contributor: The B-BBEE status level certificate issued by an authorised body or person, a sworn affidavit as prescribed by the B-BBEE Codes of good Practice or any other requirement prescribed in terms of the Broad-Based Black Economic Empowerment Act.

Qualifying Small Enterprise (QSE): A qualifying small enterprise in terms of a code of good practice on black economic empowerment issued in terms of section 9(1) of the Broad-Based Black Economic Empowerment Act.

[redacted]

Rand Value: means the total estimated value of a contract in Rand, calculated at the time of bid invitations.

Rural Area: A sparsely populated area in which people farm or depend on natural resources, including villages and small towns that are dispersed through the area or an area including a large settlement which depends on migratory labour and remittances and government social grants for survival, and may have a traditional land tenure system.

Stipulated Minimum Threshold: The minimum threshold stipulated in terms of any relevant regulation of the Preferential Procurement Regulations, 2017.

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.

The Act: The Preferential Procurement Policy Framework Act, 2000 (Act No 5 of 2000).

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.

Township: An urban living area that at any time from the late 19th century until 27 April 1994, was reserved for black people, including areas developed for historically disadvantaged individuals post 27 April 1994.

Treasury: The meaning assigned to it in section 1 of the Public Finance Management Act, 1999 (Act No. 18 of 1999).

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.

Youth: The meaning assigned to it in section 1 of the National Youth Development Agency Act, 2008 (Act No. 54 of 2008).

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 that a contract may not be awarded if the price offered is not market related;
4) accept the sanctions set out in Section 3 below should Condition 2(2) be breached, or should the tenderer have submitted any false information regarding its B-BBEE status level of contributor, local production and content, or any other matter required in terms of this bid that will affect, or has affected the bid evaluation;
5) 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);
6) accept that, further to 5) 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, 2017. 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);
7) 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;
8) accept that 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;
9) accept that, notwithstanding 8) above, a supplier will **not** be awarded points for B-BBEE status level of contributor if he indicates in his/her 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;
10) accept that any subcontracting arrangements after the award of the tender may only be entered into upon the prior approval of the City of Cape Town; and

[redacted]

11) 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 in whole or in part 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 and inform the National Treasury accordingly;
5) forward the matter for criminal prosecution; and/or
6) financial penalties payable to the CCT, as set out below.

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

Financial penalty for breach in terms of condition 10 in Section 2 above:

The penalty to be applied where the supplier fails to disclose subcontracting arrangement after the award of the tender is up to a maximum of 10% of the value of the contract.

[redacted]

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 applicable to the Code they wish to be evaluated against.

Table 1: Level of Contribution: Amended Codes for Measuring Broad-Based Black Economic Empowerment in the Construction Sector.

Type of B-BBEE Contributor	Status (tick bo below as applicabl
Exempted Micro Enterprise (EME), 100% black-owned	☐
Exempted Micro Enterprise (EME), at least 51% but less 100% black-owned	☐
Exempted Micro Enterprise (EME), at least 30% but less 51% black-owned	☐
Exempted Micro Enterprise (EME), less than 30% black-own	☐
Exempted Micro Enterprise B-BBEE Status Level of Contributor[1] ☐	☐
Qualifying Small Enterprise B-BBEE Status Level of Contributor[1] ☐	☐
Qualifying Small Enterprise (QSE), 100% black-owned	☐
Qualifying Small Enterprise (QSE), at least 51% but less 100% black-owned	☐
Qualifying Small Enterprise (QSE), less than 51% black-own	☐
Verified B-BBEE contributor B-BBEE Status Level of Contributor[1] 1	✓
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)

[redacted]

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 authorized 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 8 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 [redacted]ions pertaining to the granting of preferences.

[redacted]

Signature

28/04/2022

Date

[redacted]

Name (PRINT)

(For and on behalf of the Supplier (duly authorised))

For official use.

[redacted]

* Refer to tender file - divider 25

[redacted]

5.7 Technical Data Sheets



TENDER NO. 146Q/2021/22

DESIGN – BUILD OF MECHANICAL AND ELECTRICAL WORKS FOR THE UPGRADE AND EXPANSION OF POTSDAM WASTEWATER TREATMENT PLANT

[redacted]

INDEX

Returnable Schedules Required for Tender Evaluation Purposes

Divider	Data Sheet
1	TDS M1 - Pumps
2	TDS M2 - Screens
3	TDS M3 - Compactors/Washer Compactor
4	TDS M4 - Degritting Equipment
5	TDS M5 - Primary Sedimentation Tank
6	TDS M6 - Vertical Shaft Mixers
7	TDS M7 - FBDA Aeration Equipment
8	TDS M8 - Submerge Membrane Equipment
9	TDS M9 - Ultra Violet Disinfection System
10	TDS M10 - Pressurized Ultra Filtration Equipment
11	TDS M11 - Sludge Storage Tank Equipment
12	TDS M12 - Dewatering Equipment
13	TDS M13 - Process Control Air Systems
14	TDS M14 - Sluice & Channel Gates
15	TDS M15 - Lifting Equipment
16	TDS M16 - Valves, Fittings & Actuators (General)
17	TDS M17 - Motors (General)

29 APR 2022

[redacted]

INDEX

Returnable Schedules Required for Tender Evaluation Purposes

Divider	Data Sheet
18	TDS E1 - MINIATURE SUBSTATIONS
19	TDS E2 - MV CABLES AND CABLE SYSTEMS
20	TDS E3 - LV CABLE SYSTEMS FOR MOTOR AND EQUIPMENT
21	TDS E4 - GENERATOR SET
22	TDS E5 - LV SWITCHGEAR AND CONTROL GEAR ASSEMBLIES - MCCs AND DISTRIBUTION BOARDS
23	TDS E6 - LV SWITCHGEAR AND CONTROL GEAR ASSEMBLIES - LOCAL CONTROL PANELS
24	TDS E7 - VARIABLE FREQUENCY DRIVES : <100kW
25	TDS E8 - VARIABLE FREQUENCY DRIVES: >100kW
26	TDS E9 - STREETLIGHTS
27	TDS E10 - CONTROL, INSTRUMENTATION AND DATA CABLES
28	TDS E11 - PROGRAMMABLE LOGIC CONTROLLER
29	TDS E12 - SCADA
30	TDS E13 - INSTRUMENTATION

[redacted]

Pumps

[redacted]

'24 EMERGENCY OVERFLOW RECYCLE PUMPS

M1.1 Emergency overflow recycle pumps

Item description	Units	Technical Particulars
M1.1 Emergency overflow recycle pumps		
Note: that the information stipulated below does not necessarily represent all the information required for this item/system. The tenderer shall provide drawings and/or brochures showing details of the equipment offered and any other relevant information shall be submitted with the tender.		
General information		
Manufacturer		Xylem Water Solutions
Type		Submersible
Model		NP 3153 LT3~ 410 13.5kW
Country of origin		Sweden
Duty point – guaranteed figures		
Discharge	l/s	99.5
Head	m	10.1
Efficiency (pump)	%	79.5
Speed	rpm	1460.2
Power required	kW	12.3
Pump Specific Speed	SI	4876
Maximum power under any condition	kW	12.5
Shut valve head	m	19.5
NPSH required	m	6.13
Rated solids handling	mm	Non clog design
Mechanical information		
Number of stages		1
Casing material		Grey cast iron, GJL-250
Impeller material		Grey cast iron, Ultrasonic hardened edge
Impeller diameter	mm	250
Inlet throat diameter	mm	200
Discharge diameter	mm	200
Shaft material		Stainless steel, 1.4057+QT800
Mechanical seal		Plug-in seal
Type of bearings		Ball Bearing
Bearing lubricant		Sealed for life bearings – pre greased
Max design test pressure of casing	kPa	1600 (PN16)
Mass of pump unit complete (motor included)	kg	320
Motors		
Manufacturer		Xylem Water Solutions
Type		Squirrel Cage induction
Model		N3153.182 21-18-4AA-W 13.5kW
Country of origin		Sweden
Guaranteed figures		
Rated power	kW	13.5
Power factor at duty point		0.81

[redacted]

'24 RAW SEWAGE PUMPS

M1.2 '24 Raw sewage pumps

Item description	Units	Technical Particulars
M1.2 '24 Raw sewage pumps		
Note: that the information stipulated below does not necessarily represent all the information required for this item/system. The tenderer shall provide drawings and/or brochures showing details of the equipment offered and any other relevant information shall be submitted with the tender.		
General information		
Manufacturer		KSB
Type		Solid Handling End-Suction Pump
Model		Sewatec K 500-634G1 3EN 315L 08
Country of origin		Germany
Duty point – guaranteed figures		
Discharge	ℓ/s	752.22
Head	m	14.5
Efficiency (pump)	%	85.6
Speed	rpm	743
Power required	kW	124.54
Pump Specific Speed	SI	5203.4
Maximum power under any condition	kW	125.06
Shut valve head	m	22.7
Minimum NPSH	m	3.33
Rated solids handling	mm	132
Mechanical information		
Number of stages		1
Casing material		Grey cast iron EN-GJL-250
Impeller material		Duplex SS – 1.4517
Impeller diameter	mm	580
Inlet throat diameter	mm	500
Discharge diameter	mm	500
Shaft material		Chrome steel 1.4021+QT800
Mechanical seal	mm	TBA
Type of bearings		Anti-friction bearings
Bearing lubricant		Grease
Max design test pressure of casing	kPa	750
Mass of pump unit complete (motor including motor)	kg	4889
Motors		
Manufacturer		Siemens
Type		3 Phase Cage Induction Motor
Model		315L B3 Foot mounted
Country of origin		Germany
Guaranteed figures		
Rated power	kW	160
Power factor at duty point		0.79

[redacted]

08' RAW SEWAGE PUMP

[redacted]

M1.3 '08 Raw sewage pumps

Item description	Units	Technical Particulars
M1.3 '08 Raw sewage pumps		
Note: that the information stipulated below does not necessarily represent all the information required for this item/system. The tenderer shall provide drawings and/or brochures showing details of the equipment offered and any other relevant information shall be submitted with the tender.		
General information		
Manufacturer		Cornell
Type		Centrifugal
Model		18NHFL-VC120TR
Country of origin		USA
Duty point – guaranteed figures		
Discharge	ℓ/s	752.4
Head	m	14.6
Efficiency (pump)	%	86
Speed	rpm	735
Power required	kW	124
Pump Specific Speed	SI	750
Maximum power under any condition	kW	160
Shut valve head	m	25.9
NPSH required	m	3.94
Rated solids handling	mm	88.9
Mechanical information		
Number of stages		1
Casing material		Ductile Iron
Impeller material		Ductile Iron
Impeller diameter	mm	610
Inlet throat diameter	mm	500
Discharge diameter	mm	450
Shaft material		4140/42 BD
Mechanical seal	mm	76
Type of bearings		Double Roll Bearings
Bearing lubricant		Oil
Max design test pressure of casing	kPa	254
Mass of pump unit complete (motor including motor)	kg	4800
Motors		
Manufacturer		WEG
Type		Squirrel Cage
Model		160KW/4P/400V
Country of origin		Brazil
Guaranteed figures		
Rated power	kW	160
Power factor at duty point		-

[redacted]

'08' PRIMARY SLUDGE RECIRCULATION PUMPS

[redacted]

M1.4 '08 Primary sludge recirculation pump

Item description	Units	Technical Particulars
M1.4 '08 Primary sludge recirculation pump		
Note: that the information stipulated below does not necessarily represent all the information required for this item/system. The tenderer shall provide drawings and/or brochures showing details of the equipment offered and any other relevant information shall be submitted with the tender.		
General information		
Manufacturer		SAMCO PUMPS
Type		SELF PRIMING
Model		SP 6D286
Country of origin		SA
Duty point – guaranteed figures		
Discharge	ℓ/s	126 m3/hr
Head	m	10
Efficiency (pump)	%	62.69
Speed	rpm	1028
Power required	kW	5.47
Pump Specific Speed	SI	2052
Maximum power under any condition	kW	8.26
Shut valve head	m	13.15
NPSH required	m	3.65
Rated solids handling	mm	76
Mechanical information		
Number of stages		1
Casing material		Ci coated
Impeller material		DI
Impeller diameter	mm	286
Inlet throat diameter	mm	6 inches
Discharge diameter	mm	6 inches
Shaft material		EN8
Mechanical seal	mm	std
Type of bearings		Ball
Bearing lubricant		grease
Max design test pressure of casing	kPa	1000
Mass of pump unit complete (motor including motor)	kg	507
Motors		
Manufacturer		Weg
Type		High efficiency
Model		W22 ie3
Country of origin		Brazil
Guaranteed figures		
Rated power	kW	11kw 4p
Power factor at duty point		0.65

[redacted]

'24' PRIMARY SLUDGE RECIRCULATION PUMPS

[redacted]

M1.5 '24 Primary sludge recirculation pump

Item description	Units	Technical Particulars
M1.5 '24 Primary sludge recirculation pump		
Note: that the information stipulated below does not necessarily represent all the information required for this item/system. The tenderer shall provide drawings and/or brochures showing details of the equipment offered and any other relevant information shall be submitted with the tender.		
General information		
Manufacturer		Samco pumps
Type		Self priming
Model		SP 6D286
Country of origin		Sa
Duty point – guaranteed figures		
Discharge	l/s	188 m3/hr
Head	m	10
Efficiency (pump)	%	60.47
Speed	rpm	1141
Power required	kW	8.47
Pump Specific Speed	SI	2782
Maximum power under any condition	kW	11.29
Shut valve head	m	16.2
NPSH required	m	6.09
Rated solids handling	mm	76
Mechanical information		
Number of stages		1
Casing material		CI coated
Impeller material		DI
Impeller diameter	mm	286
Inlet throat diameter	mm	6 inches
Discharge diameter	mm	6 inches
Shaft material		EN8
Mechanical seal	mm	Std
Type of bearings		ball
Bearing lubricant		Grease
Max design test pressure of casing	kPa	1000
Mass of pump unit complete (motor including motor)	kg	529
Motors		
Manufacturer		WEG
Type		High efficiency
Model		IE3 w22
Country of origin		Brazil
Guaranteed figures		
Rated power	kW	15kw 4P
Power factor at duty point		0.76

[redacted]

'24 PRIMARY SLUDGE STORAGE TANK

[redacted]

M1.6 Primary sludge storage feed pumps

Item description	Units	Technical Particulars
M1.6 Primary sludge storage feed pumps		
Note: that the information stipulated below does not necessarily represent all the information required for this item/system. The tenderer shall provide drawings and/or brochures showing details of the equipment offered and any other relevant information shall be submitted with the tender.		
General information		
Manufacturer		Gorman-Rupp
Type		Self priming
Model		T10A60S-B
Country of origin		USA
Duty point – guaranteed figures		
Discharge	l/s	86.94
Head	m	15
Efficiency (pump)	%	72.2
Speed	rpm	950
Power required	kW	17.5
Pump Specific Speed	SI	2205
Maximum power under any condition	kW	21.2
Shut valve head	m	20.3
NPSH required	m	1.53
Rated solids handling	mm	76.2
Mechanical information		
Number of stages		1
Casing material		Gray Iron 30
Impeller material		Ductile Iron 65-45-12
Impeller diameter	mm	374.65
Inlet throat diameter	mm	254
Discharge diameter	mm	254
Shaft material		Stainless steel 17-4PH
Mechanical seal	mm	38.1 (1.5")
Type of bearings		Open Double roll ball
Bearing lubricant		Oil
Max design test pressure of casing	kPa	683
Mass of pump unit complete (motor including motor)	kg	1200
Motors		
Manufacturer		WEG
Type		Super Premium IE3
Model		30Kw
Country of origin		Brazil
Guaranteed figures		
Rated power	kW	30
Power factor at duty point		0.72

[redacted]

'24 BIOLOGICAL REACTOR A-RECYCLE PUMPS

[redacted]

M1.7 '24 Biological reactor A-recycle pumps

Item description	Units	Technical Particulars
M1.7 '24 Biological reactor A-recycle pumps		
Note: that the information stipulated below does not necessarily represent all the information required for this item/system. The tenderer shall provide drawings and/or brochures showing details of the equipment offered and any other relevant information shall be submitted with the tender.		
General information		
Manufacturer		Xylem Water Solutions
Type		Horizontal flow propeller pumps
Model		PP 4660**3~ 1258 11°
Country of origin		Sweden
Duty point – guaranteed figures		
Discharge	ℓ/s	388.33
Head	m	1.17
Efficiency (pump)	%	52.3
Speed	rpm	470
Power required	kW	10
Pump Specific Speed	SI	470rpm
Maximum power under any condition	kW	10
Shut valve head	m	1.8
Minimum NPSH	m	N/A
Rated solids handling	mm	N/A
Mechanical information		
Number of stages		-
Casing material		Stainless steel ASTM 316L
Impeller material		Stainless steel ASTM 316L
Impeller diameter	mm	580
Inlet throat diameter	mm	-
Discharge diameter	mm	590
Shaft material		Stainless steel, ASTM / AISI 431
Mechanical seal	mm	Plug-in Seal Silicon carbide(RSiC) / RSiC outer
Type of bearings		Ball Bearing
Bearing lubricant		0:1
Max design test pressure of casing	kPa	-
Mass of pump unit complete (motor including motor)	kg	265
Motors		
Manufacturer		Xylem Water Solutions
Type		Squirrel-cage induction motor
Model		P4660.412 25-26-12AA-W
Country of origin		Sweden
Guaranteed figures		
Rated power	kW	10
Power factor at duty point		-

[redacted]

'24 BIOLOGICAL REACTOR R-RECYCLE PUMPS

[redacted]

M1.8 '24 Biological reactor R-recycle pumps

Item description	Units	Technical Particulars
M1.8 '24 Biological reactor R-recycle pumps		
Note: that the information stipulated below does not necessarily represent all the information required for this item/system. The tenderer shall provide drawings and/or brochures showing details of the equipment offered and any other relevant information shall be submitted with the tender.		
General information		
Manufacturer		Xylem Water Solutions
Type		Horizontal Flow Propeller Pumps
Model		PP 4660**3~1258 6°
Country of origin		Sweden
Duty point – guaranteed figures		
Discharge	ℓ/s	187.08
Head	m	1.16
Efficiency (pump)	%	37.2
Speed	rpm	480
Power required	kW	7.5
Pump Specific Speed	SI	480 rpm
Maximum power under any condition	kW	10
Shut valve head	m	1.7
NPSH required	m	-
Rated solids handling	mm	N/A
Mechanical information		
Number of stages		-
Casing material		Stainless steel ASTM 316L
Impeller material		Stainless steel ASTM 316L
Impeller diameter	mm	580
Inlet throat diameter	mm	-
Discharge diameter	mm	590
Shaft material		Stainless steel, ASTM / AISI 431
Mechanical seal	mm	Plug-in Seal Silicon carbide(RSiC) / RSiC outer
Type of bearings		Ball Bearing
Bearing lubricant		0:1
Max design test pressure of casing	kPa	-
Mass of pump unit complete (motor including motor)	kg	265
Motors		
Manufacturer		Xylem Water Solution
Type		Squirrel-cage induction motor
Model		P4660.412 25-26-12AA-W
Country of origin		Sweden
Guaranteed figures		
Rated power	kW	10
Power factor at duty point		-

[redacted]

'24 BIOREACTOR SCUM PUMPS

[redacted]

M1.9 '24 Biological reactor scum pump station

Item description	Units	Technical Particulars
M1.9 '24 Biological reactor scum pump station		
Note: that the information stipulated below does not necessarily represent all the information required for this item/system. The tenderer shall provide drawings and/or brochures showing details of the equipment offered and any other relevant information shall be submitted with the tender.		
General information		
Manufacturer		Grundfos
Type		Submersible
Model		SLV.80.80.40.4.51D.C
Country of origin		Hungary
Duty point – guaranteed figures		
Discharge	ℓ/s	13.89
Head	m	10
Efficiency (pump)	%	43.3
Speed	rpm	1464
Power required	kW	3.137
Pump Specific Speed	SI	TBC
Maximum power under any condition	kW	4
Shut valve head	m	17
NPSH required	m	2.15
Rated solids handling	mm	80
Mechanical information		
Number of stages		1
Casing material		Cast Iron EN5.1301 EN-GJL-250
Impeller material		Cast Iron EN5.1301 EN-GJL-250
Impeller diameter	mm	TBC
Inlet throat diameter	mm	80
Discharge diameter	mm	80
Shaft material		Stainless steel
Mechanical seal	mm	TBC
Type of bearings		Ball Bearings
Bearing lubricant		Greased sealed for life
Max design test pressure of casing	kPa	1000
Mass of pump unit complete (motor including motor)	kg	133
Motors		
Manufacturer		Grundfos
Type		Submersible Induction
Model		N/A
Country of origin		Hungary
Guaranteed figures		
Rated power	kW	4
Power factor at duty point		0.72 Full load

[redacted]

'24 MBR TANK FEED PUMP PUMPS

[redacted]

M1.10 '24 MBR feed pump station

Item description	Units	Technical Particulars
M1.10 '24 MBR feed pump station		
Note: that the information stipulated below does not necessarily represent all the information required for this item/system. The tenderer shall provide drawings and/or brochures showing details of the equipment offered and any other relevant information shall be submitted with the tender.		
General information		
Manufacturer		Grundfos
Type		Vertical Submersible Axial flow Pump
Model		KPL.900.90.8.T.50.11.E.38
Country of origin		Hungary
Duty point – guaranteed figures		
Discharge	ℓ/s	1297.2
Head	m	3.92
Efficiency (pump)	%	81.8
Speed	rpm	720
Power required	kW	60.84
Pump Specific Speed	SI	TBC
Maximum power under any condition	kW	80
Shut valve head	m	N/A
NPSH required	m	6.34
Rated solids handling	mm	95
Mechanical information		
Number of stages		1
Casing material		Cast Iron AISI EN-GJL-250
Impeller material		316 Stainless Casting
Impeller diameter	mm	620
Inlet throat diameter	mm	720
Discharge diameter	mm	892
Shaft material		316 Stainless steel
Mechanical seal	mm	TBC
Type of bearings		Roller / Ball
Bearing lubricant		Grease
Max design test pressure of casing	kPa	N/A
Mass of pump unit complete (motor including motor)	kg	1420
Motors		
Manufacturer		Grundfos
Type		Submersible Induction Motor
Model		KPL.900.90.8.T.50.11.E.38
Country of origin		Hungary
Guaranteed figures		
Rated power	kW	90
Power factor at duty point		0.795 at Full Load

[redacted]

'24 MBR TANK DRAINAGE PUMP

[redacted]

M1.11 '24 MBR tank drainage pumps

Item description	Units	Technical Particulars
M1.11 '24 MBR tank drainage pumps		
Note: that the information stipulated below does not necessarily represent all the information required for this item/system. The tenderer shall provide drawings and/or brochures showing details of the equipment offered and any other relevant information shall be submitted with the tender.		
General information		
Manufacturer		Cornell
Type		Self-priming centrifugal
Model		10STX – F65
Country of origin		USA
Duty point – guaranteed figures		
Discharge	ℓ/s	125
Head	m	10
Efficiency (pump)	%	76
Speed	rpm	910
Power required	kW	16
Pump Specific Speed	SI	1485
Maximum power under any condition	kW	17
Shut valve head	m	17.4
NPSH required	m	1.76
Rated solids handling	mm	76
Mechanical information		
Number of stages		1
Casing material		DUCTILE IRON, ASTM A536,100-70-03
Impeller material		DUCTILE IRON, ASTM A536,100-70-03
Impeller diameter	mm	375
Inlet throat diameter	mm	250
Discharge diameter	mm	250
Shaft material		Stainless Steel Ph-17
Mechanical seal	mm	50
Type of bearings		Roller ball bearings
Bearing lubricant		Oil
Max design test pressure of casing	kPa	174
Mass of pump unit complete (motor including motor)	kg	1150
Motors		
Manufacturer		WEG
Type		3 Phase Cage Induction
Model		180L
Country of origin		Brazil
Guaranteed figures		
Rated power	kW	22
Power factor at duty point		

[redacted]

'24 WAS PUMPS

[redacted]

M1.12 '24 WAS pumps

Item description	Units	Technical Particulars
M1.12 '24 WAS pumps		
Note: that the information stipulated below does not necessarily represent all the information required for this item/system. The tenderer shall provide drawings and/or brochures showing details of the equipment offered and any other relevant information shall be submitted with the tender.		
General information		
Manufacturer		Gorman-Rupp
Type		Self priming
Model		T6A60S-B
Country of origin		USA
Duty point – guaranteed figures		
Discharge	ℓ/s	30.5
Head	m	10
Efficiency (pump)	%	58
Speed	rpm	914
Power required	kW	5.11
Pump Specific Speed	SI	1022
Maximum power under any condition	kW	6.91
Shut valve head	m	12.8m @ 10m
NPSH required	m	1.56
Rated solids handling	mm	76.2
Mechanical information		
Number of stages		1
Casing material		Gray Iron 30
Impeller material		Ductile Iron 65-45-12
Impeller diameter	mm	314
Inlet throat diameter	mm	152
Discharge diameter	mm	152
Shaft material		Alloy Steel 4150
Mechanical seal	mm	1.88"
Type of bearings		Open single row & Open double row
Bearing lubricant		Oil
Max design test pressure of casing	kPa	545
Mass of pump unit complete (motor including motor)	kg	760
Motors		
Manufacturer		WEG
Type		IE3 Top Premium
Model		7.5Kw 4 Pole 132M
Country of origin		Brazil
Guaranteed figures		
Rated power	kW	7.5
Power factor at duty point		68.1%

[redacted]

'24 MBR PERMEATE PUMPS

[redacted]

M1.13 '24 MBR Permeate pumps

Item description	Units	Technical Particulars
M1.13 '24 MBR Permeate pumps		
Note: that the information stipulated below does not necessarily represent all the information required for this item/system. The tenderer shall provide drawings and/or brochures showing details of the equipment offered and any other relevant information shall be submitted with the tender.		
General information		
Manufacturer		Netzsch
Type		Rotary rubber lobe
Model		XLB -8/2
Country of origin		Germany
Duty point – guaranteed figures		
Discharge	ℓ/s	125
Head	m	7
Efficiency (pump)	%	+-64
Speed	rpm	268
Power required	kW	19.6
Pump Specific Speed	SI	305rpm at 50Hz
Maximum power under any condition	kW	20KW (1.15sg / 100mPa.s/70kPa)
Shut valve head	m	Not to be run with closed valve
NPSH required	m	2.5
Rated solids handling	mm	15 max
Mechanical information		
Number of stages		1
Casing material		Cast Iron grade 250 (0.6025)
Impeller material		Rotor: Nemolast S62 / 1.7225
Impeller diameter	mm	-
Inlet throat diameter	mm	DN300 (PN16)
Discharge diameter	mm	DN300 (PN16)
Shaft material		1.7225 steel
Mechanical seal	mm	Netzsch uNS100-Q1Q1VGG Silicon Carbide
Type of bearings		Ball
Bearing lubricant		Grease
Max design test pressure of casing	kPa	500
Mass of pump unit complete (motor including motor)	kg	±1550Kg
Motors		
Manufacturer		WEG / Nord
Type		IEC200/B3/4P/B5/IP55
Model		IEC200/B3/4P/B5/IP55
Country of origin		Germany /India / South Africa
Guaranteed figures		
Rated power	kW	30
Power factor at duty point		0.82

[redacted]

'24 PERMEATE RECYCLE PUMPS

[redacted]

M1.14 '24 Permeate recycle pumps

Item description	Units	Technical Particulars
M1.14 '24 Permeate recycle pumps		
Note: that the information stipulated below does not necessarily represent all the information required for this item/system. The tenderer shall provide drawings and/or brochures showing details of the equipment offered and any other relevant information shall be submitted with the tender.		
General information		
Manufacturer		Wilo
Type		End -Suction Centrifugal
Model		Atmos GIGA N 150-200
Country of origin		
Duty point – guaranteed figures		
Discharge	ℓ/s	125
Head	m	6
Efficiency (pump)	%	73.14
Speed	rpm	1465
Power required	kW	10.05
Pump Specific Speed	SI	1465
Maximum power under any condition	kW	10.28
Shut valve head	m	13
NPSH required	m	3.96
Rated solids handling	mm	N/A
Mechanical information		
Number of stages		1
Casing material		C.I
Impeller material		CF8M
Impeller diameter	mm	207
Inlet throat diameter	mm	200
Discharge diameter	mm	150
Shaft material		SS420
Mechanical seal	mm	MFG STD
Type of bearings		Roller Bearing
Bearing lubricant		Grease
Max design test pressure of casing	kPa	1000
Mass of pump unit complete (motor including motor)	kg	TBA
Motors		
Manufacturer		WEG
Type		3 Phase Cage Induction
Model		160L
Country of origin		Brazil
Guaranteed figures		
Rated power	kW	15
Power factor at duty point		-

[redacted]

'24 DEWATERING WASHWATER SUPPLY PUMPS

[redacted]

M1.15 '24 Dewatering washwater supply pumps

Item description	Units	Technical Particulars
M1.15 '24 Dewatering washwater supply pumps		
Note: that the information stipulated below does not necessarily represent all the information required for this item/system. The tenderer shall provide drawings and/or brochures showing details of the equipment offered and any other relevant information shall be submitted with the tender.		
General information		
Manufacturer		Grundfos
Type		Vertical Multi Stage
Model		Hydro MPC-E 4 CR 95-4-2
Country of origin		Denmark
Duty point – guaranteed figures		
Discharge	*l*/s	18.2 – 111.1
Head	m	90
Efficiency (pump)	%	74
Speed	rpm	3570
Power required	kW	43.5kW per pump
Pump Specific Speed	SI	TBC
Maximum power under any condition	kW	44
Shut valve head	m	160
NPSH required	m	6.01
Rated solids handling	mm	N/A
Mechanical information		
Number of stages		4
Casing material		Cast Iron / SS304
Impeller material		Stainless steel 304
Impeller diameter	mm	110
Inlet throat diameter	mm	100
Discharge diameter	mm	100
Shaft material		Stainless steel 316
Mechanical seal	mm	22i
Type of bearings		Graflon
Bearing lubricant		Pump Liquid
Max design test pressure of casing	kPa	1600
Mass of pump unit complete (motor including motor)	kg	3370 kg for complete pump set 467 kg per pump
Motors		
Manufacturer		Siemens
Type		Induction
Model		
Country of origin		Denmark
Guaranteed figures		81U15336
Rated power	kW	45
Power factor at duty point		0.88

[redacted]

'24 MBR SITE WASHWATER SUPPLY PUMPS

[redacted]

M1.16 '24 MBR site washwater supply pumps

Item description	Units	Technical Particulars
M1.16 '24 MBR site washwater supply pumps		
Note: that the information stipulated below does not necessarily represent all the information required for this item/system. The tenderer shall provide drawings and/or brochures showing details of the equipment offered and any other relevant information shall be submitted with the tender.		
General information		
Manufacturer		Grundfos
Type		Vertical Multi Stage
Model		Hydro MPC-E 5 CR 95-4-2
Country of origin		Denmark
Duty point – guaranteed figures		
Discharge	ℓ/s	11-139
Head	m	90
Efficiency (pump)	%	76.9
Speed	rpm	3570
Power required	kW	45kw per pump
Pump Specific Speed	SI	TBC
Maximum power under any condition	kW	44
Shut valve head	m	160
NPSH required	m	5.14
Rated solids handling	mm	N/A
Mechanical information		
Number of stages		4
Casing material		Cast Iron / SS304
Impeller material		Stainless steel 304
Impeller diameter	mm	TBC
Inlet throat diameter	mm	100
Discharge diameter	mm	100
Shaft material		Stainless steel 316
Mechanical seal	mm	TBC
Type of bearings		Graflon
Bearing lubricant		Pump Liquid
Max design test pressure of casing	kPa	1600
Mass of pump unit complete (motor including motor)	kg	4150 kg for complete pump set / 467 kg per Pump
Motors		
Manufacturer		Siemens
Type		Induction
Model		81415336
Country of origin		Denmark
Guaranteed figures		
Rated power	kW	45
Power factor at duty point		0.88

[redacted]

ULTRA FILTRATION SITE WASHWATER SUPPLY PUMPS

[redacted]

M1.17 '24 UF site washwater supply pumps

Item description	Units	Technical Particulars
M1.17 '24 UF site washwater supply pumps		
Note: that the information stipulated below does not necessarily represent all the information required for this item/system. The tenderer shall provide drawings and/or brochures showing details of the equipment offered and any other relevant information shall be submitted with the tender.		
General information		
Manufacturer		Grundfos
Type		Vertical Multi Stage
Model		Hydro MPC-E 5 CR 95-4-2
Country of origin		Denmark
Duty point – guaranteed figures		
Discharge	l/s	11 - 139
Head	m	90
Efficiency (pump)	%	76.9
Speed	rpm	3570
Power required	kW	45kW per pump
Pump Specific Speed	SI	TBC
Maximum power under any condition	kW	44
Shut valve head	m	160
NPSH required	m	5.14
Rated solids handling	mm	N/A
Mechanical information		
Number of stages		4
Casing material		Cast Iron / SS304
Impeller material		Stainless steel 304
Impeller diameter	mm	110
Inlet throat diameter	mm	100
Discharge diameter	mm	100
Shaft material		Stainless steel 316
Mechanical seal	mm	22
Type of bearings		Graflon
Bearing lubricant		Pump Liquid
Max design test pressure of casing	kPa	1600
Mass of pump unit complete (motor including motor)	kg	4150 kg for complete pump set 467 kg per pump
Motors		
Manufacturer		Siemens
Type		Induction
Model		81U15336
Country of origin		Denmark
Guaranteed figures		
Rated power	kW	45
Power factor at duty point		0.88

[redacted]

ULTRA FILTRATION FEED PUMPS

[redacted]

M1.18 '24 Ultra filtration feed pumps

Item description	Units	Technical Particulars
M1.18 '24 Ultra filtration feed pumps		
Note: that the information stipulated below does not necessarily represent all the information required for this item/system. The tenderer shall provide drawings and/or brochures showing details of the equipment offered and any other relevant information shall be submitted with the tender.		
General information		
Manufacturer		Gorman-Rupp
Type		Centrifugal End-Suction Pump
Model		6514B60-B
Country of origin		USA
Duty point – guaranteed figures		
Discharge	l/s	336
Head	m	30
Efficiency (pump)	%	70.4
Speed	rpm	1070
Power required	kW	140
Pump Specific Speed	SI	2904
Maximum power under any condition	kW	148
Shut valve head	m	37.8
NPSH required	m	4.74
Rated solids handling	mm	88.9
Mechanical information		
Number of stages		1
Casing material		Ductile Iron 65-45-12
Impeller material		Ductile Iron 80-55-06
Impeller diameter	mm	483
Inlet throat diameter	mm	356mm (14")
Discharge diameter	mm	356mm (14")
Shaft material		Alloy Steel 4150
Mechanical seal	mm	2.5" (63.5mm)
Type of bearings		Radial - Open roller / Thrust - Open double roller
Bearing lubricant		Oil lubricated
Max design test pressure of casing	kPa	690Kpa
Mass of pump unit complete (motor including motor)	kg	2400 (estimated)
Motors		
Manufacturer		WEG
Type		IE3 Top Premium
Model		200Kw 4 Pole 3415L
Country of origin		Brazil
Guaranteed figures		
Rated power	kW	200
Power factor at duty point		0.85

[redacted]

ULTRA FILTRATION BACKWASH PUMPS

[redacted]

M1.19 '24 Ultra filtration backwash pumps

Item description	Units	Technical Particulars
M1.19 '24 Ultra filtration backwash pumps		
Note: that the information stipulated below does not necessarily represent all the information required for this item/system. The tenderer shall provide drawings and/or brochures showing details of the equipment offered and any other relevant information shall be submitted with the tender.		
General information		
Manufacturer		Samco pumps
Type		Centrifugal
Model		CSW 12x12x21
Country of origin		SA
Duty point – guaranteed figures		
Discharge	l/s	1848 m3/hr
Head	m	25
Efficiency (pump)	%	80.28
Speed	rpm	1023
Power required	kW	160
Pump Specific Speed	SI	3933
Maximum power under any condition	kW	167
Shut valve head	m	44
NPSH required	m	9.39
Rated solids handling	mm	154
Mechanical Information		
Number of stages		1
Casing material		CI
Impeller material		316ss
Impeller diameter	mm	533
Inlet throat diameter	mm	12 Inches
Discharge diameter	mm	12 Inches
Shaft material		EN8
Mechanical seal	mm	5.25 inches
Type of bearings		ball
Bearing lubricant		Grease
Max design test pressure of casing	kPa	1600
Mass of pump unit complete (motor including motor)	kg	3585
Motors		
Manufacturer		weg
Type		High efficiency
Model		W22 IE3
Country of origin		Brazil
Guaranteed figures		
Rated power	kW	200kw 6P
Power factor at duty point		0.757

[redacted]

ULTRA FILTRATION CLEAN IN PLACE PUMPS

[redacted]

M1.20 '24 Ultra filtration clean in place pumps

Item description	Units	Technical Particulars
M1.20 '24 Ultra filtration clean in place pumps		
Note: that the information stipulated below does not necessarily represent all the information required for this item/system. The tenderer shall provide drawings and/or brochures showing details of the equipment offered and any other relevant information shall be submitted with the tender.		
General information		
Manufacturer		Samco pumps
Type		Centrifugal
Model		CSW 4x4x10
Country of origin		SA
Duty point – guaranteed figures		
Discharge	ℓ/s	50
Head	m	10
Efficiency (pump)	%	71.88
Speed	rpm	1355
Power required	kW	6.97
Pump Specific Speed	SI	3233
Maximum power under any condition	kW	7.42
Shut valve head	m	19.4
NPSH required	m	3.31
Rated solids handling	mm	76
Mechanical information		
Number of stages		1
Casing material		316ss
Impeller material		316ss
Impeller diameter	mm	251
Inlet throat diameter	mm	101
Discharge diameter	mm	101
Shaft material		316ss
Mechanical seal	mm	47.625
Type of bearings		ball
Bearing lubricant		Grease
Max design test pressure of casing	kPa	1600
Mass of pump unit complete (motor including motor)	kg	
Motors		
Manufacturer		Weg
Type		High efficiency
Model		W22 IE3
Country of origin		Brazil
Guaranteed figures		
Rated power	kW	11kw 4P
Power factor at duty point		0.45

[redacted]

ULTRA FILTRATION REJECT RETURN PUMPS

[redacted]

M1.21 '24 Ultra filtration reject return pumps

Item description	Units	Technical Particulars
M1.21 '24 Ultra filtration reject return pumps		
Note: that the information stipulated below does not necessarily represent all the information required for this item/system. The tenderer shall provide drawings and/or brochures showing details of the equipment offered and any other relevant information shall be submitted with the tender.		
General information		
Manufacturer		Xylem Water Solutions
Type		Submersible
Model		NP 3202 MT 3~ 641
Country of origin		Sweden
Duty point – guaranteed figures		
Discharge	l/s	130
Head	m	10.7
Efficiency (pump)	%	81.2
Speed	rpm	978.7
Power required	kW	16.9
Pump Specific Speed	SI	3582
Maximum power under any condition	kW	18
Shut valve head	m	20
NPSH required	m	3.13
Rated solids handling	mm	Non-Clog design
Mechanical information		
Number of stages		1
Casing material		Cast Iron with option of coating
Impeller material		Stainless Steel
Impeller diameter	mm	354
Inlet throat diameter	mm	250
Discharge diameter	mm	200
Shaft material		Stainless steel, 1.4057+QT800
Mechanical seal	mm	Plug-in Seal – WCCR Tungsten Carbide
Type of bearings		Ball Bearing
Bearing lubricant		Sealed for life – Pre-greased
Max design test pressure of casing	kPa	1600 (PN16)
Mass of pump unit complete (motor including motor)	kg	530
Motors		
Manufacturer		Xylem Water Solutions
Type		Squirrel Cage induction
Model		N3202.660 30-18-6AA-W 22kW
Country of origin		Sweden
Guaranteed figures		
Rated power	kW	22
Power factor at duty point		0.80

[redacted]

TERTIARY TREATMENT REUSE PUMPS

[redacted]

M1.22 '24 Tertiary treatment reuse pumps

Item description	Units	Technical Particulars
M1.22 '24 Tertiary treatment reuse pumps		
Note: that the information stipulated below does not necessarily represent all the information required for this item/system. The tenderer shall provide drawings and/or brochures showing details of the equipment offered and any other relevant information shall be submitted with the tender.		
General information		
Manufacturer		Samco pumps
Type		Splitcase double suction
Model		HS90 12x8x22L
Country of origin		SA
Duty point – guaranteed figures		
Discharge	l/s	800 m3/hr
Head	m	100
Efficiency (pump)	%	83.43
Speed	rpm	1391
Power required	kW	261
Pump Specific Speed	SI	1244
Maximum power under any condition	kW	338
Shut valve head	m	116.7
NPSH required	m	4.26
Rated solids handling	mm	41
Mechanical information		
Number of stages		1
Casing material		DI
Impeller material		Duplex SS
Impeller diameter	mm	584
Inlet throat diameter	mm	12 inches
Discharge diameter	mm	8 inches
Shaft material		316ss
Mechanical seal	mm	80
Type of bearings		Ball
Bearing lubricant		Grease
Max design test pressure of casing	kPa	1600
Mass of pump unit complete (motor including motor)	kg	2926
Motors		
Manufacturer		Weg
Type		High efficiency
Model		W22 ie3
Country of origin		Brazil
Guaranteed figures		
Rated power	kW	315kw 4p
Power factor at duty point		0.83

[redacted]

'24 MBR OFF-SITE REUSE PUMPS

[redacted]

M1.23 '24 MBR off-site reuse pumps

Item description	Units	Technical Particulars
M1.23 '24 MBR off-site reuse pumps		
Note: that the information stipulated below does not necessarily represent all the information required for this item/system. The tenderer shall provide drawings and/or brochures showing details of the equipment offered and any other relevant information shall be submitted with the tender.		
General information		
Manufacturer		Grundfos
Type		Horizontal Split Casing Pump
Model		LS 350-250/630B 4F2DDBAQEX
Country of origin		China
Duty point – guaranteed figures		
Discharge	ℓ/s	389
Head	m	105
Efficiency (pump)	%	83.99
Speed	rpm	1490
Power required	kW	476.45
Pump Specific Speed	SI	TBC
Maximum power under any condition	kW	561.3
Shut valve head	m	125
NPSH required	m	6.2
Rated solids handling	mm	N/A
Mechanical information		
Number of stages		1
Casing material		Ductile Iron
Impeller material		Stainless steel
Impeller diameter	mm	568.1
Inlet throat diameter	mm	350
Discharge diameter	mm	250
Shaft material		Stainless steel 420
Mechanical seal	mm	TBC
Type of bearings		Roller & Angular Contact
Bearing lubricant		Grease
Max design test pressure of casing	kPa	1600
Mass of pump unit complete (motor including motor)	kg	6140
Motors		
Manufacturer		
Type		
Model		
Country of origin		
Guaranteed figures		
Rated power	kW	
Power factor at duty point		

[redacted]

'24 OVERFLOW DAM RECYCLE PUMPS

M1.24 '24 Overflow dam recycle pumps

Item description	Units	Technical Particulars
M1.24 '24 Overflow dam recycle pumps		
Note: that the information stipulated below does not necessarily represent all the information required for this item/system. The tenderer shall provide drawings and/or brochures showing details of the equipment offered and any other relevant information shall be submitted with the tender.		
General information		
Manufacturer		Grundfos
Type		Submersible
Model		SL1.110.200.110.4.52M.S.N.51D.A
Country of origin		Hungary
Duty point – guaranteed figures		
Discharge	ℓ/s	87
Head	m	9
Efficiency (pump)	%	81.1
Speed	rpm	1481
Power required	kW	9.45
Pump Specific Speed	SI	TBC
Maximum power under any condition	kW	11
Shut valve head	m	21.5
NPSH required	m	6.36
Rated solids handling	mm	110
Mechanical information		
Number of stages		1
Casing material		Cast Iron EN 1561 EN-GJL-250
Impeller material		Cast Iron EN 1561 EN-GJL-250
Impeller diameter	mm	TBC
Inlet throat diameter	mm	200
Discharge diameter	mm	200
Shaft material		Stainless steel
Mechanical seal	mm	TBC
Type of bearings		Ball Bearings
Bearing lubricant		Grease
Max design test pressure of casing	kPa	1000
Mass of pump unit complete (motor including motor)	kg	318
Motors		
Manufacturer		Grundfos
Type		Submersible induction
Model		
Country of origin		Hungary
Guaranteed figures		
Rated power	kW	11
Power factor at duty point		0.82

[redacted]

WAS RECYCLE PUMPS

[redacted]

M1.25 '24 WAS recycle pumps

Item description	Units	Technical Particulars
M1.25 '24 WAS recycle pumps		
Note: that the information stipulated below does not necessarily represent all the information required for this item/system. The tenderer shall provide drawings and/or brochures showing details of the equipment offered and any other relevant information shall be submitted with the tender.		
General information		
Manufacturer		Gorman-Rupp
Type		Centrifugal
Model		6510C60-B
Country of origin		USA
Duty point – guaranteed figures		
Discharge	ℓ/s	74
Head	m	10
Efficiency (pump)	%	72.1
Speed	rpm	1027
Power required	kW	10.1
Pump Specific Speed	SI	1571
Maximum power under any condition	kW	10.7
Shut valve head	m	13
NPSH required	m	3.1
Rated solids handling	mm	82.5
Mechanical information		
Number of stages		1
Casing material		Gray Iron 30
Impeller material		Ductile Iron 65-45-12
Impeller diameter	mm	303
Inlet throat diameter	mm	254
Discharge diameter	mm	254
Shaft material		Alloy Steel 4150
Mechanical seal	mm	1.88"
Type of bearings		Open roller
Bearing lubricant		Oil
Max design test pressure of casing	kPa	710
Mass of pump unit complete (motor including motor)	kg	1050
Motors		
Manufacturer		WEG
Type		IE3 Top Premium
Model		15Kw 4 Pole 160L
Country of origin		Brazil
Guaranteed figures		
Rated power	kW	15
Power factor at duty point		64.9%

[redacted]

WAS DEWATERING RING MAIN PUMPS

[redacted]

M1.26 '24 WAS dewatering ring main pumps

Item description	Units	Technical Particulars
M1.26 '24 WAS dewatering ring main pumps		
Note: that the information stipulated below does not necessarily represent all the information required for this item/system. The tenderer shall provide drawings and/or brochures showing details of the equipment offered and any other relevant information shall be submitted with the tender.		
General information		
Manufacturer		Gorman-Rupp
Type		Self priming
Model		T10A60S-B/FM
Country of origin		USA
Duty point – guaranteed figures		
Discharge	*l*/s	74
Head	m	10
Efficiency (pump)	%	74.6
Speed	rpm	782
Power required	kW	9.74
Pump Specific Speed	SI	1196
Maximum power under any condition	kW	11.5
Shut valve head	m	13.8
NPSH required	m	1.39
Rated solids handling	mm	76.2
Mechanical information		
Number of stages		1
Casing material		Gray Iron 30
Impeller material		Alloy Steel 4150
Impeller diameter	mm	375
Inlet throat diameter	mm	203
Discharge diameter	mm	203
Shaft material		Alloy Steel 4150
Mechanical seal	mm	1.88"
Type of bearings		Open double roll ball
Bearing lubricant		Oil
Max design test pressure of casing	kPa	572
Mass of pump unit complete (motor including motor)	kg	1150
Motors		
Manufacturer		WEG
Type		IE3 Top Premium
Model		15Kw 4 Pole 160L
Country of origin		Brazil
Guaranteed figures		
Rated power	kW	15
Power factor at duty point		64.9%

PRIMARY SLUDGE STORAGE TANK MIXING PUMPS

[redacted]

M1.27 '24 Primary sludge storage tank mixing pumps

Item description	Units	Technical Particulars
M1.27 '24 Primary sludge storage tank mixing pumps		
Note: that the information stipulated below does not necessarily represent all the information required for this item/system. The tenderer shall provide drawings and/or brochures showing details of the equipment offered and any other relevant information shall be submitted with the tender.		
General Information		
Manufacturer		Gorman-Rupp
Type		Self priming centrifugal
Model		T10A60S-B
Country of origin		USA
Duty point – guaranteed figures		
Discharge	ℓ/s	95
Head	m	12
Efficiency (pump)	%	78.5
Speed	rpm	885
Power required	kW	885
Pump Specific Speed	SI	2399
Maximum power under any condition	kW	16.2
Shut valve head	m	17.5
NPSH required	m	1.7
Rated solids handling	mm	76.2
Mechanical Information		
Number of stages		1
Casing material		Grey Iron 30
Impeller material		Ductile 65-45-12
Impeller diameter	mm	375
Inlet throat diameter	mm	254
Discharge diameter	mm	254
Shaft material		Stainless Steel 17-4PH
Mechanical seal	mm	38.1mm (1.5")
Type of bearings		Open double roll ball
Bearing lubricant		Oil
Max design test pressure of casing	kPa	683
Mass of pump unit complete (motor including motor)	kg	1200
Motors		
Manufacturer		WEG
Type		IE3 Top Premium
Model		18.5Kw 4 Pole 400V
Country of origin		Brazil
Guaranteed figures		
Rated power	kW	18.5
Power factor at duty point		77%

[redacted]

PRIMARY SLUDGE DEWATERING RING MAIN PUMPS

M1.28 '24 Primary sludge dewatering ring main pumps

Item description	Units	Technical Particulars
M1.28 '24 Primary sludge dewatering ring main pumps		
Note: that the information stipulated below does not necessarily represent all the information required for this item/system. The tenderer shall provide drawings and/or brochures showing details of the equipment offered and any other relevant information shall be submitted with the tender.		
General information		
Manufacturer		Gorman-Rupp
Type		Self priming
Model		T8A60S-B
Country of origin		USA
Duty point – guaranteed figures		
Discharge	l/s	37
Head	m	10
Efficiency (pump)	%	53.3
Speed	rpm	770
Power required	kW	6.78
Pump Specific Speed	SI	833
Maximum power under any condition	kW	8.18
Shut valve head	m	12.5
NPSH required	m	0.79
Rated solids handling	mm	76.2
Mechanical information		
Number of stages		1
Casing material		Gray Iron 30
Impeller material		Ductile Iron 65-45-12
Impeller diameter	mm	375
Inlet throat diameter	mm	203
Discharge diameter	mm	203
Shaft material		Alloy Steel 4150
Mechanical seal	mm	1.88"
Type of bearings		Open double roll ball
Bearing lubricant		Oil
Max design test pressure of casing	kPa	572
Mass of pump unit complete (motor including motor)	kg	1150
Motors		
Manufacturer		WEG
Type		IE3 Top Premium
Model		7.5Kw 4 Pole 132M
Country of origin		Brazil
Guaranteed figures		
Rated power	kW	7.5
Power factor at duty point		68.1%

[redacted]

WAS FILTRATE RETURN PUMPS

[redacted]

M1.29 '24 WAS filtrate return pumps

Item description	Units	Technical Particulars
M1.29 '24 WAS filtrate return pumps		
Note: that the information stipulated below does not necessarily represent all the information required for this item/system. The tenderer shall provide drawings and/or brochures showing details of the equipment offered and any other relevant information shall be submitted with the tender.		
General information		
Manufacturer		Gorman-Rupp
Type		Self priming
Model		T10A60S-B
Country of origin		USA
Duty point – guaranteed figures		
Discharge	ℓ/s	136
Head	m	6
Efficiency (pump)	%	71.8
Speed	rpm	950
Power required	kW	11.2
Pump Specific Speed	SI	2890
Maximum power under any condition	kW	11.5
Shut valve head	m	14.7
NPSH required	m	2.31
Rated solids handling	mm	76.2
Mechanical information		
Number of stages		1
Casing material		Gray Iron 30
Impeller material		Ductile Iron 65-45-12
Impeller diameter	mm	326
Inlet throat diameter	mm	254
Discharge diameter	mm	254
Shaft material		Stainless steel 17-4PH
Mechanical seal	mm	1.88"
Type of bearings		Open double row ball
Bearing lubricant		Oil
Max design test pressure of casing	kPa	683
Mass of pump unit complete (motor including motor)	kg	1250
Motors		
Manufacturer		WEG
Type		IE3 Top Premium
Model		15Kw 6 Pole 180L
Country of origin		Brazil
Guaranteed figures		
Rated power	kW	15
Power factor at duty point		68.1%

[redacted]

PRIMARY SLUDGE FILTRATE RETURN PUMPS

[redacted]

M1.30 '24 Primary sludge filtrate return pumps

Item description	Units	Technical Particulars
M1.30 '24 Primary sludge filtrate return pumps		
Note: that the information stipulated below does not necessarily represent all the information required for this item/system. The tenderer shall provide drawings and/or brochures showing details of the equipment offered and any other relevant information shall be submitted with the tender.		
General information		
Manufacturer		Gorman-Rupp
Type		Self priming
Model		T10A60S-B
Country of origin		USA
Duty point – guaranteed figures		
Discharge	l/s	72
Head	m	6.27
Efficiency (pump)	%	79
Speed	rpm	650
Power required	kW	5.62
Pump Specific Speed	SI	1439
Maximum power under any condition	kW	6.84
Shut valve head	m	9.13
NPSH required	m	1.38
Rated solids handling	mm	76.2
Mechanical information		
Number of stages		1
Casing material		Gray Iron 30
Impeller material		Ductile Iron 65-45-12
Impeller diameter	mm	375
Inlet throat diameter	mm	254
Discharge diameter	mm	254
Shaft material		Stainless Steel 17-4PH
Mechanical seal	mm	1.88"
Type of bearings		Open double row ball
Bearing lubricant		Oil
Max design test pressure of casing	kPa	683
Mass of pump unit complete (motor including motor)	kg	1100
Motors		
Manufacturer		WEG
Type		IE3 Top Premium
Model		7.5Kw 4 Pole 132M
Country of origin		Brazil
Guaranteed figures		
Rated power	kW	7.5
Power factor at duty point		74.9%

[redacted]

PRIMARY SLUDGE DEWATERING FEED PUMPS

[redacted]

M1.31 '24 Primary sludge dewatering feed pumps

Item description	Units	Technical Particulars
M1.31 '24 Primary sludge dewatering feed pumps		
Note: that the information stipulated below does not necessarily represent all the information required for this item/system. The tenderer shall provide drawings and/or brochures showing details of the equipment offered and any other relevant information shall be submitted with the tender.		
General information		
Manufacturer		Netzsch
Type		Progressive cavity
Model		NM0768Y01L04B
Country of origin		Germany/India/South Africa
Duty point – guaranteed figures		
Discharge	m^3/hr	50
Head	m	20
Speed	rpm	259
Rubbing velocity	m/s	1.5
Power required	kW	4.97
Maximum power under any condition	kW	N/A depending on operating conditions
Pressure rating of pump	bar	4
Mechanical information		
Casing material		0.6025 (Cast iron grade 250)
Discharge diameter	mm	125 (PN16)
Material		
Stator		Nemolast S62 (Shore A=72)
Rotor		Chrome steel hardened
Seal		SiC-SiC (Q1Q1VGG)
Type of bearings		Ball
Bearing lubricant		Grease
Max design test pressure of casing	kPa	1000
Mass of pump unit complete (motor	kg	ı- 330 kg
excluded)	mm	
Motors		
Manufacturer		Nord
Type		Nord /132MP/ B5 / 4P IP55
Model		Nord /132MP/ B5 / 4P IP55
Country of origin		Germany/India/South Africa
Guaranteed figures		
Rated power	kW	7.5
Power factor at duty point		0.77

[redacted]

DEWATERED PRIMARY SLUDGE CAKE PUMPS

M1.32 '24 Dewatered primary sludge cake pumps

Item description	Units	Technical Particulars
M1.32 '24 Dewatered primary sludge cake pumps		
Note: that the information stipulated below does not necessarily represent all the information required for this item/system. The tenderer shall provide drawings and/or brochures showing details of the equipment offered and any other relevant information shall be submitted with the tender.		
General information		
Manufacturer		Netzsch
Type		Progressive cavity
Model		NM090SF04S24V
Country of origin		Germany
Duty point – guaranteed figures		
Discharge	m^3/hr	12.8
Head	m	240
Speed	rpm	103
Rubbing velocity	m/s	0.78
Power required	kW	
Maximum power under any condition	kW	N/A depending on operating conditions
Pressure rating of pump	bar	Rated to 24 Bar
Mechanical information		
Casing material		AISI 316 (CrNiMo 17-12-2)
Discharge diameter	mm	200 (PN40)
Material		
Stator		Nemolast S62 (Shore A=72)
Rotor		Chrome steel hardened
Seal		Gland packing (Aramid)
Type of bearings		Roller
Bearing lubricant		Grease
Max design test pressure of casing	kPa	500
Mass of pump unit complete (motor	kg	+-1300 kg
excluded)	mm	
Motors		
Manufacturer		Nord
Type		4P/IP55/250WH
Model		4P/IP55/250WH
Country of origin		Germany/India/South Africa
Guaranteed figures		
Rated power	kW	55.0
Power factor at duty point		0.84

[redacted]

WAS DEWATERING FEED PUMPS

[redacted]

M1.33 '24 WAS dewatering feed pumps

Item description	Units	Technical Particulars
M1.33 '24 WAS dewatering feed pumps		
Note: that the information stipulated below does not necessarily represent all the information required for this item/system. The tenderer shall provide drawings and/or brochures showing details of the equipment offered and any other relevant information shall be submitted with the tender.		
General information		
Manufacturer		Netzsch
Type		Progressive cavity
Model		NM105BY01L04B
Country of origin		Germany/India/South Africa
Duty point – guaranteed figures		
Discharge	m^3/hr	100
Head	m	20
Speed	rpm	185
Rubbing velocity	m/s	1.5
Power required	kW	11.2
Maximum power under any condition	kW	N/A depending on operating conditions
Pressure rating of pump	bar	4
Mechanical information		
Casing material		0.6025 (Cast iron grade 250)
Discharge diameter	mm	150 (PN16)
Material		
Stator		Nemolast S62
Rotor		Chrome steel hardened
Seal		SiC-SiC (Q1Q1VGG)
Type of bearings		Ball
Bearing lubricant		Grease
Max design test pressure of casing	kPa	500
Mass of pump unit complete (motor	kg	+- 850 kg
excluded)	mm	
Motors		
Manufacturer		Nord
Type		Nord / 180LP/4 / B5
Model		180LP/4 / B5/ IP55
Country of origin		Germany/India/South Africa
Guaranteed figures		
Rated power	kW	22.0
Power factor at duty point		0.87

[redacted]

DEWATERED WAS CAKE PUMPS

M1.34 '24 Dewatered WAS cake pumps

Item description	Units	Technical Particulars
M1.34 '24 Dewatered WAS cake pumps		
Note: that the information stipulated below does not necessarily represent all the information required for this item/system. The tenderer shall provide drawings and/or brochures showing details of the equipment offered and any other relevant information shall be submitted with the tender.		
General information		
Manufacturer		Netzsch
Type		Progressive cavity
Model		NM090SF04S24V
Country of origin		Germany
Duty point – guaranteed figures		
Discharge	m^3/hr	12.5
Head	m	240
Speed	rpm	103
Rubbing velocity	m/s	0.78
Power required	kW	
Maximum power under any condition	kW	N/A depending on operating conditions
Pressure rating of pump	bar	24
Mechanical information		
Casing material		AISI 316 (CrNiMo 17-12-2)
Discharge diameter	mm	200 (PN40)
Material		
Stator		Nemolast S62 (Shore A=72)
Rotor		Chrome steel hardened
Seal		Gland packing (Aramid)
Type of bearings		Roller
Bearing lubricant		Grease
Max design test pressure of casing	kPa	500
Mass of pump unit complete (motor	kg	+-1300 kg
excluded)	mm	
Motors		
Manufacturer		Nord
Type		4P/IP55/250WH
Model		4P/IP55/250WH
Country of origin		Germany/India/South Africa
Guaranteed figures		
Rated power	kW	55.0
Power factor at duty point		0.84

[redacted]

PRIMARY SLUDGE DOSING PUMPS

M1.35 '24 Primary sludge poly dosing pumps

Item description	Units	Technical Particulars
M1.35 '24 Primary sludge poly dosing pumps		
Note: that the information stipulated below does not necessarily represent all the information required for this item/system. The tenderer shall provide drawings and/or brochures showing details of the equipment offered and any other relevant information shall be submitted with the tender.		
General information		
Manufacturer		Netzsch
Type		Progressive cavity
Model		NM021BY01L04B
Country of origin		Germany/India/South Africa
Duty point – guaranteed figures		
Discharge	m^3/hr	0.82
Head	m	20
Speed	rpm	304
Rubbing velocity	m/s	0.45
Power required	kW	0.29
Maximum power under any condition	kW	N/A depending on operating conditions
Pressure rating of pump	bar	4
Mechanical information		
Casing material		0.6025 (Cast iron grade 250)
Discharge diameter	mm	32 (1 ¼" BSP)
Material		
Stator		Nemolast S62 (Shore A=72)
Rotor		AISI 316 (CrNiMo 17-12-2)
Seal		SiC-SiC (Q1Q1VGG)
Type of bearings		Ball
Bearing lubricant		Grease
Max design test pressure of casing	kPa	500
Mass of pump unit complete (motor	kg	+- 35KG
excluded)	mm	
Motors		
Manufacturer		Nord
Type		90LP/4 / B5 / IP55
Model		90LP/4 / B5 / IP55
Country of origin		Germany/India/South Africa
Guaranteed figures		
Rated power	kW	1.5
Power factor at duty point		0.79

[redacted]

WAS POLY DOSING PUMPS

M1.36 '24 WAS poly dosing pumps

Item description	Units	Technical Particulars
M1.36 '24 WAS poly dosing pumps		
Note: that the information stipulated below does not necessarily represent all the information required for this item/system. The tenderer shall provide drawings and/or brochures showing details of the equipment offered and any other relevant information shall be submitted with the tender.		
General information		
Manufacturer		Netzsch
Type		Progressive cavity
Model		NM021BY01L04B
Country of origin		Germany/India/South Africa
Duty point – guaranteed figures		
Discharge	m^3/hr	0.92
Head	m	20
Speed	rpm	340
Rubbing velocity	m/s	0.51
Power required	kW	0.32
Maximum power under any condition	kW	N/A depending on operating conditions
Pressure rating of pump	bar	4
Mechanical information		
Casing material		0.6025 (Cast iron grade 250)
Discharge diameter	mm	32 (1 ¼" BSP)
Material		
Stator		Nemolast S62 (Shore A=72)
Rotor		AISI 316 (CrNiMo 17-12-2)
Seal		SiC-SiC (Q1Q1VGG)
Type of bearings		Ball
Bearing lubricant		Grease
Max design test pressure of casing	kPa	500
Mass of pump unit complete (motor	kg	+-35 kg
excluded)	mm	
Motors		
Manufacturer		Nord
Type		90LP/4 / B5 / IP55
Model		90LP/4 / B5 / IP55
Country of origin		Germany/India/South Africa
Guaranteed figures		
Rated power	kW	1.5
Power factor at duty point		0.79

[redacted]

POLY LUBRICATION PUMP

[redacted]

M1.37 '24 Poly lubrication pumps

Item description	Units	Technical Particulars
M1.37 '24 Poly lubrication pumps		
Note: that the information stipulated below does not necessarily represent all the information required for this item/system. The tenderer shall provide drawings and/or brochures showing details of the equipment offered and any other relevant information shall be submitted with the tender.		
General information		
Manufacturer		Netzsch South Africa
Type		Progressive cavity
Model		NM021BY04S24B
Country of origin		South Africa
Duty point – guaranteed figures		
Discharge	m^3/hr	0.2
Head	m	240
Speed	rpm	187
Rubbing velocity	m/s	0.28
Power required	kW	0.22
Maximum power under any condition	kW	N/A depending on operating conditions
Pressure rating of pump	bar	24
Mechanical information		
Casing material		0.6025 (Cast iron grade 250)
Discharge diameter	mm	50 (PN25)
Material		
Stator		Nemolast S62 (Shore A=72)
Rotor		AISI 316 (CrNiMo 17-12-2)
Seal		SiC-SiC (Q1Q1VGG)
Type of bearings		Ball
Bearing lubricant		Grease
Max design test pressure of casing	kPa	500
Mass of pump unit complete (motor excluded)	kg mm	+-45 kg
Motors		
Manufacturer		Nord
Type		80LP/4 / B5/ IP55
Model		80LP/4 / B5/ IP55
Country of origin		Germany/India/South Africa
Guaranteed figures		
Rated power	kW	0.75
Power factor at duty point		0.72

[redacted]

Screens

MECHANICAL FRONT RAKE SCREEN (COARSE)

[redacted]

M2.1 '24 Mechanical front rake screens (Coarse screens)

Item description	Units	Technical Particulars
M2.1 '24 Mechanical front rake screens (Coarse screens)		
Note: that the information stipulated below does not necessarily represent all the information required for this item/system. The tenderer shall provide drawings and/or brochures showing details of the equipment offered and any other relevant information shall be submitted with the tender.		
General information		
Manufacturer		S.A.M.E Water
Type		Front Rake Screen
Model		Incline Bar Screen
Country of origin		South Africa
Duty requirements		
Operating range of unit, water flow	m^3/s	1.87 m3/s @ 1m.s velocity
Operating range of unit, screenings	kg/hr	Approx..2000-3000kg/hr
Maximum headloss at 50% blinded	mm	Approx.120-140mm
Screenings Capture Ration		Approx.50-60%
Mechanical information		
Aperture of screen	mm	25
Overall width of frame at level of screen field	mm	1560
Overall height	mm	5040
Discharge level	mm	1700
Overall length	mm	5240
Material of frame		316s/s
Material of screen field		316s/s
Material of rake assembly		316s/s
Material of rake comb		316s/s
Material of chain		Duplex s/s & 316s/s
Material of chain guides		316s/s
Material of sprockets		316s/s
Material of wiper assembly		316s/s
Material of wiper blade		HDPE
Overall mass of unit (including motors(s))	kg/hr	Approx..1900kg
Motors		
Manufacturer		Zest / SEW
Type		TEFC
Model		90L
Country of origin		Brazil / Germany / SA
Guaranteed figures		
Rated power	kW	1.5kw
Power factor at duty point		0.83

[redacted]

MECHANICAL FRONT RAKE SCREEN (MEDIUM)

M2.2 '24 Mechanical front rake screens (Medium screens)

Item description	Units	Technical Particulars
M2.2 '24 Mechanical front rake screens (Medium screens)		
Note: that the information stipulated below does not necessarily represent all the information required for this item/system. The tenderer shall provide drawings and/or brochures showing details of the equipment offered and any other relevant information shall be submitted with the tender.		
General information		
Manufacturer		S.A.M.E Water
Type		Front Rake Screen
Model		Incline Bar Screen
Country of origin		South Africa
Duty requirements		
Operating range of unit, water flow	m^3/s	1.48 m3/s @ 1m.s velocity
Operating range of unit, screenings	kg/hr	Approx.2500-3500kg/hr
Maximum headloss at 50% blinded	mm	Approx.140-160mm
Screenings Capture Ration		Approx.50-70%
Mechanical information		
Aperture of screen	mm	12
Overall width of frame at level of screen field	mm	1560
Overall height	mm	5040
Discharge level	mm	1700
Overall length	mm	5240
Material of frame		316s/s
Material of screen field		316s/s
Material of rake assembly		316s/s
Material of rake comb		316s/s
Material of chain		Duplex c/s & 316s/s
Material of chain guides		316s/s
Material of sprockets		316s/s
Material of wiper assembly		316s/s
Material of wiper blade		HDPE
Overall mass of unit (including motors(s))	kg/hr	Approx.2100kg
Motors		
Manufacturer		Zest / SEW
Type		TEFC
Model		90L
Country of origin		Brazil / Germany / SA
Guaranteed figures		
Rated power	kW	1.5kw
Power factor at duty point		0.83

[redacted]

MECHANICAL PERFORATED PLATE SCREEN (FINE)

M2.3 '24 Mechanical front rake screens (Medium screens)

Item description	Units	Technical Particulars
M2.3 '24 Mechanical front rake screens (Medium screens)		
Note: that the information stipulated below does not necessarily represent all the information required for this item/system. The tenderer shall provide drawings and/or brochures showing details of the equipment offered and any other relevant information shall be submitted with the tender.		
General information		
Manufacturer		FSM
Type		Perforated Filter Screen
Model		FRS 3 1400/6/70
Country of origin		Germany
Duty requirements		
Operating range of unit, water flow	m^3/s	1.58 m3/s
Operating range of unit, screenings	kg/hr	3800
Maximum headloss at 50% blinded	mm	290mm
Screenings Capture Ration		85%
Mechanical information		
Aperture of screen	mm	6
Overall width of frame at level of screen field	mm	1576
Overall height	mm	6520
Discharge level	mm	1700
Overall length	mm	6520
Material of frame		316s/s
Material of screen field		316s/s
Material of brush assembly		316s/s
Material of brush		Polyamide / Polypropylene
Material of sprockets		Duplex s/s
Overall mass of unit (including motors(s))	kg/hr	2151
Motors		
Manufacturer		SEW
Type		1.1kw / 1.5kw 112G Ex e IIc T3 Gb Ip65
Model		90S / 90 L

[redacted]

'24 ULTRA FINE DRUM SCREEN

M2.4 '24 Drum screens (Ultra fine screens)

Item description	Units	Technical Particulars
M2.4 '24 Drum screens (Ultra fine screens)		
Note: that the information stipulated below does not necessarily represent all the information required for this item/system. The tenderer shall provide drawings and/or brochures showing details of the equipment offered and any other relevant information shall be submitted with the tender.		
General information		
Manufacturer		Nrw-Anlagentechnik
Type		DSF
Model		78
Country of origin		Germany
Duty requirements		
Operating range of unit, water flow	m^3/s	0.47
Operating range of unit, screenings/solids	mg/l	575
Design filtration rate	$m^3/m^2/hr$	144 up to 217
Maximum headloss at 50% blinded	mm	800
Screenings Capture Ration		
Washwater requirements	l/s	4.2.(5.12m / day)
Washwater requirements	bar	2-3bar
Mechanical information		
Aperture of screen	mm	1.5
Overall width of frame at level of screen field	mm	1874
Overall height	mm	768
Discharge level	mm	1.000
Overall length	mm	3.880
Material of frame		SS316 (1.4401/1.4404/1.4571)
Material of screen field		SS316 (1.4401/1.4404/1.4571)
Material of brush assembly		SS316 (1.4401/1.4404/1.4571)
Material of brush		SS316 / PPN
Material of sprockets		N/A
Material of wiper blade		SS316 (1.4401/1.4404/1.4571)
Overall mass of unit (including motors(s))	kg	2.500
Motors		
Manufacturer		SEW
Type		FA
Model		87
Country of origin		Germany
Guaranteed figures		
Rated power	kW	0.55
Power factor at duty point		1.75

[redacted]

ULTRA FILTRATION DISC MICRO SCREEN

M2.5 '24 Ultra filtration micro screens

Item description	Units	Technical Particulars
M2.5 '24 Ultra filtration micro screens		
Note: that the information stipulated below does not necessarily represent all the information required for this item/system. The tenderer shall provide drawings and/or brochures showing details of the equipment offered and any other relevant information shall be submitted with the tender.		
General information		
Manufacturer		Huber SE
Type		RoDisc
Model		28
Country of origin		Germany
Duty requirements		
Operating range of unit, water flow	m^3/s	0,3472
Operating range of unit, screenings/solids	mg/l	60 mg/l 24 Hours, 80mg/l 1 Hour
Design filtration rate	$m^3/m^2/hr$	12,3
Maximum headloss at 50% blinded	mm	100
Screenings Capture Ration		95
Washwater requirements	l/s	13 l/s
Washwater requirements	bar	7 bar
Mechanical information		
Aperture of screen	mm	18 µm
Overall width of frame at level of screen field	mm	2295
Overall height	mm	2691
Discharge level	mm	1270
Overall length	mm	7890
Material of frame		304 Stainless Steel
Material of sereen field		136 L Stainless Steel
Material of brush assembly		na
Material of brush		na
Material of sprockets		na
Material of wiper blade		na
Overall mass of unit (including motors(s))	kg/hr	5800 kg
Motors		
Manufacturer		Bauer
Type		BF60ZX-74W
Model		S08MA4-TF/C2-__
Country of origin		Germany
Guaranteed figures		
Rated power	kW	1,55 kW
Power factor at duty point		84,7

[redacted]

Compactors/Washer Compactor

COARSE AND MEDIUM SCREEN COMPACTOR

M3.1 '24 Inlet works washer compactors(Coarse and medium screens)

Item description	Units	Technical Particulars
M3.1 '24 Inlet works washer compactors(Coarse and medium screens)		
Note: that the information stipulated below does not necessarily represent all the information required for this item/system. The tenderer shall provide drawings and/or brochures showing details of the equipment offered and any other relevant information shall be submitted with the tender.		
General information		
Manufacturer		S.A.M.E Water
Type		Compactor Washer
Model		SPW 350
Country of origin		South Africa
Duty requirements		
Dry screenings discharge rate	m^3/hr	3.5
Max. moisture content at discharge	%	40
Washwater requirement	l/s	3
Washwater pressure requirement	bar	4
Mechanical information		
Discharge tube diameter	mm	350mm taper up to 400
Discharge tube orientation	deg	45
Discharge tube length	mm	2500mm
Discharge height above compactor	mm	Approx. 2000mm
Draining pipe diameter	mm	100NB
Screenings receiving chute dimensions. (L x W x H)	mm	1000x600x500mm
Compacting screw material		316s/s
Receiving chute material		316s/s
Discharge tube material		316s/s
Total weight of unit (including motors)	kg	Approx 1850kg
Motors		
Compactor drive unit		
Manufacturer		SEW
Type		Parallel shaft helical
Model		FAF107 DV 100L4
Country of origin		Germany / SA
Guaranteed figures		
Rated power	kW	3.0
Power factor at duty point		0.86
Washer drive unit		Motor
Manufacturer		Zest / SEW or similar
Type		TEFC
Model		132M
Country of origin		Brazil / Germany / SA
Gearbox Service Factor (min)		N/A
Rotational speed	rpm	950rpm

Item description	Units	Technical Particulars
M3.1 '24 Inlet works washer compactors(Coarse and medium screens)		
Guaranteed figures		
Rated power	kW	5.5
Power factor at duty point		0.81

[redacted]

'24 FINE SCREEN COMPACTOR

[redacted]

M3.2 '24 Inlet works washer compactors(Fine screens)

Item description	Units	Technical Particulars
M3.2 '24 Inlet works washer compactors(Fine screens)		
Note: that the information stipulated below does not necessarily represent all the information required for this item/system. The tenderer shall provide drawings and/or brochures showing details of the equipment offered and any other relevant information shall be submitted with the tender.		
General information		
Manufacturer		S.A.M.E Water
Type		Compactor Washer
Model		SPW350
Country of origin		South Africa
Duty requirements		
Dry screenings discharge rate	m^3/hr	3.5
Max. moisture content at discharge	%	40%
Washwater requirement	l/s	3
Washwater pressure requirement	bar	4
Mechanical information		
Discharge tube diameter	mm	350
Discharge tube orientation	deg	45
Discharge tube length	mm	2500mm
Discharge height above compactor	mm	Approx. 2000mm
Draining pipe diameter	mm	100NB
Screenings receiving chute dimensions. (L x W x H)	mm	1000x600x500mm
Compacting screw material		316s/s
Receiving chute material		316s/s
Discharge tube material		316s/s
Total weight of unit (including motors)	kg	Approx.1850kg
Motors		
Compactor drive unit		
Manufacturer		SEW
Type		Parallel shaft helical
Model		FAF107 DV100 L4
Country of origin		Germany / SA
Guaranteed figures		
Rated power	kW	3.0
Power factor at duty point		0.86
Washer drive unit		Motor
Manufacturer		Zest / SEW
Type		TEFC
Model		132 M
Country of origin		Brazil / Germany / SA
Gearbox Service Factor (min)		N/A
Rotational speed	rpm	950 rpm

[redacted]

Item description	Units	Technical Particulars
M3.2 '24 Inlet works washer compactors(Fine screens)		
Guaranteed figures		
Rated power	kW	5.5
Power factor at duty point		0.81

[redacted]

ULTRA-FINE SCREEN COMPACTOR

[redacted]

M3.3 '24 Ultra fine screen washpress

Item description	Units	Technical Particulars
M3.3 '24 Ultra fine screen washpress		
Note: that the information stipulated below does not necessarily represent all the information required for this item/system. The tenderer shall provide drawings and/or brochures showing details of the equipment offered and any other relevant information shall be submitted with the tender.		
General information		
Manufacturer		Nrw-Anlagentechnik
Type		PUW
Model		230KU
Country of origin		Germany
Duty requirements		
Dry screenings discharge rate	m^3/hr	2.0
Max. moisture content at discharge	%	40-50
Washwater requirement	l/s	1.5 (~0.8m^3 / day)
Washwater requirement	bar	5
Perforation aperture of strainer	mm	0.4
Mechanical information		
Discharge tube diameter	mm	324mm
Discharge tube orientation	deg	30
Discharge tube length	mm	3400
Discharge height above compactor	mm	1750
Draining pipe diameter	mm	D=80mm
Screenings receiving chute dimensions. (L x W x H)	mm	800x400160
Compacting screw material		Special steel
Receiving chute material		SS316 (1.4401/1.4404/1.4571)
Discharge tube material		SS316 (1.4401/1.4404/1.4571)
Total weight of unit (including motors)	kg	~350-400
Motors		
Compactor drive unit		
Manufacturer		Siemens
Type		FDAF
Model		109
Country of origin		Germany
Guaranteed figures		
Rated power	kW	4.0
Power factor at duty point		1.75

[redacted]

Degritting Equipment

[redacted]

VORTEX DE-GRITTING SYSTEM

M4.1 '24 Vortex degritter

Item description	Units	Technical Particulars
M4.1 '24 Vortex degritter		
Note: that the information stipulated below does not necessarily represent all the information required for this item/system. The tenderer shall provide drawings and/or brochures showing details of the equipment offered and any other relevant information shall be submitted with the tender.		
General information		
Manufacturer		PCI Africa
Type		Paddle stirrer with Air lift pump
Model		Forced Vortex
Country of origin		South Africa
Duty requirements		
Grit removal efficiency	%-mesh-SG	SG – 2.5 >0.3 – 95% >0.212 – 85% >0.15 – 65%
Washwater requirement	l/s	≈20
Washwater pressure requirement	bar	6
Mechanical information		
Rated motor power of grit fluidizer	kW	1.1kW
Material of fluidizer		S/S316
Corrosion protection on fluidizer		Pickle and passivate
Grit removal pump make and model		Air Lift Pump. As per specification: 12. Grit Removal Equipment
Grit pump flow rate and pressure		20m³/hr @ 2.4m lift
Rated motor power of grit pump	kW	Air Blower: 5.5kW
Efficiency of grit pump at duty point	%	N/A
Pump casing material		S/S 316 lift pipe
Pump impeller material		N/A
Motors		Paddle Drive / Roots Blower
Manufacturer		Bonfiglioli / WEG
Type		1.1kW-4P / 5.5kW 4P
Model		IE2 / IE3
Country of origin		Italy / Brazil
Guaranteed figures		
Rated power	kW	1.1kW / 5.5kW
Power factor at duty point		0.8 / 0.8

[redacted]

INLET WORKS GRIT CLASSIFIER

M4.2 '24 Inlet works grit classifier

Item description	Units	Technical Particulars
M4.2 '24 Inlet works grit classifier		
Note: that the information stipulated below does not necessarily represent all the information required for this item/system. The tenderer shall provide drawings and/or brochures showing details of the equipment offered and any other relevant information shall be submitted with the tender.		
General information		
Manufacturer		S.A.M.E Water
Type		Grit Classifier
Model		GC300
Country of origin		South Africa
Duty requirements		
Solids handling capacity	m^3/hr	1 ton / hr
Hydraulic capacity	m^3/hr	58
Separation efficiency	%-mesh	90
Washwater requirement	l/s	4-6l/s
Washwater pressure requirement	bar	3-4 bars
Mechanical information		
Overall dimensions (Diameter)	mm	290
Discharge chute length (in plan view)	mm	6190
Material of Body		316s/s
Material of Frame		316s/s
Material of Supports		316s/s
Material of Screw / Spiral		Hardened Mild steel
Material of Shaft		Carbon Steel
Material of Lining		3CR12
Thickness of lining	mm	10
Motors		
Manufacturer		Zest / SEW
Type		IEC 80 / FAF77 gearbox
Model		IEC / Parrallel shaft helical
Country of origin		Germany
Gearbox service factor		2
Guaranteed figures		
Rated power	kW	AGMA 1.1
Power factor at duty point		Motor 0.83 / Gear box 1.32

[redacted]

HYDRO CYCLONE

M4.3 '24 PST sludge hydro cyclone

Item description	Units	Technical Particulars
M4.3 '24 PST sludge hydro cyclone		
Note: that the information stipulated below does not necessarily represent all the information required for this item/system. The tenderer shall provide drawings and/or brochures showing details of the equipment offered and any other relevant information shall be submitted with the tender.		
General information		
Manufacturer		Multotec
Type		HC cyclone
Model		D2-42/2 (Inline) c/w HC420-15-1/A-B/60 c/w full 180 HDPE OE
Country of origin		South Africa
Duty requirements		282 – Nominal as per specification
Minimum flow	m^3/h	85
Maximum flow	m^3/h	330
Minimum inlet pressure	kPa	120kPa simulated (35kPa minimum, 130kPa maximum)
Allowable feed concertation	% solids v/v	1.13% given
Pressure drop across cyclone	kPa	120
Particle cut size	µm	21
Mechanical information		
Casing material		Mild steel
Liner material		Rubber
Overflow pipe material		HDPE
Overall mass of cyclone unit	kg	280 per cyclone, 1877kg dry mass for complete cluster
Flange drilling specification		SABS 1123/1000
Top diameter of cyclone	mm	420 (390mm ID)
Bottom diameter of cyclone	mm	120
Angle of conical section	deg	15
Overall height of unit	mm	2210

PRIMARY SLUDGE GRIT CLASSIFIER

[redacted]

M4.4 '24 Primary sludge grit classifier

Item description	Units	Technical Particulars
M4.4 '24 Primary sludge grit classifier		
Note: that the information stipulated below does not necessarily represent all the information required for this item/system. The tenderer shall provide drawings and/or brochures showing details of the equipment offered and any other relevant information shall be submitted with the tender.		
General information		
Manufacturer		S.A.M.E Water
Type		Grit Classifier
Model		GC 300
Country of origin		South Africa
Duty requirements		
Solids handling capacity	m^3/hr	1t/hr
Hydraulic capacity	m^3/hr	58
Separation efficiency	%-mesh	90
Washwater requirement	l/s	4-6l/s
Washwater pressure requirement	bar	3-4 bars
Mechanical information		
Overall dimensions (Diameter)	mm	290
Discharge chute length (in plan view)	mm	6190
Material of Body		316s/s
Material of Frame		316s/s
Material of Supports		316s/s
Material of Screw / Spiral		Hardened Mild Steel
Material of Shaft		Carbon Steel
Material of Lining		3CR12
Thickness of lining	mm	10
Motors		
Manufacturer		Zest/SEW
Type		IEC 80/FAF77 Gearbox
Model		TEFC/Parrallel shaft Helical
Country of origin		Germany
Gearbox service factor		2
Guaranteed figures		
Rated power	kW	AGMA 1.1
Power factor at duty point		Motor0.83 / Gearbox 1.32

[redacted]

Primary Sedimentation Tank

[redacted]

'24 PST BRIDGES

M5.1 '24 PST Bridges

Item description	Units	Technical Particulars
M5.1 '24 PST Bridges		
Note: that the information stipulated below does not necessarily represent all the information required for this item/system. The tenderer shall provide drawings and/or brochures showing details of the equipment offered and any other relevant information shall be submitted with the tender.		
General Information		
Manufacturer		Inenzo Water
Type		Full Bridge Echelon
Country of origin		South Africa
Mechanical information		
Bridge width (walkway width)		750mm
Mass of bridge (kg)		± 4000
Make and model of slewing bearing		Jost. HES
Scraper type (spiral/echelon)		Echelon
Make and model of bridge geared drive		Siemens KAD88
Rated power of geared drive motor	kW	0.37 kw
Output torque of geared drive motor	N.m	TBA
Service factor of gearbox		≥ 1.75
Wheel material		C.I A Polyeurothane
Wheel spacing	mm	2.2m
Wheel diameter	mm	400
Wheel load rating	kg	2500
Slip ring make and model		AP CIR8RF
Slip ring IP rating		IP55
Stilling chamber diameter	mm	7.25m
Stilling chamber material and wall thickness	mm	SS316 1.6mm
Weir plate material and wall thickness	mm	Ss316 2.5mm
Total mass of bridge with scrapper	ton	± 5T
Motors		
Manufacturer		Siemens
Type		TEFC
Model		0.37kw
Country of origin		Europe
Guaranteed figures		
Power factor at duty point		0.73

[redacted]

PRIMARY SLUDGE GRINDER

M5.2 '24 PST sludge macerator

Item description	Units	Technical Particulars
M5.2 '24 PST sludge macerator		
Note: that the information stipulated below does not necessarily represent all the information required for this item/system. The tenderer shall provide drawings and/or brochures showing details of the equipment offered and any other relevant information shall be submitted with the tender.		
General information		
Manufacturer		FRANKLIIN MILLER INC
Type		TASKMASTER
Model		TM8532
Country of origin		USA
Duty requirements		
Allowable flow range	m^3/h	104 L/S
Maximum pressure drop across unit	mm	45
Mechanical information		
Power demand at duty point	kW	RELIANT ON MOTOR
Rated motor power	kW	2.2
Material of casing		CAST IRON
Corrosion protection		Epoxy Paint
Material of shaft		Hardened 4140 Steel
Material of cutter and spacers		Hardened 4140 Steel
Hardness of cutters		45-49RC
Thickness of cutters	mm	8
Overall mass of unit	kg	295
Motors		
Manufacturer		
Type		
Model		
Country of origin		
Guaranteed figures		
Power factor at duty point		RELIANT ON MOTOR

[redacted]

Vertical Shaft Mixers

[redacted]

ANAEROBIC / ANOXIC MIXERS

[redacted]

M6.1 '24 Anaerobic zone mixers

Item description	Units	Technical Particulars
M6.1 '24 Anaerobic zone mixers		
Note: that the information stipulated below does not necessarily represent all the information required for this item/system. The tenderer shall provide drawings and/or brochures showing details of the equipment offered and any other relevant information shall be submitted with the tender.		
General Information		
Manufacturer		MAXMIX
Type		Top entry plinth mounted
Model		TELP 750/23/1 – 2500D
Country of origin		RSA
Duty requirements		
Rotational speed (tip speed)	m/s	3
Rotational speed	rpm	23
Mechanical information		
Type of blades		Down Thrust – Axial Flow
Number of blades	No.	3
Material of blades		316 SS
Direction of trust		Down Thrust
Make of gearbox		SEW *
Material of gears		DIN EN 10084
Service factor on motor power		2.5
Service factor on max. absorbed power		3.13
Impeller diameter	mm	2500
Power absorbed	kW	6
Shaft diameter	mm	141
Material of shaft		316 SS
Method of lubrication		Splash
Motors		
Manufacturer		SEW
Type		3 Phase 400V TEFC
Model		DRN 132M4 Premier efficiency
Country of origin		Germany
Guaranteed figures		
Rated power	kW	0.7
Power factor at duty point		0.84

*Drywell output Shaft included as specified

[redacted]

M6.2 '24 Anoxic zone mixers

Item description	Units	Technical Particulars
M6.2 '24 Anoxic zone mixers		
Note: that the information stipulated below does not necessarily represent all the information required for this item/system. The tenderer shall provide drawings and/or brochures showing details of the equipment offered and any other relevant information shall be submitted with the tender.		
General Information		
Manufacturer		MAXMIX
Type		Top entry plinth mounted
Model		TELP 300/22/1 – 2150D
Country of origin		RSA
Duty requirements		
Rotational speed (tip speed)	m/s	2.5
Rotational speed	rpm	22
Mechanical information		
Type of blades		Down Thrust – Axial Flow
Number of blades	No.	3
Material of blades		316 SS
Direction of trust		Down Thrust
Make of gearbox		SEW *
Material of gears		DIN EN 10084
Service factor on motor power		3.3
Service factor on max. absorbed power		4.4
Impeller diameter	mm	2150
Power absorbed	kW	2.25
Shaft diameter	mm	114
Material of shaft		316 SS
Method of lubrication		Splash
Motors		
Manufacturer		SEW
Type		3 Phase 400V TEFC
Model		DRN 100L4 Premium efficiency
Country of origin		Germany
Guaranteed figures		
Rated power	kW	3
Power factor at duty point		0.8

*Drywell output Shaft included as specified

[redacted]

FBDA Aeration Equipment

[redacted]

'24 FBDA BLOWERS

[redacted]

M7.1 '24 Bioreactor FBDA aeration blowers

Item description	Units	Technical Particulars
M7.1 '24 Bioreactor FBDA aeration blowers		
Note: that the information stipulated below does not necessarily represent all the information required for this item/system. The tenderer shall provide drawings and/or brochures showing details of the equipment offered and any other relevant information shall be submitted with the tender.		
General information		
Manufacturer		Howden
Type		Centrifugal
Model		SG 40-100
Country of origin		China/UK/South Africa
Duty requirements		
Maximum turn-down ratio	%	45
Air flow at 100% operation	Nm^3/hr	12461
Air flow at maximum trun-down	Nm^3/hr	5607
Efficiency at 100% operation	%	84.783
Efficiency at maximum turn-down	%	77.751
Operating information		
Scenario 1		
Ambient temperature	°C	20
Ambient pressure (kPa(a))	kPa	101.325
Ambient humidity	% RH	0
Fluid density, pre-inlet silencer/filter	kg/m^3	1.204
Aspiration rate, pre-inlet silencer/filter	m^3/h	13373
Total mass flowrate air	kg/hr	16103
Mass flowrate dry air	kg/h	16103
Absolute pressure at blower inlet flange (corresponding to highest allowable filter ΔP)	kPa(a)	101.121
Fluid density at blower inlet flange (highest allowable filter ΔP)	kg/m^3	1.2017
Discharge pressure downstream of cone diffuser (required operating)	kPa(g)	70
Air temperature downstream of cone diffuser (at required operating pressure)	°C	78.3
Discharge pressure downstream of cone diffuser (required maximum)	kPa(g)	70
Air temperature downstream of cone diffuser (at required maximum pressure)	°C	78.3
Pressure difference over cone diffuser	kPa	<1

[redacted]

Item description	Units	Technical Particulars
M7.1 '24 Bioreactor FBDA aeration blowers		
Noise level with acoustic enclosure	dBA @ 1m	<81 db(A) 1m distance from blower
Noise level with discharge silencer	dBA @ 1m	<81 db(A) 1m distance from blower
Scenario 2		
Ambient temperature	°C	35
Ambient pressure (kPa(a))	kPa	101.325
Ambient humidity	% RH	90
Fluid density, pre-inlet silencer/filter	kg/m³	1.1235
Aspiration rate, pre-inlet silencer/filter	m³/h	14807
Total mass flowrate air	kg/hr	16636
Mass flowrate dry air	kg/h	15793
Absolute pressure at blower inlet flange (corresponding to highest allowable filter ΔP)	kPa(a)	101.075
Fluid density at blower inlet flange (highest allowable filter ΔP)	kg/m³	1.1209
Discharge pressure downstream of cone diffuser (required operating)	kPa(g)	70
Air temperature downstream of cone diffuser (at required operating pressure)	°C	94.7
Discharge pressure downstream of cone diffuser (required maximum)	kPa(g)	70
Air temperature downstream of cone diffuser (at required maximum pressure)	°C	94.7
Pressure difference over cone diffuser	kPa	<1
Noise level with acoustic enclosure	dBA @ 1m	<81 db(A) 1m distance from blower
Noise level with discharge silencer	dBA @ 1m	<81 db(A) 1m distance from blower
Physical data		
Length x width x height (including motor and inlet filter/silencer, without acoustic enclosure)	mm	4400 x 2400 x 2100
Acoustic enclosure dimensions	mm	4650 x 2700 x 2250
Gross weight (blower skid only)	kg	Blower Skid : 4200kg Motor : 2046kg
Total gross weight (enclosure & blower skid)	kg	Blower Skid : 4200kg Motor : 2046kg Enclosure : 1760kg Total : 8006kg
Type of impeller (i.e. description of blade design)		Backwards swept
Blower outlet flange connection	mm	250
Diffuser cone outlet flange connection	mm	400
Impeller diameter	mm	400
Lubrication circuit		
Type of cooling		Forced

[redacted]

Item description	Units	Technical Particulars
M7.1 '24 Bioreactor FBDA aeration blowers		
Cooling duty required	kW	20kW, subject to final gearbox design
Quantity of oil	litres	210
Ancillaries		
Inlet filter surface area	m²	For Blower (2.16m2) , 610 x 610 x 50 mm Filter, 6 off per blower
Inlet filter rating	micron	For Primary Inlet Filter, G4 filter ,91% to EN779, For Secondary Inlet Filter, F9, 98% to EN779, average arrestance against synthetic dust
Inlet filter clean ΔP	mbar	Primary Inlet Filter (G4): 0.7mbar Secondary Inlet Filter (F9) : 1.3mbar
Inlet filter dirty ΔP (mbar)	mbar	Primary Inlet Filter (G4): 2.5mbar Secondary Inlet Filter (F9) : 2.5mbar
Inlet filter (plenum chamber) surface area	m²	Spec 22.2 40.94m2 610 x 610 x 50, 110 filters total Plenum
Inlet filter (plenum chamber) rating	micron	G4 filter ,91% to EN779
Inlet filter (plenum chamber) clean ΔP	mbar	0.7mbar
Inlet filter (plenum chamber) dirty ΔP	mbar	2.5mbar
Fast shaft bearing type		Sleeve (>350kW) Spec 21.6.4
Slow shaft bearing type		Sleeve (>350kW) Spec 21.6.4
Cone diffuser length	mm	1030
Cone diffuser mass	kg	250
Blow off valve type, size & actuator		DN250 Butterfly electric Actuator
Materials of construction		
Inlet filter material (aeration blower)		Primary Inlet Filters: Pleated UE4 disposable panel filters Secondary Inlet Filters: F9 Compact Fine Dust Panel Filter
Inlet filter material (plenum chamber)		Pleated UE4 disposable panel filters
Inlet silencer		Galvanized Mild Steel MOC as per CoCT specification complete with corrosion resistant paint spec D14.5.7 with polyester sound absorption foam (Including outside acoustic insulation) U Thermoboard
Blower casing		Cast Iron EN 1561/GG25 (Paint D14.5.11)
Fast shaft		Forged Steel ASTM A332 Gr 4145
Slow shaft		Forged Steel SACM 645
Baseplate		Mild Steel (Paint D14.5.5)
Impeller		Aluminium Alloy ASTM B2471
Inlet guide vanes (IGV's)		AISI 316 SS

[redacted]

Item description	Units	Technical Particulars
M7.1 '24 Bioreactor FBDA aeration blowers		
Variable vane diffusers (VVD's)		AISI 316 SS
Fast shaft bearings		Carbon Steel
Slow shaft bearings		Carbon Steel
Cone diffuser		MS Fabricated and galvanised mineral wool lining and centre baffle (Paint D14.5.11, Acoustic Insulation)
Flexible connector on blower inlet		Bellow Type 316 SS membranes CS flanges
Check valve		CI Body and Plates, 304 SS pins and spring, PTFE seals, Epoxy coated as per CoCT spec
Blow-off valve		CI body and plates, 304 SS pins, disc and spring, PTFE seals, Epoxy coated as per CoCT spec
Acoustic enclosure		Pre-galvanised MS acoustic panels and high density mineral wool (Paint D14.5.7, Acoustic Insulation)
Local control panel housing		3CR12/304StSt powder coated 1.5mm sheet steel with 2mm sheet steel door IP55 protection and painted
Master control panel housing		3CR12/304StSt powder coated 1.5mm sheet steel with 2mm sheet steel door IP55 protection and painted
Discharge Silencer		MS fabricated and galvanised mineral wool lining and centre pod (Paint D14.5.11, Acoustic Insulation)
Drives/gearbox		
Blower		
Manufacturer		Howden
Type		SG Turbo Centrifugal
Model		SG 40-100
Country of origin		China/UK/South Africa
Motor rating	kW	355
Guaranteed absorbed power (for blower, shaft power, stipulated at "maximum" pressure)	kW	Specification 21.13.2 – Factory Acceptance Testing, Specification 21.5 – Guarantee of Performance **287.34kW** at 35degC, 90%RH, 101.325kPa The performance quoted at the specified volume flow is subject to a test tolerance of +/ 4% on pressure and +/- 4% on power according to ISO 5389 .

[redacted]

Item description	Units	Technical Particulars
M7.1 '24 Bioreactor FBDA aeration blowers		
		The minimum required motor margin is 15%, a standard **355kW** is the required motor rating
Electricity supply	V/phase/Hz	400/3/50
Motor speed	rpm	2980
Motor enclosure rating		IP55
Gearbox make, if applicable		Howden
Gearbox ratio, if applicable		4.82
Enclosure fan		
Manufacturer		Howden Donkin - Local
Type		Majax-2 1000.32.F.8
Model		Axial Flow Fan
Country of origin		South Africa
Motor rating	kW	1.5
Guaranteed absorbed power (for blower, shaft power, stipulated at "maximum" pressure)	kW	1.18
Electricity supply	V/phase/Hz	400/3/50
Motor speed	rpm	750rpm, 8 pole
Motor enclosure rating		IP55
Gearbox make, if applicable		N/A
Gearbox ratio, if applicable		N/A
Auxiliary oil pump		
Manufacturer		Howden
Type		Spray Bar
Model		N/A
Country of origin		China
Motor rating	kW	1.5
Guaranteed absorbed power (for blower, shaft power, stipulated at "maximum" pressure)	kW	1.15
Electricity supply	V/phase/Hz	400/3/50
Motor speed	rpm	3000
Motor enclosure rating		IP55 minimum, TBC
Gearbox make, if applicable		N/A
Gearbox ratio, if applicable		N/A
Oil cooler fan (if applicable)		
Manufacturer		Hydac International
Type		Axial
Model		AC-LN10L/1.3/F/B/1 Low Noise
Country of origin		Germany

[redacted]

Item description	Units	Technical Particulars
M7.1 '24 Bioreactor FBDA aeration blowers		
Motor rating	kW	1.1
Guaranteed absorbed power (for blower, shaft power, stipulated at "maximum" pressure)	kW	0.75
Electricity supply	V/phase/Hz	400/3/50
Motor speed	rpm	1000
Motor enclosure rating		N/A
Gearbox make, if applicable		N/A
Gearbox ratio, if applicable		The table below represents the guaranteed performance of the blower over the range of duties and is inclusive of tolerance losses.

Inlet pressure (p_o) bara	Outlet pressure (p_2)	Inlet flow %	308.15 K & Normal RH			303.15 K & Normal RH			293.15 K & Normal RH			283.15 K & Normal RH			273.15 K & Normal RH		
			m^3/hr	kW	η	m^3/hr	kW	η	m^3/hr	kW	η	m^3/hr	kW	η	m^3/hr	kW	η
1.013	1.713	100	14843	299	84.8	14412	290	84.9	13689	283	82.9	13086	276	81.5	12552	269	80.3
1.013	1.713	80	11864	235	86.9	11520	230	86.3	10943	234	85.0	10462	223	81.4	10035	221	78.9
1.013	1.713	70	10377	212	84.6	10077	213	82.0	9572	208	80.2	9152	201	79.4	8779	194	79.1
1.013	1.713	60	8832	193	80.6	8635	189	80.3	8203	181	79.5	7843	173	79.8	7523	166	72.6
1.013	1.713	45	6666	152	77.8	6473	150	77.0	6149	145	75.5	5879	141	73.7	5640	145	70.5

[redacted]

'24 FBDA DIFFUSER GRIDS

M7.2 '24 Bioreactor FBDA system

Item description	Units	Technical Particulars		
M7.2 '24 Bioreactor FBDA system				
Note: that the information stipulated below does not necessarily represent all the information required for this item/system. The tenderer shall provide drawings and/or brochures showing details of the equipment offered and any other relevant information shall be submitted with the tender.				
Diffuser details				
Make and model		WTE,12" Diffuser		
Type		AirTech 12" disc diffusers with EPDM+PTFE membrane		
Size		12"		
Country of manufacture		Italy		
		Zone 1	Zone 2	Zone 3
Number of diffusers		836	814	700
Diffuser density		21.1%	20.7%	17.8%
Product Specification				
Fluid		Air		
Operating Conditions		Zone 1	Zone 2	Zone 3
Design (peak) Standard Oxygen Transfer Rate (SOTR) @ 20°C and 101.325 kPa(a)	kg/hr	466.1	459.3	398.7
SOTR proportion per zone	%	35	35	30
Design (peak) air requirement @ 20°C, 101.325 kPa(a) and 0% RH to achieve SOR	m^3/h	4700	4643	4301
Basin depth (m)	m	5.5	5.5	5.5
Minimum airflow required for mixing per unit floor area @ 20°C and 101.325 kPa(a) and 0% RH	$m^3/h/m^2$	2.4	2.4	2.4
Minimum airflow required for mixing @ 20°C and 101.325 kPa(a) and 0% RH	m^3/h	555	555	555
Diffuser submergence (operating depth)	m	6.25	6.25	6.25
Orifice diameter	mm	10	10	10
Average header pressure in assembly at design airflow	kPa	58.3	58.3	58.4
Pressure loss in dropper at design airflow	kPa	0.2	0.2	0.18
Diffuser orifice pressure loss at design airflow	kPa	3.8	3.8	3.9
Diffuser Wet Pressure (DWP) at design airflow	kPa	2.5	2.5	2.5
Static pressure	kPa	52.5	52.5	5.25
Pressure required at top of dropper at design airflow	kPa	58.5	58.5	58.6
Dropleg air velocity at design airflow	m/s	11.439	11.301	9.812
Header air velocity at design airflow	m/s	8.475	8.382	7.274
Lateral air velocity at design airflow	m/s	3.299	3.274	3.018

[redacted]

Item description	Units	Technical Particulars		
M7.2 '24 Bioreactor FBDA system				
Airflow per diffuser @ 20°C and 101.325 kPa(a)	m³/h	5.64	5.69	5.76
Guaranteed Standard Oxygen Transfer Efficiency (SOTE) at operating depth and design airflow	%	37.6	37.5	37.5
Guaranteed Standard Oxygen Transfer Efficiency (SOTE) per meter at operating depth and design airflow	%/m	7.2	7.1	7.1
Maximum allowable air temperature °C to diffusers	°C	115	115	115
Physical data		Zone 1	Zone 2	Zone 3
Number of grids per zone		2	2	2
No of operating disc diffusers per grid		418	407	350
Lateral piping count per grid		11	11	10
Number of sub headers		1	1	1
Floor width	m	11.6	11.6	11.6
Floor length	m	21.75	21.75	21.75
Vertical dropleg nominal bore	mm	300	300	300
Disc diameter	mm	344	344	344
Header piping nominal bore	mm	200	200	200
Sub header (at bottom of dropleg) nominal bore	mm	250	250	250
Lateral piping (from headers) nominal bore	mm	110	110	110
Header piping length	m	5.5	5.5	5.5
Sub header piping length	m	6	6	6
Lateral piping length	m	21	21	21
Spacing between laterals	mm	514	514	514
Spacing between diffusers on laterals	mm	534	549	581
Number of condensate purge pipes		2	2	2
Nominal bore of condensate release piping	mm	25	25	25
Materials of construction				
Dropper piping		Stainless Steel 316		
Header piping		uPVC Class 12		
Sub header piping		uPVC Class 12		
Laterals piping		uPVC Class 12		
Diffuser membranes		EPDM,PTFE Coated		
Diffuser bodies		Polypropylene Glass Fibre Reinforce		
Pipe supports		Stainless Steel 316		
Condensate release piping		Stainless Steel 316		

[redacted]

'24 FBDA CLEAN IN PLACE PUMP SYSTEM

M7.3 '24 FBDA Clean in place pump system

Item description	Units	Technical Particulars	
M7.3 '24 FBDA Clean in place pump system		Dosing pump	Charging pump
Note: that the information stipulated below does not necessarily represent all the information required for this item/system. The tenderer shall provide drawings and/or brochures showing details of the equipment offered and any other relevant information shall be submitted with the tender.			
Equipment details			
Manufacturer		Grundfos	
Type		Mechanical	
Model		DMX 50-10	
Country of origin		France	
Product Specifications			
Fluid		Formic Acid	Formic Acid
Concentration	%	85	
Temperature	°C	Ambient	
Viscosity	cP	1.607	
Operating Conditions			
Guaranteed capacity	l/hr	0-50	
Differential pressure	bar	1-10	
Turndown ratio		1:10	
NPSH available	m	N/A	
Performance			
Speed	rpm	120	
Rated power	kW	0.09	
Efficiency	%	80	
NPSH required	m	3	
Physical Data			
Pump length x width x height	mm	275 x 175 x319	
Pump suction diameter	mm	6/12	
Pump discharge diameter	mm	6/12	
Materials of Construction			
Pump casing		PVC	
Pump wetted parts		PVC	
Pump seals		FKM	
Motor specifications			
Electrical supply	V-phase-Hz	200 / 1 / 50	
Speed	rpm	1450	
Gearbox make		Grundfos	
Gearbox ratio		1:12	

[redacted]

'24 FBDA CLEAN IN PLACE DOSING TANK AND BUND SYSTEM

M7.4 '24 CIP Storage and dosing area

Item description	Units	Technical Particulars
M7.4 '24 CIP Storage and dosing area		
Note: that the information stipulated below does not necessarily represent all the information required for this item/system. The tenderer shall provide drawings and/or brochures showing details of the equipment offered and any other relevant information shall be submitted with the tender.		
General information		
Manufacturer		WTE
Type		Trolley
Model		CIP01
Country of origin		Italy
Product Specifications		
Fluid		Formic Acid
Concentration	%	85
Temperature	°C	Ambient
Viscosity	cP	1.607
Operating Conditions		
Total volume	L	25
Working volume	L	25
Maximum allowable working pressure	kPa	1000
Physical Data		
Tank diameter	m	0.4
Tank height	m	0.75
Mass of empty vessel	kg	1
Mass of vessel at maximum operating capacity	kg	25
Volume of containment bund	L	25
Length x Width x Height of containment bund skid	m	0.75 x 0.5 x 1.5
Total mass of mobile containment bund and tank	kg	85
Materials of Construction		
Tank		Plastic
Containment bund		Stainless Steel

[redacted]

'24 FBDA V-PORT KNIFE GATE VALVES

M7.5 '24 V-port knife gate valves

Item description	Units	Technical Particulars
M7.5 '24 V-port knife gate valves		
Note: that the information stipulated below does not necessarily represent all the information required for this item/system. The tenderer shall provide drawings and/or brochures showing details of the equipment offered and any other relevant information shall be submitted with the tender.		
General information		
Manufacturer		Bovaco
Type		Knife Gate
Model		WLD
Country of origin		RSA
Product Specification		
Fluid		Air
Operating Conditions		
Guaranteed design pressure	kPag	70 kPa
Guaranteed design temperature	°C	80°C
Physical data		
Fluid port profile type		60 degree V-Port
Flange connection detail		Table 1000
Type of facing		Flat faced
Supports		Stainless Steel
Overall valve dimensions	mm	1500 x 400 x 400
Valve mass	kg	76
Valves size	mm	300
Materials of construction		
Body		Ductile Iron
Corrosion protection		FBE 300 Microns
Blade		Stainless Steel
Seals		EPDM
Scrapers		PTFE
Gland packing		Graphited PTFE
Rising spindle		YES Stainless Steel
A-plate top works		FBE coated cast iron
Bridge and handwheel		FBE coated cast iron
Body and bridge plate fasteners		Stainless Steel
Actuator		
Type		IQ
Size		F14
Manufacturer		Rotork
Communications protocol		Modbus TCP

[redacted]

'24 FBDA RETRIEVABLE DIFFUSER NETWORK

[redacted]

M7.6 '24 Retrievable diffuser grids

Item description	Units	Technical Particulars
M7.6 '24 Retrievable diffuser grids		
Note: that the information stipulated below does not necessarily represent all the information required for this item/system. The tenderer shall provide drawings and/or brochures showing details of the equipment offered and any other relevant information shall be submitted with the tender.		
Equipment details		
Diffuser make and model		WTE, 12" Diffusser
Diffuser Type		AirTech 12"Disc diffusers with EPDM+PTFE membrane
Country of manufacture		Italy
Number of diffusers		9
Butterfly valve make and model		TBC
Lifting jip make and model		N/A
Jip lifting capacity	kg	350
Product Specifications		
Fluid		Air
Operating Conditions		
Basin depth	m	5.5
Diffuser submergence (operating depth)	m	5.25
Orifice diameter	mm	10
Average header pressure in assembly at design airflow	kPa	58.3
Pressure loss in dropper at design airflow	kPa	0.2
Diffuser orifice pressure loss at design airflow	kPa	2.9
Diffuser Wet Pressure (DWP) at design airflow	kPa	2.5
Static pressure	kPa	52.5
Pressure required at top of dropper at design airflow	kPa	58.5
Dropleg air velocity at design airflow	m/s	4.3
Header air velocity at design airflow	m/s	1.5
Lateral air velocity at design airflow	m/s	1.5
Airflow per diffuser @ 20°C and 101.325 kPa(a)	m³/h	5.76
Guaranteed Standard Oxygen Transfer Efficiency (SOTE) at operating depth and design airflow	%	37.5
Guaranteed Standard Oxygen Transfer Efficiency (SOTE) per meter at operating depth and design airflow	%/m	7.1
Maximum allowable air temperature °C to diffusers	°C	115

[redacted]

Item description	Units	Technical Particulars
M7.6 '24 Retrievable diffuser grids		
Physical Data		
Total length of network	m	2
Total width of network	m	1.136
Vertical dropleg nominal bore	mm	50
Disc diameter	mm	344
Header piping nominal bore	mm	50
Lateral piping nominal bore	mm	50
Physical data continued		
Header piping length	m	1.136
Lateral piping length	m	2
Spacing between laterals	mm	568
Spacing between diffusers on laterals	mm	581
Number of laterals		3
Butterfly valve diameter	mm	50
Gross weight of diffuser network	kg	150
Jip beam length	m	1.5
Jip height	m	2.5
Guide rail length	m	5.5

[redacted]

Submerge Membrane Equipment

[redacted]

'24 MBR MEMBRANE DETAILS

M8.1 '24 MBR membrane details

Item description	Units	Technical Particulars
M8.1 '24 MBR membrane details		
Note: that the information stipulated below does not necessarily represent all the information required for this item/system. The tenderer shall provide drawings and/or brochures showing details of the equipment offered and any other relevant information shall be submitted with the tender.		
General information		
Manufacturer		Suez WTS]
Type		UFMBR]
Model		ZeeWeed 500D LEAP]
Country of origin		Hungary]
Membrane Key Data / Operational Parameters		
Membrane Material and Construction	-	PVDF]
Type	-	UFMBR]
Nominal membrane pore size	µm	0.04]
Membrane area per cassette (fully filled)	m^2	2,080 with 52modules of 40m2 each
Number of filtration trains	No.	13+3=16
Cassettes per filtration train	No.	6 @ config of 4x52M + 2x32M
Membrane area per filtration train	m^2	10,880
Total membrane area	m^2	174,080 for 16 trains
Cassettes per train (allowance for future installation)	No.	6 installed + 1 spare space]
Membrane area per train(allowance for future installation)	m^2	14,560 all 7 cassettes per train with 52modules each
Total membrane area (allowance for future installation)	m^2	232,960 for 16 trains
Membrane volume per train	m^2	152 m3, geometric membrane tank volume @ L-15.0, W-2.74 & H-3.70
Aeration rate per train	Nm^3/hr per train	900 to 1,800 installed membrane area / train
Specific Aeration Demand (SAD_m) per per permeate volume	$Nm^3/m^2/hr$	0.083 to 0.166
SAD_p per membrane surface area @ Average Daily Flow	m^3 air/m^3 permeate	3.78 to 7.56 Nm^3 air/m^3 permeate
SAD_p per membrane surface area @ Maximum Daily Flow	m^3 air/m^3 permeate	4.32 Nm^3 air/m^3 permeate
Permeate/back pulse volume tank	m^3	8.3 for 1 minute of backwash
Net filtration time per 24 hours	h	21.5]
Back pulse frequency	s	600]
Back pulse duration (incl. valve change-over)	s	60]
Relaxation duration	s	0]
Filtration duration	s	600]

[redacted]

Item description	Units	Technical Particulars
M8.1 '24 MBR membrane details		
Material of Construction (Cassette assembly - frame & beam)		SS]
Membrane design flow criteria		
Capacity	m³/d	130,000
Duration	h	21,5
Net flux (13 duty trains)	LMH	38.3 @ Peak @ 5416.7 m3/h
Net flux (6 x 2 duty trains)	LMH	21.9 (7x2 =14 trains) @ ADF @3333.3m3/h
Back pulse Flux	LMH	34 to 45.5]
Back pulse Pressure	bar	0.55 maximum
Biomass concentration (MLSS)	mg/ℓ	12,000 in membrane tank
Design operating temperature	°C	16]
Operating pH range	-	5 – 9]
Typical trans-membrane pressure (TMP)	bar	-0.10 to +0.25 operating
Maximum trans-membrane pressure (TMP)	bar	-0.55 to +0.55]
Allowable flux		Average Fluxes based on 12g/l MLSS in membrane tank
@ Liquid temperature of 10°C	LMH	17.7
@ Liquid temperature of 15°C	LMH	22.3
@ Liquid temperature of 20°C	LMH	21.9
@ Liquid temperature of 25°C	LMH	21.9
@ Liquid temperature of 30°C	LMH	21.9
Laboratory analysis requirement (Contractor to list)		
Trash content in mixed liquor (set of sieves)		
Time to Filter – TTF] in mixed liquor		
MLSS]		
Fats, Oils & Grease (FOG]), mineral oil in the feed to the MBR		
cTOC, soluble BOD5 in mixed liquor, permeate ammonia, COD and BOD5, scaling potential for calcium carbonate; chlorine concentration of cleaning solution, pH and conductivity		
Online monitoring requirements (Contractor to list)		
Turbidity - NTU]		
Temperature		
Dissolved Oxygen		
Membrane related parameters: Train permeate flow, TMP, back-pulse flow, recycle flow rate		
Membrane scour air flow and pressure, level in tanks		

[redacted]

'24 MBR CLEAN IN PLACE STORAGE AND DOSING AREA

M8.2 '24 MBR CIP Storage and dosing area

Item description	Units	Technical Particulars	
M8.2 '24 MBR CIP Storage and dosing area		**Sodium hypochlorite**	**Citric Acid**
Note: that the information stipulated below does not necessarily represent all the information required for this item/system. The tenderer shall provide drawings and/or brochures showing details of the equipment offered and any other relevant information shall be submitted with the tender.			
General information			
Manufacturer		Maxal Projects	Maxal Projects
Type		Dosing skids	Dosing Skids
Model		Sodium Hypo CIP Station	Citric Acid CIP Station
Country of origin		South Africa	South Africa
Product Specifications			
Fluid		NaOCl	C6H8O7
Concentration	%	11.3%	50%
Temperature	°C	Ambient	Ambient
Viscosity	cP	1.53	6.5
Operating Conditions			
Total volume	L	30000	12000
Working volume	L	24000	10000
Maximum allowable working pressure	kPa	101.325 + static head	101.325+static head
Physical Data			
Tank			
Tank diameter	m	2.150m	1.9m
Tank height	m	3m	2.2m
Mass of empty vessel	kg	310	153
Mass of vessel at maximum operating capacity	kg	10310	6353
Volume of containment bund	L	1000	6000
Length x Width x Height of containment bund skid	m	3.5x3.5x0.75	3.5x3.5x0.5
Total mass of mobile containment bund and tank	kg	286	165
Mixer			
Make & model		Sodium Hypo 10 000L top entry mixer	Citric acid 6 000L top entry mixer
Motor rating	kW	1.1kW	1.5kW
Piping			
Pressure rating	kPA	1600 kPa	1600 kPa
Materials of Construction			
Tank		Fiberglass	Fiberglass
Containment bund		Fiberglass	Fiberglass
Piping		PVC Class 16	PVC Class 16

[redacted]

'24 MBR CLEAN IN PLACE CHEMICAL CONSUMPTION

M8.3 '24 MBR Clean in place consumption

Item description	Units	Technical Particulars	
M8.3 '24 MBR Clean in place consumption		**Sodium hypochlorite**	**Citric Acid**
Note: that the information stipulated below does not necessarily represent all the information required for this item/system. The tenderer shall provide drawings and/or brochures showing details of the equipment offered and any other relevant information shall be submitted with the tender.			
Operating Conditions			
Maintenance Clean			
Concentration/ Strength as free chlorine	ppm	200	2000
Chemical concentration strength at 20 °C	% w/w	10.3 w/w	50 w/w
Specific Gravity (SG)	-	1.168]	1.240]
Cleaning Frequency	per week	2] based on 14 trains	1] based on 14 trains
Cleaning Duration	min/train	70]	70]
Chemical required per maintenance cleaning	ℓ	36.1] 10.3% sol.	70.1] 50% sol.
Weekly chemical required per maintenance cleaning	kg	1,182] 10.3% sol.	1,217] 50% sol.
Weekly chemical required per recovery cleaning	ℓ	1,012] 10.3% sol. For MC	981] 50% sol. FOR MC
Chemical required per recovery cleaning	kg	42.2] 10.3% sol. For MC event	86.9] 50% sol. For MC event
Recovery Clean:			
Concentration/ Strength as free chlorine	ppm	1,000 with soak	2000 with soak
Chemical concentration strength at 20 °C	% w/w	10.3 w/w	50w/w
Specific Gravity (SG)	-	1.168]	1.240]
Cleaning Frequency	per week	2 per year per train] max	2 per year per train] max
Cleaning Duration	min/train	300 – 480]	300 – 480]
Chemical required per maintenance cleaning	ℓ	831.2] 10.3% sol. per RC	322.6] 50% sol. Per RC
Weekly chemical required per maintenance cleaning	kg	597] 10.3% sol. For RC	246] 50% sol. For RC
Weekly chemical required per recovery cleaning	ℓ	512] 10.3% sol.	199] 50% sol. For RC
Chemical required per recovery cleaning	kg	971] 10.3% sol.	400] 50% sol.
Chemical storage system			
Total volume	ℓ	30 000	12 000
Working volume	ℓ	24 000	10 000

[redacted]

'24 MBR AIR SCOUR EQUIPMENT

M8.4 '24 MBR air scour blower

Item description	Units	Technical Particulars
M8.4 '24 MBR air scour blower		
Note: that the information stipulated below does not necessarily represent all the information required for this item/system. The tenderer shall provide drawings and/or brochures showing details of the equipment offered and any other relevant information shall be submitted with the tender.		
General information		
Manufacturer		Howden
Type		Centrifugal
Model		SG 45
Country of origin		China/UK/South Africa
Duty requirements		
Maximum turn-down ratio	%	45
Air flow at 100% operation	Nm^3/hr	15000
Air flow at maximum turn-down	Nm^3/hr	6750
Efficiency at 100% operation	%	83.673
Efficiency at maximum turn-down	%	78.001
Operating information		
Scenario 1		
Ambient temperature	°C	20
Ambient pressure (kPa(a))	kPa	101.325
Ambient humidity	% RH	0
Fluid density, pre-inlet silencer/filter	kg/m^3	1.204
Aspiration rate, pre-inlet silencer/filter	m^3/h	16098
Total mass flowrate air	kg/hr	19382
Mass flowrate dry air	kg/h	19382
Absolute pressure at blower inlet flange (corresponding to highest allowable filter ΔP)	kPa(a)	101.121
Fluid density at blower inlet flange (highest allowable filter ΔP)	kg/m^3	1.2016
Discharge pressure downstream of cone diffuser (required operating)	kPa(g)	45
Air temperature downstream of cone diffuser (at required operating pressure)	°C	60.6
Discharge pressure downstream of cone diffuser (required maximum)	kPa(g)	45
Air temperature downstream of cone diffuser (at required maximum pressure)	°C	60.6
Pressure difference over cone diffuser	kPa	<1
Noise level with acoustic enclosure	dBA @ 1m	<81 db(A) 1m distance from blower
Noise level with discharge silencer	dBA @ 1m	<81 db(A) 1m distance from blower
Scenario 2		

[redacted]

Item description	Units	Technical Particulars
M8.4 '24 MBR air scour blower		
Ambient temperature	°C	35
Ambient pressure (kPa(a))	kPa	101.325
Ambient humidity	% RH	90
Fluid density, pre-inlet silencer/filter	kg/m³	1.1235
Aspiration rate, pre-inlet silencer/filter	m³/h	17823
Total mass flowrate air	kg/hr	20023
Mass flowrate dry air	kg/h	19012
Absolute pressure at blower inlet flange (corresponding to highest allowable filter ΔP)	kPa(a)	101.075
Fluid density at blower inlet flange (highest allowable filter ΔP)	kg/m³	1.1207
Discharge pressure downstream of cone diffuser (required operating)	kPa(g)	45
Air temperature downstream of cone diffuser (at required operating pressure)	°C	76.4
Discharge pressure downstream of cone diffuser (required maximum)	kPa(g)	45
Air temperature downstream of cone diffuser (at required maximum pressure)	°C	76.4
Pressure difference over cone diffuser	kPa	<1
Noise level with acoustic enclosure	dBA @ 1m	<81 db(A) 1m distance from blower
Noise level with discharge silencer	dBA @ 1m	<81 db(A) 1m distance from blower
Physical data		
Length x width x height (including motor and inlet filter/silencer, without acoustic enclosure)	mm	4400 x 2400 x 2100
Acoustic enclosure dimensions	mm	4650 x 2700 x 2250
Gross weight (blower skid only)	kg	Blower Skid : 4200kg Motor : 1850kg
Total gross weight (enclosure & blower skid)	kg	Blower Skid : 4200kg Motor : 1850kg Enclosure : 1760kg Total : 7810kg
Type of impeller (i.e. description of blade design)		Backwards Swept
Blower outlet flange connection	mm	300
Diffuser cone outlet flange connection	mm	500
Impeller diameter	mm	450
Lubrication circuit		
Type of cooling		Forced
Cooling duty required	kW	18.1
Quantity of oil	litres	280
Ancillaries		
Inlet filter surface area	m²	For Blower (2.16m2) , 610 x 610 x 50 mm Filter, 6 off per blower

[redacted]

Item description	Units	Technical Particulars
M8.4 '24 MBR air scour blower		
Inlet filter rating	micron	For Primary Inlet Filter, G4 filter ,91% to EN779, For Secondary Inlet Filter, F9, 98% to EN779, average arrestance against synthetic dust
Inlet filter clean ΔP	mbar	Primary Inlet Filter (G4): 0.7mbar Secondary Inlet Filter (F9) : 1.3mbar
Inlet filter dirty ΔP (mbar)	mbar	Primary Inlet Filter (G4): 2.5mbar Secondary Inlet Filter (F9) : 2.5mbar
Inlet filter (plenum chamber) surface area	m^2	Spec 22.2 40.94m2 610 x 610 x 50, 110 filters total Plenum
Inlet filter (plenum chamber) rating	micron	G4 filter ,91% to EN779
Inlet filter (plenum chamber) clean ΔP	mbar	0.7mbar
Inlet filter (plenum chamber) dirty ΔP	mbar	2.5mbar
Fast shaft bearing type		Sleeve
Slow shaft bearing type		Sleeve
Cone diffuser length	mm	1290
Cone diffuser mass	kg	300
Blow off valve type, size & actuator		DN250 Butterfly electric Actuator
Materials of construction		
Inlet filter material (aeration blower)		Primary Inlet Filters: Pleated UE4 disposable panel filters Secondary Inlet Filters: F9 Compact Fine Dust Panel Filter
Inlet filter material (plenum chamber)		Pleated UE4 disposable panel filters
Inlet silencer		Galvanized Mild Steel MOC as per CoCT specification complete with corrosion resistant paint spec D14.5.7 with polyester sound absorption foam (Including outside acoustic insulation) U Thermoboard
Blower casing		Cast Iron EN 1561/GG25 (Paint D14.5.11
Fast shaft		Forged Steel ASTM A332 Gr 4145
Slow shaft		Forged Steel SACM 645
Baseplate		Mild Steel (Paint D14.5.5)
Impeller		Aluminium Alloy ASTM B2471
Inlet guide vanes (IGV's)		AISI 316 SS
Variable vane diffusers (VVD's)		AISI 316 SS
Fast shaft bearings		Carbon Steel
Slow shaft bearings		Carbon Steel
Cone diffuser		MS Fabricated and galvanised mineral wool lining and centre baffle (Paint D14.5.11, Acoustic Insulation)
Flexible connector on blower inlet		Bellow Type 316 SS membranes CS flanges

[redacted]

Item description	Units	Technical Particulars
M8.4 '24 MBR air scour blower		
Check valve		CI Body and Plates, 304 SS pins and spring, PTFE seals, Epoxy coated as per CoCT spec
Blow-off valve		CI body and plates, 304 SS pins, disc and spring, PTFE seals, Epoxy coated as per CoCT spec
Acoustic enclosure		Pre-galvanised MS acoustic panels and high density mineral wool (Paint D14.5.7, Acoustic Insulation)
Local control panel housing		3CR12/304StSt powder coated 1.5mm sheet steel with 2mm sheet steel door IP55 protection and painted
Master control panel housing		3CR12/304StSt powder coated 1.5mm sheet steel with 2mm sheet steel door IP55 protection and painted
Discharge Silencer		MS fabricated and galvanised mineral wool lining and centre pod (Paint D14.5.11, Acoustic Insulation)
Drives/gearbox		
Blower		
Manufacturer		Howden
Type		SG Turbo Compressor
Model		SG 45
Country of origin		China/UK/South Africa
Motor rating	kW	280
Guaranteed absorbed power (for blower, shaft power, stipulated at "maximum" pressure)	kW	Specification 21.13.2 – Factory Acceptance Testing **241.21kW** at 35degC, 90%RH, 101.325kPa The performance quoted at the specified volume flow is subject to a test tolerance of +/- 4% on pressure and +/- 4% on power according to ISO 5389 . The minimum required motor margin is 15%, a standard **280kW** is the required motor rating
Electricity supply	V/phase/Hz	400/3/50
Motor speed	rpm	2985
Motor enclosure rating		IP55
Gearbox make, if applicable		Howden
Gearbox ratio, if applicable		7.25
Enclosure fan		
Manufacturer		Howden Donkin - Local

[redacted]

Item description	Units	Technical Particulars
M8.4 '24 MBR air scour blower		
Type		Majax-2 1000.32.F.8
Model		Axial Flow Fan
Country of origin		South Africa
Motor rating	kW	1.5
Guaranteed absorbed power (for blower, shaft power, stipulated at "maximum" pressure)	kW	1.18
Electricity supply	V/phase/Hz	400/3/50
Motor speed	rpm	750rpm, 8 pole
Motor enclosure rating		IP55
Gearbox make, if applicable		N/A
Gearbox ratio, if applicable		N/A
Auxiliary oil pump		
Manufacturer		Howden
Type		Spray Bar
Model		N/A
Country of origin		China
Motor rating	kW	1.5
Guaranteed absorbed power (for blower, shaft power, stipulated at "maximum" pressure)	kW	1.5
Electricity supply	V/phase/Hz	400/3/50
Motor speed	rpm	3000
Motor enclosure rating		IP55 minimum, TBC
Gearbox make, if applicable		N/A
Gearbox ratio, if applicable		N/A
Oil cooler fan (if applicable)		
Manufacturer		Hydac International
Type		Axial
Model		AC-LN10L/1.3/F/B/1 Low Noise
Country of origin		Germany
Motor rating	kW	1.1
Guaranteed absorbed power (for blower, shaft power, stipulated at "maximum" pressure)	kW	0.75
Electricity supply	V/phase/Hz	400/3/50
Motor speed	rpm	1000
Motor enclosure rating		N/A
Gearbox make, if applicable		N/A
Gearbox ratio, if applicable		N/A

[redacted]

'24 MBR OPERATIONAL EXPENSES (OPEX) ANALYSIS

M8.5 '24 MBR Operational Expenses (OPEX) Analysis

Item description	Units	Technical Particulars
M8.5 '24 MBR Operational Expenses (OPEX) Analysis		
Note: that the information stipulated below does not necessarily represent all the information required for this item/system. The tenderer shall provide drawings and/or brochures showing details of the equipment offered and any other relevant information shall be submitted with the tender.		
Guaranteed Chemical Consumption [1]:		
Sodium Hypochlorite Maintenance Clean (10.3% as free Cl_2)	ℓ/year	60'000
	kg/year	74'393
Sodium Hypochlorite Recovery Clean (10.3% as free Cl_2)	ℓ/year	24'596
	kg/year	30'499
Citric Acid Maintenance Clean (50%)	ℓ/year	58'196
	kg/year	72'163
Citric Acid Recovery Clean (50%)	ℓ/year	9'540
	kg/year	11'830
Guaranteed Absorbed Power Requirements [2]:		
Membrane tank feed pumps	kW	426
Permeate pumps	kW	275
Membrane air scour blowers	kW	965
Membrane tank drainage pumps	kW	44
Guaranteed Power Consumption [3]:		
Permeate/ Back pulse Pump	kWh/d	6'599
Membrane Air Scour Blower (Based on 10/10 aeration as specified, or similar equivalent)	kWh/d	23'155
Membrane Tanks Feed / Sludge Transfer Pump	kWh/d	10'231
Filtration Drain Pump	kWh/d	128
Daily Consumption	kWh/d	40'113
Specific Consumption at 80,000 m^3/d (ADF) with all trains in operation	kWh/m^3	0.501
Specific Consumption at 130,000 m^3/d (AWWF) with all trains in operation	kWh/m^3	0.609
Membrane Module Replacement Price - Prorated Replacement		
Membrane module replacement price (MMRP)[5]	ZAR	41'765.30
Guaranteed life span of membrane equipment	Years	2+8 as per warranty submitted in the proposal
Notes:		
1. Consumption based on flows of 80,000 m^3/d with all trains in operation. 2. Consumption based on flows of 80,000 m^3/d with all trains in operation. 3. Consumption based on flows of 80,000 m^3/d with all trains in operation. 4. The inflation adjustment for replacement cost shall be calculated based on an average inflation of 2.5% and a discount rate of 6%. 5. Amount for membrane modules as allowed for in this tender.		

Ultra Violet Disinfection System

[redacted]

MBR UV (LOW PRESSURE, OPEN CHANNEL SYSTEM)

M9.1 '24 MBR UV system (Open Channel)

Item description	Units	Technical Particulars
M9.1 '24 MBR OPEN CHANNEL SYSTEM		
Note: that the information stipulated below does not necessarily represent all the information required for this item/system. The tenderer shall provide drawings and/or brochures showing details of the equipment offered and any other relevant information shall be submitted with the tender.		
UV supplier detail		
UV manufacturer (OEM)		Trojan Technologies Group ULC
UV supplier (local)		Aquest Colsen
UV supplier (international)		Trojan Technologies Group ULC
Proof of minimum 200 operating UV systems across the world		Please find enclosed partial list of UV systems installed (Sr. 01.00).
Proof of minimum 20 operating municipal wastewater UV systems across the world with variable output electronic ballasts		Pease find enclosed partial list of municipal wastewater UV systems project with variable output electronic ballasts (Sr. 02.00).
Proof of minimum 5 operating municipal wastewater UV systems used in tertiray treatment applicaiton where the system achieved 3 Log removal of feacal coliform over a period of 12 months.		Please find enclosed partial list of operating municipal wastewater UV systems used in tertiary treatment application where the system achieved 3 Log removal of faecal coliform (Sr. 03.00).
Proof of UV manufacturer's service capabilities including location and experience		See Trojan Service Support PDF
Proof of UV supplier local presence, support and workshops in South Africa.		See attached 17,10
UV equipment detail		
UV lamp type (LP HP or MP) & technical details		Low Pressure (LP) Lamp datasheet enclosed (Sr. 04.00).
UV ballast and technical details		Trojan Solo Lamp Drive Ballast datasheet enclosed (Sr. 05.00).
UV quartz sleeve technical details		Quartz sleeves will be clear fused quartz circular tubing containing 99.9% silicon dioxide. Sleeves will have minimum UV transmittance at 254nm of > 87% . Sleeves will be open at one end only and domed at the other end.
UV cleaning mechanism technical details		Refer enclosed TrojanSigna UV System and Component Description (Sr. 06.10)
UV sensors technical details		UV intensity Sensor details enclosed (Sr. 07.10)
UVt sensor technical details		UVT sensor details enclosed (Sr. 08.10)
UV reactor description		TrojanSigna UV System and Component Description enclosed (Sr. 06.10)
Independent bioassay validation and dosage calculations demonstrating compliance with the specified dose		Dose Calculations & Validation Certificates

requirements for site conditions		enclosed (Sr. 14.10)
UV system details		
UV system general layout drawings		Drawings enclosed
Simulated UV system dose control & monitoring technical details		Typical Control Philosophy enclosed (Sr. 09.10)
Single line diagrams for UV power supply system		DDE, after award of contract
Hydraulic calculations demonstrating compliance to site specific conditions		DDE, after award of contract
P&IDs for proposed UV system		See P&ID and Layout Document
Description of UV control system and integration with site SCADA system		Quantity Supplied: One (1) SCC will be supplied. Location: Wall Mounted Panel. Controller Type: Allen Bradley Compact Logix PLC. SCADA: Ethernet I/P. Operator Interface: Beijer 15" – A15. Material: 316 Stainless steel. Panel Rating: Type 4X (IP 66).
UV dose per lamp & flow rate per lamp for full flow range		Dose Calculations & Validation Certificates enclosed (Sr. 14.10)
UV lamp aging and quartz sleeve fouling factors for site specific conditions		Third Party Certificates enclosed (Sr. 10.00 & 11.10
The following aspects will be included in the nett present value life cycle cost assessment for each UV system which will incorporate a **discount factor** suitable for the local conditions at the time for a period of **10 years** after the completion of the DFN. The operational conditions used will be for **average flow rates** and projected post UF/MBR **90th percentile water quality** for each UV system (this combination of flow and water quality condition is referred to the life cycle operating condition (LCOC):		

Table continues on overleaf

[redacted]

M9.1.'24 MBR LOW PRESSURE OPEN CHANNEL SYSTEM			
1. CONFIGURATION of UV system			
	Description of UV elements	**Quantity**	**Comments**
1.1	UV reactors trains per UV system		2 nos. 1 Working + 1 Standby
1.2	UV reactors per UV reactor train		1 Reactor (channel) with 5 UV Banks
1.3	UV lamps per UV reactor		5X22 = 110
1.4	Ballasts per UV lamp		1 no. Ballast per 2 UV Lamps
1.5	UV sensors per reactor		1 no. per UV Bank, 5 nos. per reactor (channel)
1.6	UVt sensors per reactor		1 UVT per reactor (Channel). Total 3 nos. including 1 spare.)
1.7	Power factor correction		~~Yes~~/No
1.8	**Configuration of UV system** *(sum of items 1.1-1.7)*		Open Channel TrojanUVSigna UV system consisting of 2 channels (1W+1S), each having 5 UV Banks of 22 lamps
2. CONFIGURATION OF UV SYSTEM			
	Description of UV system cost elements	**Quantity**	**Total Capital Cost (ZAR)**
2.1	UV reactor housings and pipework		Included
2.2	UV lamps for entire UV system		Included
2.3	UV sleeves & cleaning systems for UV system		Included
2.4	Ballasts for UV system		Included
2.5	UV online instrumentation		Included
2.6	UV dosing & control system		Included
2.7	UV power supply system		Included
2.8	Other not included above		Included
2.9	Spares		Provided
2.10	**Total Capital of UV system** *(sum of items 2.1-2.9)*		**US $1,084,400**
3. ENERGY COST			
	UV system element energy information	**Units**	**Value**
3.1	Maximum energy use per UV lamp	W	1000
3.2	Turn-down range of ballast	%	30 – 100%
3.3	Energy use range per UV lamp	W	320 min – 1000 max
3.4	No of operational reactor trains required at LCOC	No	1
3.5	No of operational reactors required at LCOC	No	1
3.6	No of operational UV lamps required for entire UV system at LCOC	No	110
3.6	Turndown value of ballast at LCOC	%	100%
3.7	Energy use of all lamps required at LCOC	W	115,830 (Working)
3.8	Energy use of instrumentation and control system at LCOC	W	2700
3.9	Energy use of cleaning system at LCOC	W	2400
3.10	Other energy uses of UV system at LCOC	W	Motorized Weir Gate – 2200 Air Conditioner – 7326
3.11	Power factor of UV system at LCOC	%	> 98%
3.12	**Total Energy use of UV system at LCOC**	W	130,456 per hour

[redacted]

	(sum of 3.7-3.10)		
4. CONSUMABLE COST			
	UV system element	**Unit**	**Value**
4.1	**In-situ cleaning**		

**Table continues on overleaf*

[redacted]

M9.1 '24 MBR OPEN CHANNEL SYSTEM			
4. CONSUMABLE COST			
	UV system element	**Unit**	**Value**
4.1.1	In-situ chemical detergent (Specify)	-	ActiClean Gel
4.1.2	Supply cost of chemical	ZAR/m³	US $168/case, each of 16 litre (Ex. Works London, ON, Canada)
4.1.3	Concentration/Strength of chemical detergent	ppm	-
4.1.4	Chemical detergent strength (bulk solution)	%w/w	5% w/w
4.1.5	Specific Gravity (SG) (as delivered)	-	Please refer to safety Datasheet Sr. 12.00
4.1.6	Cleaning frequency at LCOC	per month	0.225 times/month (2.7/year)
4.1.7	Chemical detergent required per in-situ sleeve cleaning event	kg	116.4 kg/year (128 lit/year
4.1.8	Guaranteed chemical consumption per year	m³/year	0.128 m3/year
4.2	**Out of reactor cleaning**		
4.2.1	UV out of reactor sleeve chemical detergent (Specify)	-	Not Applicable
4.2.2	Supply cost of chemical	ZAR/m³	Not Applicable
4.2.3	Concentration/Strength of chemical detergent	ppm	Not Applicable
4.2.4	Chemical detergent strength (bulk solution)	%w/w	Not Applicable
4.2.5	Specific Gravity (SG) (as delivered)	-	Not Applicable
4.2.6	Cleaning frequency at LCOC	per month	Not Applicable
4.2.7	Chemical detergent required per in-situ sleeve cleaning event	kg	Not Applicable
4.2.8	Guaranteed chemical consumption per year	m³/year	Not Applicable
4.3	Any other consumable cost related to UV system	ZAR	Not Applicable
4.4	**Total Consumable cost of UV system at LCOC** *(sum of 4.1-4.3)*	ZAR/month	US $1,125 (Ex. Works London, ON, Canada)

5. REPLACEMENT COST				
	UV system element	**Replacement frequency**	**Replacement currency (ZAR/USD/EUR)**	**Cost of replaced items over 10 year period at LCOC (ZAR)**
5.1	UV lamps	15,000 hours	US $755.75	US $525,246 Ex. Works London, ON, Canada
5.2	UV quartz sleeves	As required	US $297.5	US $14,875 Ex. Works London, ON, Canada
5.3	UV quartz wipers	15,000 hours	US $119	US $81,039 Ex. Works London, ON, Canada
5.4	Ballasts	As required	US $1,041	US $31,230 Ex. Works London, ON, Canada
5.5	UV sensors	As required	US $ 2,707	US $0 Ex. Works London, ON, Canada
5.6	UVt sensors	As required	US $24,500	US $0 Ex. Works London, ON, Canada
5.7	UV controllers	As required		
5.8	Any other replacement item			Please refer 10 years O&M Spares List

[redacted]

5.9	**Total Replacement cost of UV system at LCOC** *(sum of 5.1-5.8)*	-	US $729,047 Ex. Works London, ON, Canada
	Specify exchange rates assumed at time of tender for purposes of replacement cost: ZAR:USD and ZAR:EUR	ZAR 1 :15.46 USD	ZAR1 : 17.02 EUR

6. LABOUR COST

	UV system element	Labour hours per event	Frequency of event	Cost of replaced items over 10 year period at LCOC (ZAR)
6.1	UV lamp replacement	0.083 for 1 Lamp	695	695 x 0.083 x 500 = ZAR 28,968.3
6.2	UV quartz sleeve replacement	0.167 for 1 sleeve	50	50 x 0.167 x 500 = ZAR 4,166.7

M9.1 '24 MBR OPEN CHANNEL SYSTEM

6. LABOUR COST

	UV system element	Labour hours per event	Frequency of event	Cost of replaced items over 10 year period at LCOC (ZAR)
6.3	UV quartz wiper replacement	0.250 with the Lamp	681	681 x 0.25 x 500 = 85,125
6.4	Ballasts replacement	0.167 for 1 ballast	30	30 x 0.167 x 500 = ZAR 2,500
6.5	UV sensors replacement	0.167 for 1 sensor	As required	0 x 0.167 x 500 = ZAR 0
6.6	UVt sensors replacement	0.33 for 1 sensor	As required	0 x 0.33 x 500 = ZAR 0
6.7	UV power supply replacement	UV Lamp Cable replacement – 0.750 per lamp	15	15 x 0.750 x 500 = ZAR 5,625
6.8	UV controller replacement	2 hours	As required	0 x 2 x 500 = ZAR 0
6.9	Any other replacement	Chemical Solution change – 0.167 for 1 UV Bank	200	200 x 0.167 x 500 = ZAR 16,666.7
6.10	UV sensors calibration	Calibration with Reference sensor – 0.33 per sensor	200	200 x 0.33 x 500 = ZAR 33,333.34
6.11	UVt sensors calibration	0.5 per sensor	40	40 x 0.50 x 500 = ZAR 10,000
6.12	UV controller setup	As required 3 - 12 hours, typical.	As required	0 x 4 x 500 = ZAR 0
6.13	UV system fault finding and SCADA maintenance	As required 3 - 12 hours, typical.	As required	0 x 4 x 500 = ZAR 0
	Quantity of oil	Please refer the litres	280	
Ancillaries 6.14	preventative maintenance	maintenance schedule (Sr. 13.10)	As per Schedule	ZAR 146,000
6.15	Any other maintenance	-	-	-
6.16	**Total Labour cost of UV system at LCOC** *(sum of 6.1-6.14)*		664.750	ZAR 332,375

A labour cost of R 500/hour should be assumed for Life Cycle Cost estimates

[redacted]

'24 MBR UV (MEDIUM PRESSURE, CLOSED VESSEL SYSTEM)

M9.2 '24 MBR UV system (Closed Vessel)

Item description	Units	Technical Particulars
M9.2 '24 MBR CLOSED VESSEL SYSTEM		
Note: that the information stipulated below does not necessarily represent all the information required for this item/system. The tenderer shall provide drawings and/or brochures showing details of the equipment offered and any other relevant information shall be submitted with the tender.		
UV supplier detail		
UV manufacturer (OEM)		Trojan Technologies Group ULC
UV supplier (local)		Aquest Colsen
UV supplier (international)		Trojan Technologies Group ULC
Proof of minimum 200 operating UV systems across the world		Please find enclosed partial list of UV systems installed (Sr. 01.00).
Proof of minimum 20 operating municipal waste water UV systems across the world with variable output electronic ballasts		Pease find enclosed partial list of municipal wastewater UV systems project with variable output electronic ballasts (Sr. 02.00).
Proof of minimum 5 operating municipal wastewater UV systems used in tertiray treatment applicaiton where the system achieved 3 Log removal of feacal coliform over a period of 12 months.		Please find enclosed partial list of operating municipal wastewater UV systems used in tertiary treatment application where the system achieved 3 Log removal of faecal coliform (Sr. 03.00).
Proof of UV manufacturer's service capabilities including location and experience		See 17.10 RS2021 Aquest UV Tech document
Proof of UV supplier local presence, support and workshops in South Africa.		See Attached 17.10
UV equipment detail		
UV lamp type (LP HP or MP) & technical details		Low Pressure (LP) Lamp datasheet enclosed (Sr. 04.00).
UV ballast and technical details		Trojan Solo Lamp Drive Ballast datasheet enclosed (Sr. 05.00).
UV quartz sleeve technical details		Quartz sleeves will be clear fused quartz circular tubing containing 99.9% silicon dioxide. Sleeves will have minimum UV transmittance at 254nm of > 87% . Sleeves will be open at one end only and domed at the other end.
UV cleaning mechanism technical details		Refer enclosed TrojanUVFlex-200 UV System and Component Description (Sr. 06.20)
UV sensors technical details		U V intensity Sensor details enclosed (Sr. 07.20)
UVt sensor technical details		UVT sensor details enclosed (Sr. 08.20)
UV reactor description		Refer enclosed TrojanUVFlex-200 UV System and Component Description

[redacted]

		(Sr. 06.20)
Independent bioassay validation and dosage calculations demonstrating compliance with the specified dose requirements for site conditions		Dose Calculations & Validation Certificates enclosed (Sr. 14.20)
UV system details		
UV system general layout drawings		Drawings enclosed
Simulated UV system dose control & monitoring technical details		Typical Control Philosophy enclosed (Sr. 09.20)
Single line diagrams for UV power supply system		DDE, after award of contract
Hydraulic calculations demonstrating compliance to site specific conditions		DDE, after award of contract
P&IDs for proposed UV system		See P&ID and Layout drawing Document
Description of UV control system and integration with site SCADA system		Quantity: One (1) LCP Panel per chamber – Total two (2) LCP panels Panel Size (W x H x D): 30" x 30" x 12" (762 mm x 762 mm x 310 mm) (Wall mounted by others) PLC Type: AB CompactLogix L33ER Operator Interface: Trojan OIT 7" Display Material of Construction: 316 Stainless steel Rating: Type 4X, IP66 SCADA: Ethernet I/P Panel Weight (approx.): 60 kg
UV dose per lamp & flow rate per lamp for full flow range		Dose Calculations & Validation Certificates enclosed (Sr. 14.20)
UV lamp aging and quartz sleeve fouling factors for site specific conditions		Third Party Certificates enclosed (Sr. 10.00 & 11.20
The following aspects will be included in the nett present value life cycle cost assessment for each UV system which will incorporate a **discount factor** suitable for the local conditions at the time for a period of **10 years** after the completion of the DFN. The operational conditions used will be for **average flow rates** and projected post UF/MBR **90th percentile water quality** for each UV system (this combination of flow and water quality condition is referred to the life cycle operating condition (LCOC):		

Table continues on overleaf

[redacted]

M9.2 '24 MBR CLOSED VESSEL SYSTEM			
1. CONFIGURATION of UV system			
	Description of UV elements	**Quantity**	**Comments**
1.1	UV reactors trains per UV system	2	1 Working + 1 Standby
1.2	UV reactors per UV reactor train	1	
1.3	UV lamps per UV reactor	120	
1.4	Ballasts per UV lamp	1 Ballast per 2 Lamps	
1.5	UV sensors per reactor	5	
1.6	UVt sensors per reactor	1	Total 3 nos. including 1 spare.
1.7	Power factor correction	No	Yes/No
1.8	**Configuration of UV system** *(sum of items 1.1-1.7)*	Closed Vessel TrojanUVFlex-200 UV system consisting of 2 reactors (1W+1S), each having 5 UV Sections of 24 lamps	
2. CONFIGURATION OF UV SYSTEM			
	Description of UV system cost elements	**Quantity**	**Total Capital Cost (ZAR)**
2.1	UV reactor housings and pipework	2	Included
2.2	UV lamps for entire UV system	240	Included
2.3	UV sleeves & cleaning systems for UV system	240 Sleeves & 2 Cleaning Systems, 1 per reactor	Included
2.4	Ballasts for UV system	120	Included
2.5	UV online instrumentation	10 – UVI Sensor 3 UVT Sensor, etc.	Included
2.6	UV dosing & control system	1 nos.	Included
2.7	UV power supply system	4 nos. (PDC) 2 nos. Double 2 nos. Single	Included
2.8	Other not included above	-	Included
2.9	Spares	-	Provided
2.10	**Total Capital of UV system** *(sum of items 2.1-2.9)*	2 reactor UV system	US $1,274,000
3. ENERGY COST			
	UV system element energy information	**Units**	**Value**
3.1	Maximum energy use per UV lamp	W	1000
3.2	Turn-down range of ballast	%	30 – 100%
3.3	Energy use range per UV lamp	W	320 min – 1000 max
3.4	No of operational reactor trains required at LCOC	No	1
3.5	No of operational reactors required at LCOC	No	1
3.6	No of operational UV lamps required for entire UV system at LCOC	No	120
3.6	Turndown value of ballast at LCOC	%	100%
3.7	Energy use of all lamps required at LCOC	W	127,810
3.8	Energy use of instrumentation and control system	W	2700

[redacted]

	at LCOC		
3.9	Energy use of cleaning system at LCOC	W	2400
3.10	Other energy uses of UV system at LCOC	W	Air Conditioner – 6336
3.11	Power factor of UV system at LCOC	%	> 98
3.12	**Total Energy use of UV system at LCOC** *(sum of 3.7-3.10)*	W	139,246
4. CONSUMABLE COST			
	UV system element	**Unit**	**Value**
4.1	In-situ cleaning		No
4.1.1	In-situ chemical detergent (Specify)	-	

**Table continues on overleaf*

[redacted]

M9.2 '24 MBR CLOSED VESSEL SYSTEM			
4. CONSUMABLE COST			
	UV system element	**Unit**	**Value**
4.1.2	Supply cost of chemical	ZAR/m³	
4.1.3	Concentration/Strength of chemical detergent	ppm	
4.1.4	Chemical detergent strength (bulk solution)	%w/w	
4.1.5	Specific Gravity (SG) (as delivered)	-	
4.1.6	Cleaning frequency at LCOC	per month	
4.1.7	Chemical detergent required per in-situ sleeve cleaning event	kg	
4.1.8	Guaranteed chemical consumption per year	m³/year	
4.2	**Out of reactor cleaning**		
4.2.1	UV out of reactor sleeve chemical detergent (Specify)	-	
4.2.2	Supply cost of chemical	ZAR/m³	
4.2.3	Concentration/Strength of chemical detergent	ppm	
4.2.4	Chemical detergent strength (bulk solution)	%w/w	
4.2.5	Specific Gravity (SG) (as delivered)	-	
4.2.6	Cleaning frequency at LCOC	per month	
4.2.7	Chemical detergent required per in-situ sleeve cleaning event	kg	
4.2.8	Guaranteed chemical consumption per year	m³/year	
4.3	Any other consumable cost related to UV system	ZAR	
4.4	**Total Consumable cost of UV system at LCOC** *(sum of 4.1-4.3)*	ZAR/month	

5. REPLACEMENT COST				
	UV system element	**Replacement frequency**	**Replacement currency (ZAR/USD/EUR)**	**Cost of replaced items over 10 year period at LCOC (ZAR)**
5.1	UV lamps	15,000 hours	US $741.50	US $575,404 Ex. Works London, ON, Canada
5.2	UV quartz sleeves	As required	US $186.25	US $4,656 Ex. Works London, ON, Canada
5.3	UV quartz wipers	15,000 hours	US $71.3	US $52,796 Ex. Works London, ON, Canada
5.4	Ballasts	As required	US $1,041	US $52,050 Ex. Works London, ON, Canada
5.5	UV sensors	As required	US $2,697	US $0 Ex. Works London, ON, Canada
5.6	UVt sensors	As required	US $24,500	US $0 Ex. Works London, ON, Canada
5.7	UV controllers	As required	US $18,500	US $0 Ex. Works London, ON, Canada
5.8	Any other replacement item			Please refer 10 years O&M Spares List
5.9	**Total Replacement cost of UV system at LCOC** *(sum of 5.1-5.8)*			US $719,905 Ex. Works London,

[redacted]

			ON, Canada
	Specify exchange rates assumed at time of tender for purposes of replacement cost: ZAR:USD and ZAR:EUR	ZAR1: 15.46 USD	ZAR1: 17.02 EUR

6. LABOUR COST

	UV system element	Labour hours per event	Frequency of event	Cost of replaced items over 10 year period at LCOC (ZAR)
6.1	UV lamp replacement	0.083 for 1 Lamp	776	776 x 0.0834 x 500 = ZAR 32,333.34
6.2	UV quartz sleeve replacement	0.167 for 1 sleeve	25	25 x 0.1667 x 500 = ZAR 2,083.34
6.3	UV quartz wiper replacement	0.250 with the Lamp	741	741 x 0.25 x 500 = ZAR 92,625

**Table continues on overleaf*

[redacted]

M9.2 '24 MBR CLOSED VESSEL SYSTEM				
6. LABOUR COST				
	UV system element	Labour hours per event	Frequency of event	Cost of replaced items over 10 year period at LCOC (ZAR)
6.4	Ballasts replacement	0.167 for 1 ballast	50	50 x 0.1667 x 500 = ZAR 4,166.67
6.5	UV sensors replacement	0.167 for 1 sensor	As required	0 x 0.1667 x 500 = ZAR 0
6.6	UVt sensors replacement	0.33 1 sensor	As required	0 x 0.3334 x 500 = ZAR 0
6.7	UV power supply replacement	UV Lamp Cable replacement – 0.750 per lamp	0	0 x 0.75 x 500 = ZAR 0
6.8	UV controller replacement	2 hours	As required	0 x 2 x 500 = ZAR 0
6.9	Any other replacement	-	-	-
6.10	UV sensors calibration	Calibration with Reference sensor – 0.33 per sensor	200	200 x 0.33 x 500 = ZAR 33,333.34
6.11	UVt sensors calibration	0.5 per sensor	40	40 x 0.5 x 500 = ZAR 10,000
6.12	UV controller setup	As required 3 - 12 hours, typical	As required	0 x 4 x 500 = ZAR 0
6.13	UV system fault finding and SCADA maintenance	As required 3 - 12 hours, typical	As required	0 x 4 x 500 = ZAR 0
6.14	UV system planned & preventative maintenance	Please refer the Typical Planned & preventive maintenance schedule(Sr. 13.20)	As per Schedule	225 x 500 = ZAR 112,500
6.15	Any other maintenance	-	-	-
6.16	Total Labour cost of UV system at LCOC *(sum of 6.1-6.14)*		574.083	ZAR 287,041.7
A labour cost of R 500/hour should be assumed for Life Cycle Cost estimates				

[redacted]

ULTRA FILTRATION UV (LOW PRESSURE, OPEN CHANNEL SYSTEM)

[redacted]

M9.3 '24 UF UV system (Low Pressure, Open Channel)

Item description	Units	Technical Particulars
M9.3 '24 UF OPEN CHANNEL SYSTEM		
Note: that the information stipulated below does not necessarily represent all the information required for this item/system. The tenderer shall provide drawings and/or brochures showing details of the equipment offered and any other relevant information shall be submitted with the tender.		
UV supplier detail		
UV manufacturer (OEM)		Trojan Technologies Group ULC
UV supplier (local)		Aquest Colsen
UV supplier (international)		Trojan Technologies Group ULC
Proof of minimum 200 operating UV systems across the world		Please find enclosed partial list of UV systems installed (Sr. 01.00).
Proof of minimum 20 operating municipal waste water UV systems across the world with variable output electronic ballasts		Pease find enclosed partial list of municipal wastewater UV systems project with variable output electronic ballasts (Sr. 02.00).
Proof of minimum 5 operating municipal wastewater UV systems used in tertiray treatment applicaiton where the system achieved 3 Log removal of feacal coliform over a period of 12 months.		Please find enclosed partial list of operating municipal wastewater UV systems used in tertiary treatment application where the system achieved 3 Log removal of faecal coliform (Sr. 03.00).
Proof of UV manufacturer's service capabilities including location and experience		See 17.10 PDF
Proof of UV supplier local presence, support and workshops in South Africa.		See attached 17.10
UV equipment detail		
UV lamp type (LP HP or MP) & technical details		Low Pressure (LP) Lamp datasheet enclosed (Sr. 04.00).
UV ballast and technical details		Trojan Solo Lamp Drive Ballast datasheet enclosed (Sr. 05.00).
UV quartz sleeve technical details		Quartz sleeves will be clear fused quartz circular tubing containing 99.9% silicon dioxide. Sleeves will have minimum UV transmittance at 254nm of > 87% . Sleeves will be open at one end only and domed at the other end.
UV cleaning mechanism technical details		Refer enclosed TrojanSigna UV System and Component Description (Sr. 06.10)
UV sensors technical details		UV intensity Sensor details enclosed (Sr. 07.10)
UVt sensor technical details		UVT sensor details enclosed (Sr. 08.10)
UV reactor description		TrojanSigna UV System and Component Description enclosed (Sr. 06.10)

[redacted]

Independent bioassay validation and dosage calculations demonstrating compliance with the specified dose requirements for site conditions		Dose Calculations & Validation Certificates enclosed (Sr. 14.10)
UV system details		
UV system general layout drawings		Drawings Attached
Simulated UV system dose control & monitoring technical details		Typical Control Philosophy enclosed (Sr. 09.10)
Single line diagrams for UV power supply system		DDE, after award of contract
Hydraulic calculations demonstrating compliance to site specific conditions		DDE, after award of contract
P&IDs for proposed UV system		See P&ID and Layout Drawings Document
Description of UV control system and integration with site SCADA system		Quantity Supplied: One (1) SCC will be supplied. Location: Wall Mounted Panel. Controller Type: Allen Bradley Compact Logix PLC. SCADA: Ethernet I/P. Operator Interface: Beijer 15" – A15. Material: 316 Stainless steel. Panel Rating: Type 4X (IP 66).
UV dose per lamp & flow rate per lamp for full flow range		Dose Calculations & Validation Certificates enclosed (Sr. 14.10)
UV lamp aging and quartz sleeve fouling factors for site specific conditions		Third Party Certificates enclosed (Sr. 10.00 & 11.10
The following aspects will be included in the nett present value life cycle cost assessment for each UV system which will incorporate a **discount factor** suitable for the local conditions at the time for a period of **10 years** after the completion of the DFN. The operational conditions used will be for **average flow rates** and projected post UF/MBR **90th percentile water quality** for each UV system (this combination of flow and water quality condition is referred to the life cycle operating condition (LCOC):		

Table continues on overleaf

[redacted]

M9.3 '24 UF OPEN CHANNEL SYSTEM			
1. CONFIGURATION of UV system			
	Description of UV elements	**Quantity**	**Comments**
1.1	UV reactors trains per UV system	2	1 Working + 1 Standby
1.2	UV reactors per UV reactor train	1	1 Reactor (channel) with 5 UV Banks
1.3	UV lamps per UV reactor	56	4 x 14 = 56
1.4	Ballasts per UV lamp	1 per 2 Lamps	1 no. Ballast per 2 UV Lamps
1.5	UV sensors per reactor	4	1 no. per UV Bank, 4 nos. per reactor (channel)
1.6	UVt sensors per reactor	1	1 UVT per reactor (Channel). Total 3 nos. including 1 spare.)
1.7	Power factor correction	No	Yes/No
1.8	**Configuration of UV system** *(sum of items 1.1-1.7)*	-	Open Channel TrojanUVSigna UV system consisting of 2 channels (1W+1S), each having 4 UV Banks of 14 lamps
2. CONFIGURATION OF UV SYSTEM			
	Description of UV system cost elements	**Quantity**	**Total Capital Cost (ZAR)**
2.1	UV reactor housings and pipework	2	Included
2.2	UV lamps for entire UV system	112	Included
2.3	UV sleeves & cleaning systems for UV system	112 Sleeves & 2 Cleaning Panels (HSC)	Included
2.4	Ballasts for UV system	56 Ballas	Included
2.5	UV online instrumentation	8 – UVI Sensor 3 UVT Sensor, etc.	Included
2.6	UV dosing & control system	1 no (SCC).	Included
2.7	UV power supply system	2 nos. (PDC)	Included
2.8	Other not included above	-	Included
2.9	Spares	-	Included
2.10	**Total Capital of UV system** *(sum of items 2.1-2.9)*	2 reactor (Channel) UV system	**US $758,500**
3. ENERGY COST			
	UV system element energy information	**Units**	**Value**
3.1	Maximum energy use per UV lamp	W	1000
3.2	Turn-down range of ballast	%	30 – 100%
3.3	Energy use range per UV lamp	W	320 min – 1000 max
3.4	No of operational reactor trains required at LCOC	No	1
3.5	No of operational reactors required at LCOC	No	1
3.6	No of operational UV lamps required for entire UV system at LCOC	No	56
3.6	Turndown value of ballast at LCOC	%	100
3.7	Energy use of all lamps required at LCOC	W	59,000

[redacted]

3.8	Energy use of instrumentation and control system at LCOC	W	2,700
3.9	Energy use of cleaning system at LCOC	W	2,400
3.10	Other energy uses of UV system at LCOC	W	Motorized Weir Gate – 2,200 Air Conditioner – 3,600
3.11	Power factor of UV system at LCOC	%	> 98
3.12	**Total Energy use of UV system at LCOC** *(sum of 3.7-3.10)*	**W**	69,900
4. CONSUMABLE COST			
	UV system element	**Unit**	**Value**
4.1	**In-situ cleaning**		
4.1.1	In-situ chemical detergent (Specify)	-	ActiClean Gel

Table continues on overleaf

[redacted]

M9.3 '24 UF OPEN CHANNEL SYSTEM			
4. CONSUMABLE COST			
	UV system element	**Unit**	**Value**
4.1.2	Supply cost of chemical	ZAR/m^3	US $168/case, each of 16 litre (Ex. Works London, ON, Canada)
4.1.3	Concentration/Strength of chemical detergent	ppm	-
4.1.4	Chemical detergent strength (bulk solution)	%w/w	5% w/w
4.1.5	Specific Gravity (SG) (as delivered)	-	Please refer to safety Datasheet Sr. 12.00
4.1.6	Cleaning frequency at LCOC	per month	0.225 times/month (2.7/year)
4.1.7	Chemical detergent required per in-situ sleeve cleaning event	kg	72.8 kg/year (80 lit/year
4.1.8	Guaranteed chemical consumption per year	m^3/year	0.08m3/year
4.2	**Out of reactor cleaning**		
4.2.1	UV out of reactor sleeve chemical detergent (Specify)	-	Not Applicable
4.2.2	Supply cost of chemical	ZAR/m^3	Not Applicable
4.2.3	Concentration/Strength of chemical detergent	ppm	Not Applicable
4.2.4	Chemical detergent strength (bulk solution)	%w/w	Not Applicable
4.2.5	Specific Gravity (SG) (as delivered)	-	Not Applicable
4.2.6	Cleaning frequency at LCOC	per month	Not Applicable
4.2.7	Chemical detergent required per in-situ sleeve cleaning event	kg	Not Applicable
4.2.8	Guaranteed chemical consumption per year	m^3/year	Not Applicable
4.3	Any other consumable cost related to UV system	ZAR	Not Applicable
4.4	**Total Consumable cost of UV system at LCOC** *(sum of 4.1-4.3)*	**ZAR/month**	US $840 (Ex. Works London, ON, Canada)

5. REPLACEMENT COST				
	UV system element	**Replacement frequency**	**Replacement currency** (ZAR/USD/EUR)	**Cost of replaced items over 10 year period at LCOC (ZAR)**
				US $269,803
5.2	UV quartz sleeves	As required	S $297.5	US $8,925 Ex. Works London, ON, Canada
5.3	UV quartz wipers	15,000 hours	S $119	US $41,650 Ex. Works London, ON, Canada
5.4	Ballasts	As required	S $1,041	US $20,820 Ex. Works London, ON, Canada
5.5	UV sensors	As required	S $2,707	US $0 Ex. Works London, ON, Canada
5.6	UVt sensors	As required	US $24,500	US $0 Ex. Works London, ON, Canada
5.7	UV controllers	As required	US $18,500	US $0 Ex. Works London, ON, Canada
5.8	Any other replacement item	As required	-	Please refer 10 years O&M Spares List

[redacted]

5.9	**Total Replacement cost of UV system at LCOC** *(sum of 5.1-5.8)*	Please refer 10 years O&M Spares List	US $396,114 Ex. Works London, ON, Canada
	Specify exchange rates assumed at time of tender for purposes of replacement cost: ZAR:USD and ZAR:EUR	See above	R15.46: 1USD

6. LABOUR COST

	UV system element	Labour hours per event	Frequency of event	Cost of replaced items over 10 year period at LCOC (ZAR)
6.1	UV lamp replacement	**0.083 with the Lamp**	**357**	**357 x 0.0834 x 500 = ZAR 14,875**
6.2	UV quartz sleeve replacement	**0.167 for 1 sleeve**	**30**	**30 x 0.1667 x 500 = ZAR 2,500**
6.3	UV quartz wiper replacement	**0.250 with the Lamp**	**350**	**350 x 0.25 x 500 = ZAR 43,750**

Table continues on overleaf

[redacted]

M9.3 '24 UF OPEN CHANNEL SYSTEM				
6. LABOUR COST				
	UV system element	**Labour hours per event**	**Frequency of event**	**Cost of replaced items over 10 year period at LCOC (ZAR)**
6.4	Ballasts replacement	**0.167 for 1 ballast**	**20**	**20 x 0.1667 x 500 = ZAR 1,666.67**
6.5	UV sensors replacement	**0.167 for 1 sensor**	**As required**	**0 x 0.1667 x 500 = ZAR 0**
6.6	UVt sensors replacement	**0.33 for 1 sensor**	**As required**	**0 x 0.3334 x 500 = ZAR 0**
6.7	UV power supply replacement	**UV Lamp Cable replacement – 0.750 per lamp**	**10**	**10 x 0.75 x 500 = ZAR3,750**
6.8	UV controller replacement	**2 hours**	**As required**	**0 x 2 x 500 = ZAR 0**
6.9	Any other replacement	**Chemical Solution change – 0.167 for 1 UV Bank**	**160**	**160 x 0.1667 x 500 = ZAR 13,333.34**
6.10	UV sensors calibration	**Calibration with Reference sensor – 0.33 per sensor**	**160**	**160 x 0.3334 x 500 = ZAR 26,666.67**
6.11	UVt sensors calibration	**0.5 per sensor**	**40**	**40 x 0.5 x 500 = ZAR 10,000**
6.12	UV controller setup	**As required 3 - 12 hours, typical.**	**As required**	**0 x 4 x 500 = ZAR 0**
6.13	UV system fault finding and SCADA maintenance	**As required 3 - 12 hours, typical.**	**As required**	**0 x 4 x 500 = ZAR 0**
6.14	UV system planned & preventative maintenance	**Please refer the Typical Planned & preventive maintenance schedule (Sr. 13.10)**	**As per Schedule**	**242 x 500 = ZAR 121,000**
6.15	Any other maintenance	-	-	-
6.16	**Total Labour cost of UV system at LCOC** *(sum of 6.1-6.14)*		**475.083**	**ZAR 237,541.7**
A labour cost of R 500/hour should be assumed for Life Cycle Cost estimates				

[redacted]

ULTRA FILTRATION UV (MEDIUM PRESSURE, CLOSED VESSEL SYSTEM)

M9.4 '24 UF Ultra filtration UV system (Closed Vessel)

Item description	Units	Technical Particulars
M9.4 '24 UF CLOSED VESSEL SYSTEM		
Note: that the information stipulated below does not necessarily represent all the information required for this item/system. The tenderer shall provide drawings and/or brochures showing details of the equipment offered and any other relevant information shall be submitted with the tender.		
UV supplier detail		
UV manufacturer (OEM)		Trojan Technologies Group ULC
UV supplier (local)		Aquest Colsen
UV supplier (international)		Trojan Technologies Group ULC
Proof of minimum 200 operating UV systems across the world		Please find enclosed partial list of UV systems installed (Sr. 01.00).
Proof of minimum 20 operating municipal waste water UV systems across the world with variable output electronic ballasts		Pease find enclosed partial list of municipal wastewater UV systems project with variable output electronic ballasts (Sr. 02.00).
Proof of minimum 5 operating municipal wastewater UV systems used in tertiray treatment applicaiton where the system achieved 3 Log removal of feacal coliform over a period of 12 months.		Please find enclosed partial list of operating municipal wastewater UV systems used in tertiary treatment application where the system achieved 3 Log removal of faecal coliform (Sr. 03.00).
Proof of UV manufacturer's service capabilities including location and experience		See Trojan Service support Document
Proof of UV supplier local presence, support and workshops in South Africa.		See attached 17.10
UV equipment detail		
UV lamp type (LP HP or MP) & technical details		Low Pressure (LP) Lamp datasheet enclosed (Sr. 04.00).
UV ballast and technical details		Trojan Solo Lamp Drive Ballast datasheet enclosed (Sr. 05.00)
UV quartz sleeve technical details		Quartz sleeves will be clear fused quartz circular tubing containing 99.9% silicon dioxide. Sleeves will have minimum UV transmittance at 254nm of > 87% . Sleeves will be open at one end only and domed at the other end.
UV cleaning mechanism technical details		Refer enclosed TrojanUVFlex-200 UV System and Component Description (Sr. 06.20)
UV sensors technical details		UV intensity Sensor details enclosed (Sr. 07.20)
UVt sensor technical details		UVT sensor details enclosed (Sr. 08.20)
UV reactor description		Refer enclosed TrojanUVFlex-200 UV System and Component Description (Sr. 06.20)

Independent bioassay validation and dosage calculations demonstrating compliance with the specified dose requirements for site conditions		Dose Calculations & Validation Certificates enclosed (Sr. 14.20)
UV system details		
UV system general layout drawings		Drawings attached
Simulated UV system dose control & monitoring technical details		Typical Control Philosophy enclosed (Sr. 09.20
Single line diagrams for UV power supply system		DDE, after award of contract
Hydraulic calculations demonstrating compliance to site specific conditions		DDE, after award of contract
P&IDs for proposed UV system		See P&ID and Layout Drawing Document
Description of UV control system and integration with site SCADA system		Quantity: One (1) LCP Panel per chamber – Total two (2) LCP panels Panel Size (W x H x D): 30" x 30" x 12" (762 mm x 762 mm x 310 mm) (Wall mounted by others) PLC Type: AB CompactLogix L33ER Operator Interface: Trojan OIT 7" Display Material of Construction: 316 Stainless steel Rating: Type 4X, IP66 SCADA: Ethernet I/P Panel Weight (approx.): 68 kg
UV dose per lamp & flow rate per lamp for full flow range		Dose Calculations & Validation Certificates enclosed (Sr. 14.20)
UV lamp aging and quartz sleeve fouling factors for site specific conditions		Third Party Certificates enclosed (Sr. 10.00 & 11.20
The following aspects will be included in the nett present value life cycle cost assessment for each UV system which will incorporate a **discount factor** suitable for the local conditions at the time for a period of **10 years** after the completion of the DFN. The operational conditions used will be for **average flow rates** and projected post UF/MBR **90th percentile water quality** for each UV system (this combination of flow and water quality condition is referred to the life cycle operating condition (LCOC):		

Table continues on overleaf

M9.4 '24 UF CLOSED VESSEL SYSTEM

1. CONFIGURATION of UV system

	Description of UV elements	Quantity	Comments
1.1	UV reactors trains per UV system	2	1 Working + 1 Standby
1.2	UV reactors per UV reactor train	1	
1.3	UV lamps per UV reactor	72	
1.4	Ballasts per UV lamp	1 Ballast per 2 Lamps	
1.5	UV sensors per reactor	3	1 per section / 2 per UV Bank
1.6	UVt sensors per reactor	1	Total 3 nos. including 1 spare
1.7	Power factor correction	No	Yes/No
1.8	**Configuration of UV system** *(sum of items 1.1-1.7)*		Closed Vessel TrojanUVFlex-200 UV system consisting of 2 reactors (1W+1S), each having 3 UV Sections of 24 lamps

2. CONFIGURATION OF UV SYSTEM

	Description of UV system cost elements	Quantity	Total Capital Cost (ZAR)
2.1	UV reactor housings and pipework	2	Included

[redacted]

2.2	UV lamps for entire UV system	144	Included
2.3	UV sleeves & cleaning systems for UV system	144 Sleeves & 2 Cleaning Systems, 1 per reactor	Included
2.4	Ballasts for UV system	72	Included
2.5	UV online instrumentation	6 – UVI Sensor 3 UVT Sensor, etc	Included
2.6	UV dosing & control system	1 nos	Included
2.7	UV power supply system	2 nos.	Included
2.8	Other not included above		Included
2.9	Spares		Provided
2.10	**Total Capital of UV system** *(sum of items 2.1-2.9)*		US $933,400

3. ENERGY COST

	UV system element energy information	Units	Value
3.1	Maximum energy use per UV lamp	W	1000
3.2	Turn-down range of ballast	%	30 – 100%
3.3	Energy use range per UV lamp	W	320 min – 1000 max
3.4	No of operational reactor trains required at LCOC	No	1
3.5	No of operational reactors required at LCOC	No	1
3.6	No of operational UV lamps required for entire UV system at LCOC	No	72
3.6	Turndown value of ballast at LCOC	%	100%
3.7	Energy use of all lamps required at LCOC	W	77,100
3.8	Energy use of instrumentation and control system at LCOC	W	2,700
3.9	Energy use of cleaning system at LCOC	W	2,400
3.10	Other energy uses of UV system at LCOC	W	Air Conditioner – 4896
3.11	Power factor of UV system at LCOC	%	> 98
3.12	**Total Energy use of UV system at LCOC** *(sum of 3.7-3.10)*	W	87,096

4. CONSUMABLE COST

	UV system element	Unit	Value
4.1	**In-situ cleaning**		Yes (as per DMS 26.4.5.1)
4.1.1	In-situ chemical detergent (Specify)	-	Oxalic Acid

Table continues on overleaf

M9.4 '24 UF CLOSED VESSEL SYSTEM

4. CONSUMABLE COST

	UV system element	Unit	Value
4.1.2	Supply cost of chemical	ZAR/m^3	50 ZAR/kg
4.1.3	Concentration/Strength of chemical detergent	ppm	>99%
4.1.4	Chemical detergent strength (bulk solution)	%w/w	1%
4.1.5	Specific Gravity (SG) (as delivered)	-	1.65
4.1.6	Cleaning frequency at LCOC	per month	0.333 (four times per year)
4.1.7	Chemical detergent required per in-situ sleeve cleaning event	kg	99
4.1.8	Guaranteed chemical consumption per year	m^3/year	Approx.400kg (99kg per cleaning event)

[redacted]

4.2	**Out of reactor cleaning**		
4.2.1	UV out of reactor sleeve chemical detergent (Specify)	-	Not Applicable
4.2.2	Supply cost of chemical	ZAR/m^3	Not Applicable
4.2.3	Concentration/Strength of chemical detergent	ppm	Not Applicable
4.2.4	Chemical detergent strength (bulk solution)	%w/w	Not Applicable
4.2.5	Specific Gravity (SG) (as delivered)	-	Not Applicable
4.2.6	Cleaning frequency at LCOC	per month	Not Applicable
4.2.7	Chemical detergent required per in-situ sleeve cleaning event	kg	Not Applicable
4.2.8	Guaranteed chemical consumption per year	m^3/year	Not Applicable
4.3	Any other consumable cost related to UV system	ZAR	Not Applicable
4.4	**Total Consumable cost of UV system at LCOC** *(sum of 4.1-4.3)*	**ZAR/month**	ZAR 1666.67

5. REPLACEMENT COST

	UV system element	**Replacement frequency**	**Replacement currency** (ZAR/USD/EUR)	**Cost of replaced items over 10 year period at LCOC (ZAR)**
5.1	UV lamps	15,000 hours	US $741.50	US $361,852 Ex. Works London, ON, Canada
5.2	UV quartz sleeves	As required	US $186.25	US $2,794 Ex. Works London, ON, Canada
5.3	UV quartz wipers	15,000 hours	US $71.3	US $31,778 Ex. Works London, ON, Canada
5.4	Ballasts	As required	S $1,041	US $31,230 Ex. Works London, ON, Canada
5.5	UV sensors	As required	S $2,697	US $0 Ex. Works London, ON, Canada
5.6	UVt sensors	As required	S $24,500	US $0 Ex. Works London, ON, Canada
5.7	UV controllers	As required	S $18,500	US $0 , Ex. Works London, ON, Canada
5.8	Any other replacement item	As required		Please refer 10 years O&M Spares List
5.9	**Total Replacement cost of UV system at LCOC** *(sum of 5.1-5.8)*		Please refer 10 years O&M Spares List	US $458,287 Ex. Works London, ON, Canada
	Specify exchange rates assumed at time of tender for purposes of replacement cost: ZAR:USD and ZAR:EUR		See Above	R15.46: 1USD

6. LABOUR COST

	UV system element	**Labour hours per event**	**Frequency of event**	**Cost of replaced items over 10 year period at LCOC (ZAR)**
6.1	UV lamp replacement	**0.083 for 1 Lamp**	**488**	**488 x 0.0834 x 500 = ZAR 20,333.34**
6.2	UV quartz sleeve replacement	**0.167 for 1 sleeve**	**15**	**15 x 0.1667 x 500 = ZAR 1250**
6.3	UV quartz wiper replacement	**0.250 with the Lamp**	**446**	**446 x 0.25 x 500 = ZAR 55,750**

Table continues on overleaf

[redacted]

M9.4 '24 UF CLOSED VESSEL SYSTEM				
6. LABOUR COST				
	UV system element	**Labour hours per event**	**Frequency of event**	**Cost of replaced items over 10 year period at LCOC (ZAR)**
6.4	Ballasts replacement	**0.167 for 1 ballast**	**30**	**30 x 0.1667 x 500 = ZAR 2,500**
6.5	UV sensors replacement	**0.167 for 1 sensor**	**As required**	**0 x 0.1667 x 500 = ZAR 0**
6.6	UVt sensors replacement	**0.33 for 1 sensor**	**As required**	**0 x 0.3334 x 500 = ZAR 0**
6.7	UV power supply replacement	**UV Lamp Cable replacement – 0.750 per lamp**	**As required**	**0 x 0.75 x 500 = ZAR 0**
6.8	UV controller replacement	**2 hours**	**As required**	**0 x 2 x 500 = ZAR 0**
6.9	Any other replacement	-	-	-
6.10	UV sensors calibration	**Calibration with Reference sensor – 0.33 per sensor**	**120**	**120 x 0.3334 x 500 = ZAR 20,000**
6.11	UVt sensors calibration	**0.5 per sensor**	**40**	**40 x 0.5 x 500 = ZAR 10000**
6.12	UV controller setup	**As required 3 - 12 hours, typical**	**As required**	**0 x 4 x 500 = ZAR 0**
6.13	UV system fault finding and SCADA maintenance	**As required 3 - 12 hours, typical**	**As required**	**0 x 4 x 500 = ZAR 0**
6.14	UV system planned & preventative maintenance	**Please refer the Typical Planned & preventive maintenance schedule(Sr. 13.20)**	**As per Schedule**	**168 x 500 = ZAR 84,000**
6.15	Any other maintenance	-	-	-
6.16	**Total Labour cost of UV system at LCOC** *(sum of 6.1-6.14)*		**387.667**	**ZAR 193,833.33**
A labour cost of R 500/hour should be assumed for Life Cycle Cost estimates				

[redacted]

Pressurized Ultra Filtration Equipment

[redacted]

PRESSURIZED UF MEMBRANE DETAILS

[redacted]

M10.1 '24 Pressurized UF membrane details

Item description	Units	Technical Particulars
M10.1 '24 Pressurized UF membrane details		
Note: that the information stipulated below does not necessarily represent all the information required for this item/system. The tenderer shall provide drawings and/or brochures showing details of the equipment offered and any other relevant information shall be submitted with the tender.		
General information		
Manufacturer		Dupont
Type		Pressurised ultra-filtration
Model		IP-77
Country of origin		China
Relevant experience of manufacturer	years	20
No. of full scale plants where offered model is installed with design capacity in excess of 10 Ml/d (ADWF) (only for plants commissioned in past 8 years and operational for 2 years to be counted)	No.	15
Membrane Key Data / Operational Parameters		
Membrane Material and Construction	-	uPVC/ABS
Type (Flow direction)	-	Outside to inside
Hollow fibre material	-	PVDF
Nominal membrane pore size	µm	0.03
Membrane potting material/method	-	Polyurethane embedded
Number of filtration units/skids/trains	No.	9
Membrane area per skid/unit (fully filled)	m^2/unit	9240
Modules per filtration train	No.	120
Membrane filtration area per module	m^2/module	77
Modules per unit/skid	No.	20
Total membrane area	m^2	1540/skid
UF System Feed Pre-treatment Requirements		Pre-screening ≤100 Micron
Maximum aeration rate per unit/skid	Nm^3/hr/ unit	240
Maximum aeration rate per module	Nm^3/hr/ module	12
Maximum design air scour delivery pressure at plant design capacity	kPa	50
Permeate/back pulse volume tank	m^3	100
Net filtration time per 24 hours	hr	22.1
Minimum filtration time before backwash request at design capacity	min	30
Backwash duration (incl. valve change-over)	min	2.7
Relaxation duration	min	0
Net filtration duration per day	hr/day	22.0
Feed delivery into individual membrane module (i.e. from bottom or top)	-	Bottom
Filtrate discharge from individual membrane module (i.e. from bottom or top)	-	Top
Material of Construction (Unit assembly - frame & beam)	-	SS316

[redacted]

Item description	Units	Technical Particulars
M10.1 '24 Pressurized UF membrane details		
Mass of a Wet Membrane Module	kg	119
Mass of a Dry Membrane Module	kg	66
Membrane Repair Method (Pinning, Adhesive, Other)		Pinning
Membrane design flow criteria		
Plant design capacity	m^3/d	65,000
Duration	hr	Continuous
Net flux at design capacity (5 duty trains/units/skids)	LMH	48 (6 trains)
Back pulse Flux	LMH	100
Back pulse Pressure	kPa	150
Design transmembrane pressure at full capacity	kPa	30
Design operating temperature	°C	25
Operating pH range	-	7.5
Chlorine resistance of UF components	mg.hr/l	Maximum NaOCl concentration of 2 000 mg/l
Typical trans-membrane pressure (TMP)	kPa	60
Maximum trans-membrane pressure (Positive and negative)	kPa	140
Allowable flux		
@ Liquid temperature of 10°C	LMH	60
@ Liquid temperature of 15°C	LMH	60
@ Liquid temperature of 20°C	LMH	60
@ Liquid temperature of 25°C	LMH	60
@ Liquid temperature of 30°C	LMH	60
Laboratory analysis requirement (Contractor to list)		
TSS		
Turbidity		
COD		
TOC		
pH		
Online monitoring requirements (Contractor to list)		
Temperature		
Feed, concentrate & filtrate pressure		
Feed, filtrate & backwash flow rate		
Feed & filtrate turbidity		
Feed & filtrate TSS		

[redacted]

10.2.1 - PRESSURIZED UF CIP CHEMICAL CONSUMPTION

M10.2.1 '24 Pressurised UF clean in place consumption

Item description	Units	Technical Particulars	
M10.2.1 '24 Pressurised UF clean in place consumption		**Sodium hypochlorite**	**Citric Acid**
Note: that the information stipulated below does not necessarily represent all the information required for this item/system. The tenderer shall provide drawings and/or brochures showing details of the equipment offered and any other relevant information shall be submitted with the tender.			
General Information			
Manufacturer		Grundfos	Grundfos
Type		Mechanical diaphragm pump	Mechanical diaphragm pump
Model		DMX 765-3	DMX 525-3
Country of origin		Denmark	Denmark
Operating Conditions			
Backwash/CIP pump system			
Maximum backwash flowrate	l/s	0.2	0.14
Maximum CIP flowrate	l/s	0.2	0.14
Maintenance Clean			
Concentration/ Strength	ppm	500	n/a
Chemical concentration strength at 20 °C	% w/w	12	50
Specific Gravity (SG)	-	1.22	1.23
Cleaning Frequency	per week	7	0
Cleaning Duration	min/train	15	0
Chemical required per maintenance cleaning	ℓ	36.6	0
Weekly chemical required per maintenance cleaning	kg	1540	0
Weekly chemical required per recovery cleaning	ℓ		0
Chemical required per recovery cleaning	kg		
Recovery Clean:			
Concentration/ Strength as free chlorine	ppm	2000	20 000
Chemical concentration strength at 20 °C	% w/w	12	50
Specific Gravity (SG)	-	1.22	1.23
Cleaning Frequency	per week	0.25	0.25
Cleaning Duration	min/train	90	90
Chemical required per maintenance cleaning	ℓ	-	-
Weekly chemical required per maintenance cleaning	kg	-	0
Weekly chemical required per recovery cleaning	ℓ	85	99
Chemical required per recovery cleaning	kg	103	121
Chemical storage system			
2 months storage equivalent at design plant capacity	ℓ	14 500	1200
Working volume of storage tank offered	ℓ	10 000	500

[redacted]

10.2.2 - PRESSURIZED UF CIP CHEMICAL CONSUMPTION

[redacted]

M10.2.2 '24 Pressurised UF clean in place consumption

Item description	Units	Technical Particulars		
M10.2.2 '24 Pressurised UF clean in place consumption		**Chemical 1**	**Chemical 2**	**Chemical 3**
Note: that the information stipulated below does not necessarily represent all the information required for this item/system. The tenderer shall provide drawings and/or brochures showing details of the equipment offered and any other relevant information shall be submitted with the tender.				
General information		**Hydrochloric Acid**	**Sodium Hydroxide**	**SMBS**
Manufacturer		**Grundfos**	**Grundfos**	**Grundfos**
Type		**Mechanical diaphragm pump**	**Mechanical diaphragm pump**	**Mechanical diaphragm pump**
Model		**DMX 460-6**	**DMX 525-3**	**DMX 100-8**
Country of origin		**Denmark**	**Denmark**	**Denmark**
Operating Conditions				
Backwash/CIP pump system				
Maximum backwash flowrate	l/s	-	-	-
Maximum CIP flowrate	l/s	-	-	-
Maintenance Clean				
Concentration/ Strength of CIP water	ppm	365	500	25
Chemical concentration strength at 20 °C	% w/w	32	50	1
Specific Gravity (SG)	-	1.18	1.5	1.15
Cleaning Frequency	per week	7	7	1
Cleaning Duration	min/train	15	15	0
Chemical required per maintenance cleaning	ℓ	9	6.2	0
Weekly chemical required per maintenance cleaning	kg	145	395	0
Weekly chemical required per recovery cleaning	ℓ	0	-	-
Chemical required per recovery cleaning	kg	0	-	-
Recovery Clean/Clean in Place:				
Concentration/ Strength CIP water	ppm	0	500	50
Chemical concentration strength at 20 °C	% w/w	0	50	1
Specific Gravity (SG)	-	1.18	1.5	1.15
Cleaning Frequency	per week	0	.25	.25
Cleaning Duration	min/train	0	90	30
Chemical required per maintenance cleaning	ℓ	0	-	-
Weekly chemical required per maintenance cleaning	kg	-	-	-
Weekly chemical required per recovery cleaning	ℓ	-	14	5
Chemical required per recovery cleaning	kg	-	21	5.7
Chemical storage system				
2 months storage equivalent at design plant capacity	ℓ	1000	2500	200
Working volume of storage tank offered	ℓ	1000	1300	200

[redacted]

10.3.1 - PRESSURIZED UF CIP CHEMICAL STORAGE AREA

M10.3.1 '24 Pressurised UF clean in place chemical storage

Item description	Units	Technical Particulars	
M10.3.1 '24 Pressurised UF clean in place chemical storage		**Sodium hypochlorite**	**Citric Acid**
Note: that the information stipulated below does not necessarily represent all the information required for this item/system. The tenderer shall provide drawings and/or brochures showing details of the equipment offered and any other relevant information shall be submitted with the tender.			
General information			
Manufacturer		Famsystems	Famsystems
Type		Custom	Custom
Model		-	-
Country of origin		RSA	RSA
Product Specifications			
Fluid		NaOCl	Citric Acid
Concentration	%	12	50
Temperature	°C	25	25
Viscosity	cP	2.15	11
Operating Conditions			
Total volume	ℓ	10000	500
Working volume	ℓ	10000	500
Maximum allowable working pressure	kPa	50	20
Physical Data			
Tank			
Tank diameter	m	2.2	0.9
Tank height	m	2.75	0.9
Mass of empty vessel	kg	TBA	TBA
Mass of vessel at maximum operating capacity	kg	11 100 content	620 content
Volume of containment bund	ℓ	n/a	n/a
Length x Width x Height of containment bund skid	m	Civil	Civil
Total mass of mobile containment bund and tank	kg	Civil	Civil
Mixer			
Make & model		n/a	Custom
Motor rating	kW	n/a	1.5
Piping			
Pressure rating	kPA	1000	1000
Materials of Construction			
Tank		Vinyl Ester	GRP
Containment bund		Civil	Civil
Piping		uPVC	uPVC

[redacted]

10.3.2 - PRESSURIZED UF CIP CHEMICAL STORAGE AREA

[redacted]

M10.3.2 '24 Pressurised UF clean in place chemical storage

Item description	Units	Technical Particulars		
M10.3.2 '24 Pressurised UF clean in place chemical storage		**Chemical 1**	**Chemical 2**	**Chemical 3**
Note: that the information stipulated below does not necessary represent all the information required for this item/system. The Tenderer shall provide drawings and/or brochures showing details of the equipment offered and any other relevant information shall be submitted with the tender.				
General information				
Manufacturer		Famsystems	Famsystems	Famsystems
Type		Custom	Custom	Custom
Model		-	-	-
Country of origin		RSA	RSA	RSA
Product Specifications				
Fluid		Hydrochloric acid	Sodium Hydroxide	SMBS
Concentration	%	32	50	40
Temperature	°C	25	25	25
Viscosity	cP	1.8	86.5	TBA
Operating Conditions				
Total volume	ℓ	1000	2000	200
Working volume	ℓ	1000	2000	200
Maximum allowable working pressure	kPa	20	40	20
Physical Data				
Tank				
Tank diameter	m	1.2	1.2	0.9
Tank height	m	1	2	0.9
Mass of empty vessel	kg	TBA	TBA	TBA
Mass of vessel at maximum operating capacity	kg	1 180 content	2 400 content	262 content
Volume of containment bund	ℓ	Civil	Civil	Civil
Length x Width x Height of containment bund skid	m	Civil	Civil	Civil
Total mass of mobile containment bund and tank	kg	n/a	n/a	n/a
Mixer				
Make & model		n/a	n/a	n/a
Motor rating	kW	n/a	n/a	n/a
Piping				
Pressure rating	kPA	1000	1600	1000
Materials of Construction				
Tank		GRP	GTP&PP	GRP&PVC
Containment bund		Civil	Civil	Civil
Piping		HDPE	SS316	HDPE

[redacted]

PRESSURIZED UF AIR SCOUR EQUIPMENT

M10.4 '24 Pressurised UF air scour system

Item description	Units	Technical Particulars
M10.4 '24 Pressurised UF air scour system		
Note: that the information stipulated below does not necessarily represent all the information required for this item/system. The tenderer shall provide drawings and/or brochures showing details of the equipment offered and any other relevant information shall be submitted with the tender.		
Blowers		
Make & model		Robuschi ROBOX ES_66/3P
Material of casing		grey cast iron G250 EN 1561
Material of shaft		cast iron GJS 400-15 EN 1563
Material of rotor		nodular cast iron GJS 400-15 EN 1563
Impeller/Rotor Speed	RPM	2945
Outlet diameter	DN	150
Total Mass of Blower	kg	195
Noise level	dB	75
Maximum guaranteed noise level at 1 m distance (Lp, mean, 1 meter) ISO 9614-2	dB	77
Overall dimensions of hood (L x W x H)	mm	1550x1510x1657
Turndown Ratio	%	1.85
Flow range	Nm^3/h	1850
Pressure range	mbar	400
Filter Efficiency		40 micron
Characteristics of blower at maximum efficiency (1 blower operating)		
Pressure	mbar	400
Flow	Nm^3/h	1420
Absorbed Load	kW	37
Overall Efficiency	%	60.6
Operating capacity	%	88.9
Discharge Temperature	°C	94
Characteristics of blower at duty point (1 blower operating)		
Pressure	mbar	400
Flow	Nm^3/h	1222
Absorbed Load	kW	24.5
Overall Efficiency	%	63.1
Operating capacity	%	87.5
Discharge Temperature	°C	94
Motor		
Make and Model		200LB 2 pole TEFC
Type of enclosure		IEC Cast Iron
Class of insulation		IP55
Continuous maximum motor rating	kW	37
Speed of rotation	RPM	2945

[redacted]

Item description	Units	Technical Particulars
M10.4 '24 Pressurised UF air scour system		
Full load current	A	65
Efficiency at 100% rate power	%	93.7
Power factor (uncorrected) at 100% rated power		0.87
Bearings		
Type		6312ZZC3 Deep groove ball bearings
L10 life	hr	100 000
Isolation Valve		
Make & model		AVK Series 43/60
Type		RS gate valve
Material of body		Ductile iron, EN-GJS-500-7
Material of disc		ductile iron fully vulcanized EPDM
Material of seat		EPDM
Corrosion protection of valve (External)		Epoxy DIN30677-2
Corrosion protection of valve (External)	µm	n/a
Corrosion protection of valve (Internal)		Epoxy DIN30677-2
Corrosion protection of valve (Internal)	µm	n/a
Material of fasteners		SS316
Size	DN	200
Pressure rating	PN	100
Temperature Rating	°C	70
Leak tight seal	Yes/No	Yes
Bidirectional Seal	Yes/No	Yes
Gearbox ratio		n/a
Torque-slip device	Yes/No	n/a
Torque limit	Yes/No	n/a
Overall mass of unit	kg	57
Check Valve		
Make & model		AVK Series 41/60
Type		RS Swing check
Material of body		Ductile iron, EN-GJS-500-7
Material of disc		EPDM with steel insert
Material of seat		EPDM
Material of seal Spring		n/a
Corrosion protection of valve (External)		Epoxy DIN30677-2
Corrosion protection of valve (External)	µm	n/a
Corrosion protection of valve (Internal)		Epoxy DIN30677-2
Corrosion protection of valve (Internal)	µm	n/a
Material of fasteners		SS316
Size	DN	200
Pressure rating	PN	1000
Temperature Rating	°C	/0
Leak tight seal	Yes/No	Yes
Overall mass of unit	kg	83

[redacted]

PRESSURIZED UF OPERATIONAL (OPEX) ANALYSES

[redacted]

M10.5 '24 UF Operational Expenses (OPEX) Analysis

Item description	Units	Technical Particulars
M10.5 '24 UF Operational Expenses (OPEX) Analysis		
Note: that the information stipulated below does not necessarily represent all the information required for this item/system. The tenderer shall provide drawings and/or brochures showing details of the equipment offered and any other relevant information shall be submitted with the tender.		
Guaranteed Chemical Consumption [1]:		
Sodium Hypochlorite Maintenance Clean (10.3% as free Cl_2)	t/year	*96 500 (12% Sodium Hypochlorite)*
	kg/year	*117 730*
Sodium Hypochlorite Recovery Clean (10.3% as free Cl_2)	t/year	*6 500 (12% Sodium Hypochlorite)*
	kg/year	*7 930*
Citric Acid Maintenance Clean (50%)	t/year	*0*
	kg/year	
Citric Acid Recovery Clean (50%)	t/year	*7300*
	kg/year	*8900*
Other chemical (Chemical No.1 _____%) (State purpose:_____)	t/year	*Hydrochloric acid 32% -6500/year*
	kg/year	***Maintenance clean***
Other chemical (Chemical No.1 _____%) (State purpose:_____)	t/year	*Sodium Hydroxide 50% - 16 050 l/year*
	kg/year	***Recovery clean***
Other chemical (Chemical No.2 _____%) (State purpose:_____)	t/year	*Sodium Hydroxide 50% - 1050 l/year*
	kg/year	***Recovery clean***
Other chemical (Chemical No.2 _____%) (State purpose:_____)	t/year	*SMBS - 1000 l/year*
	kg/year	***Recovery clean***
Other chemical (Chemical No.3 _____%) (State purpose:_____)	t/year	*n/a*
	kg/year	
Other chemical (Chemical No.3 _____%) (State purpose:_____)	t/year	*n/a*
	kg/year	
Guaranteed Absorbed Power Requirements [2]:		
UF feed pumps	kW	67 (73% efficiency)
Backwash pumps	kW	65 (73% efficiency)
CIP pumps	kW	6.8 (73% efficiency)
Membrane air scour blowers	kW	62
Guaranteed Power Consumption [3]:		
UF feed pumps	kWh/d	*1 585*
Backwash pumps	kWh/d	*155*
CIP pumps	kWh/d	*3*
Membrane air scour blowers	kWh/d	*45 (60% efficiency)*
Total Daily Consumption	kWh/d	*1 850*
Specific Consumption at 40,000 m^3/d (ADF) with 6 trains in operation	kWh/m^3	0.05
Specific Consumption at 65,000 m^3/d (AWWF) with 6 trains in operation	kWh/m^3	0.05

Item description	Units	Technical Particulars
M10.5 '24 UF Operational Expenses (OPEX) Analysis		
Membrane Module Replacement Price - Prorated Replacement		
Membrane module replacement price (MMRP)[5]	ZAR	*35 000.00*
Guaranteed life span of membrane equipment	Years	9
Notes:		
1. Consumption based on flows of 40,000 m^3/d with all trains in operation. 2. Consumption based on flows of 40,000 m^3/d with all trains in operation. 3. Consumption based on flows of 40,000 m^3/d with all trains in operation. 4. The inflation adjustment for replacement cost shall be calculated based on an average inflation of 2.5% and a discount rate of 6%. 5. Amount for membrane modules as allowed for in this tender.		

[redacted]

Sludge Storage Tank Equipment

[redacted]

FLOATING SURFACE AERATORS

M11.1 '24 Floating surface aerators

Item description	Units	Technical Particulars
M11.1 '24 Floating surface aerators		
Note: that the information stipulated below does not necessarily represent all the information required for this item/system. The tenderer shall provide drawings and/or brochures showing details of the equipment offered and any other relevant information shall be submitted with the tender.		
General information		
Manufacturer		PCI Africa
Type		Floating surface aerator
Model		PCI Africa
Country of origin		South Africa
Duty requirements		
Installed motor power	kW	55kW
Material of aerator impeller		SANS 50025 Gr S355JR
Protection against corrosion		Epoxy painted
Diameter of impeller	mm	2500
Material of shaft		ANSI B36.10 Sch 40
Material of floating structure		SANS 50025 Gr S355JR
Speed of rotation	rpm	37
Tip speed	m/s	4.95
Energy Transfer		
Power input to aerator shaft	kW	47
Efficiency of electric motor	%	94.7
Efficiency of gearbox	%	96
OC of aerator	kgO_2/hr	85
Depth of immersion	mm	WL Flush with top plate. Blade depth ≈500mm
Oxygen efficiency (shaft to water)	kgO_2/kW	1.8
Oxygen efficiency (wire to water)	kgO_2/kW	1.71
Overall mass of aerator (including gearbox and motor)	kg	≈ 1500
Gearbox		
Manufacturer		SEW-Eurodrive (Pty) Ltd
Country of manufacture		Germany
Type number		MC3PVSF07 (55Kw)
AGMA rating		2.4
Thermal rating		70kW
Maximum torque capacity		35.7KN.m
Maximum allowable radial load		Case dependant
Motors		
Manufacturer		SEW-Eurodrive (Pty) Ltd
Type		SEW 55Kw IEC IE3 IP65 180(H)
Model		DRN250M4/TF/NS/FF
Country of origin		Germany

[redacted]

Item description	Units	Technical Particulars
M11.1 '24 Floating surface aerators		
Guaranteed figures		
Rated power	kW	55kW
Power factor at duty point		0.78

[redacted]

WAS SUBMERSIBLE MIXERS

M11.2 '24 WAS storage submersible mixers

Item description	Units	Technical Particulars
M11.2 '24 WAS storage submersible mixers		
Note: that the information stipulated below does not necessarily represent all the information required for this item/system. The tenderer shall provide drawings and/or brochures showing details of the equipment offered and any other relevant information shall be submitted with the tender.		
General information		
Manufacturer		Grundfos
Type		Submersible mixer
Model		SMG.36.71.301.5.1B
Country of origin		Hungary
Duty requirements		
Maximum Dry Solids Content for Mixing Design	% TSS	3
Temperature Range	°C	5 - 40
Mixing Time		TBA
Homogeneity	%	TBA
Average Bulk Flow Velocity	m/s	1.3
Mixer impeller diameter	mm	710
Mixer thrust produced	N	1340
Absorbed power	kW	3.6
Mixer speed	RPM	301
Shaft diameter	mm	TBC
Mixer impeller material		Stainless Steel 1.4401
Mixer shaft material		Stainless Steel 1.4401
Mixer Body Material		Cast Iron, AISI EN-GJL-250, Epoxy Coated
Details of balancing procedure	ISO 1940	Yes
Ingress Protection	IP	68
Overall mass of unit	kg	77
Motors		
Manufacturer		Grundfos
Type		Submersible Induction
Model		SMG.36.71.301.5.1B
Country of origin		Hungary
Guaranteed figures		
Rated power	kW	3.7
Power factor at duty point		0.86

[redacted]

WAS STORAGE AERATION EQUIPMENT

[redacted]

M11.3 WAS storage tank aeration equipment

Item description	Units	Technical Particulars
M11.3 WAS storage tank aeration equipment		
Note: that the information stipulated below does not necessarily represent all the information required for this item/system. The tenderer shall provide drawings and/or brochures showing details of the equipment offered and any other relevant information shall be submitted with the tender.		
Blowers:		
General data:		
Make:		**Bush Vacuum**
Country of manufacture:		**Czech Replublic**
Type:		Positive Displacement type
Model:		**TYR WT 0100**
Installed power		**5.5KW**
Peak output discharge volume	m3/hr	**152**
Discharge pressure	m water (head)	**Differential Pressure 60 KPA**
Mains connections		
Power supply		**380V**
Auxiliary supply		
Noise level at 1m indoors		
Acoustic enclosure (yes/no)		**Yes**
Outlet silencer (yes/no)		**Yes**
Blow off silencer (yes/no)		**Yes**
Forced air cooling system (yes/no)		**No**
Cooling system type (e.g. fan, driven by blower shaft etc)		**FAN**
Motor cooling silencer (yes/no)		**No**
Blower ancillaries		
Safety valve (yes/no)		**Yes**
Non return valve (yes/no)		**Yes**
Blower isolation valve (yes/no)		**Yes**
Dimensions (length x width x height)		**1572 x 1000 x 1082mm**
Mass (kg)		**295**
Variable Frequency Drive Integration		
Make and model		**N/A**
Diffuser :		
General data:		
Materials of components	2	
Screw-on ring		
Sliding ring		

Item description	Units	Technical Particulars
M11.3 WAS storage tank aeration equipment		
Main body		Polypropylene fibre glass reinforced
Flat seal		
Clamp saddle		Polypropylene
Valve Fully Open	Yes/No	Yes
Valve Fully Closed	Yes/No	Yes
Valve Intermediate Position	Yes/No	Yes
Locked out (by switch disconnector)	Yes/No	Yes
Diffuser diameter	mm	270
Membrane diameter	mm	220
Surface area per diffuser membrane		0.0381
Bubble size	mm	2-2.5
Maximum air temperature		100 °C
Pressure loss at design flow	kPa	34.8
Slit density		2200
Specification data		
Droplegs per tank		1
Droplegs' material	SS 304	SS304
Droplegs' diameter and air flow velocity	m/s	
Laterals' materials		uPVC Class 9
Laterals' diameter		110mm

[redacted]

Dewatering Equipment

[redacted]

WAS POLY MAKE-UP UNIT

M12.1 WAS poly make-up unit

Item description	Units	Technical Particulars
M12.1 WAS poly make-up unit		
Note: that the information stipulated below does not necessarily represent all the information required for this item/system. The tenderer shall provide drawings and/or brochures showing details of the equipment offered and any other relevant information shall be submitted with the tender.		
General information		
Manufacturer		DMT Systems
Type		Polypack APX Dosification System
Model		APX 4000 Dual
Country of origin		Europe
Bag Hopper/Screw Feeder:		
Rated dry poly dosing rate of screw feeder	kgPoly/hr	20kg/hr
Hopper Storage Volume:	m^3	0.2m3
Hopper Material:		304SS
Jet Wet Head		
Manufacturer		Milton Roy
Type / Model No.:		GM240V40H3
Capacity	kgPoly/hr	240l/hr
Water flow required	m^3/hr	TBC
Water pressure required	bar	TBC
Make-up tank		
Tank material		Polypropylene
Mixing compartment No.1		
Mixed (yes/no)		YES
Make of mixer:		MRE
Type/ Model No.:		VR2B-035/090/E0.37022/A00
Mixer Material and Power absorbed:	Watt	370Watt
Tank Volume	m^3	TBC
Depth (m)	m	1.1m
Mixing compartment No.2		
Mixed (yes/no)		YES
Make of mixer:		MRE
Type/ Model No.:		VR2A-035/090/E0.37022/A00
Mixer Material and Power absorbed:	Watt	370Watt
Tank Volume	m^3	TBC
Depth (m)	m	1.1m
Curing compartment (tank 3)		
Mixed (yes/no)		No
Make of mixer:		n/a
Type/ Model No.:		n/a
Mixer Material and Power absorbed:	Watt	n/a
Tank Volume	m^3	TBC

[redacted]

Item description	Units	Technical Particulars
M12.1 WAS poly make-up unit		
Depth (m)	m	1.1m

[redacted]

PRIMARY SLUDGE POLY MAKE-UP UNIT

[redacted]

M12.2 Primary sludge poly make-up unit

Item description	Units	Technical Particulars
M12.2 Primary sludge poly make-up unit		
Note: that the information stipulated below does not necessarily represent all the information required for this item/system. The tenderer shall provide drawings and/or brochures showing details of the equipment offered and any other relevant information shall be submitted with the tender.		
General Information		
Manufacturer		**DMT Systems**
Type		**Polypack APX Dosification System**
Model		**APX 4000 Dual**
Country of origin		**Europe**
Bag Hopper/Screw Feeder:		
Rated dry poly dosing rate of screw feeder	kgPoly/hr	20kg/hr
Hopper Storage Volume:	m^3	0.2m3
Hopper Material:		304SS
Jet Wet Head		
Manufacturer		Milton Roy
Type / Model No.:		GM240V40H3
Capacity	kgPoly/hr	240l/hr
Water flow required	m^3/hr	TBC
Water pressure required	bar	TBC
Make-up tank		
Tank material		Polypropylene
Mixing compartment No.1		Polypropylene
Mixed (yes/no)		Yes
Make of mixer:		MRE
Type/ Model No.:		VR2B-035/090/E0.37022/A00
Mixer Material and Power absorbed:	Watt	370Watt
Tank Volume	m^3	TBC
Depth (m)	m	1.1m
Mixing compartment No.2		
Mixed (yes/no)		Yes
Make of mixer:		MRE
Type/ Model No.:		VR2A-035/090/E0.37022/A00
Mixer Material and Power absorbed:	Watt	370Watt
Tank Volume	m^3	TBC
Depth (m)	m	1.1m
Curing compartment (tank 3)		
Mixed (yes/no)		NO
Make of mixer:		n/a
Type/ Model No.:		n/a
Mixer Material and Power absorbed:	Watt	n/a
Tank Volume	m^3	TBC

[redacted]

Depth (m)	m	1.1m

[redacted]

WAS TRAIN GRAVITY BELT THICKENER(LINEAR SCREEN)

M12.3 WAS Gravity belt thickener (linear screen)

Item description	Units	Technical Particulars
M12.3 WAS Gravity belt thickener (linear screen)		
Note: that the information stipulated below does not necessarily represent all the information required for this item/system. The tenderer shall provide drawings and/or brochures showing details of the equipment offered and any other relevant information shall be submitted with the tender.		
General information		
Manufacturer		**Bellmer GmbH**
Type		**TurboDrain**
Model		**TDC 3**
Country of origin		**Germany**
Key operational data		
Minimum design loading	m³/h	30
Operating range	m³/h	30 - 100
Minimum belt length	mm	5.800
Maximum belt length	mm	5.800
Effective filter area	m²/h	840 - 5.040
Drive unit make and model		SEW, FA47
Drive motor rated power	kW	1,5
Variable frequency convertor rating for drive motor	kW	2,2 (by others)
Description of filter belt weave		Woven belt
Nominal filter belt aperture	mm	N/A
Belt width	mm	2,2
Material of filter belt		PE
Belt joint type		clipper seam
Description of belt tension system		mechanical
Description of belt tracking system		mechanical
Belt speed range (m/min to m/min)	m/min	7 - 42
Material of main structural assembly		stainless steel AISI 304
Corrosion protection of structural assembly		stainless steel AISI 304
Material of filtrate collection trays		stainless steel AISI 304
Material of sludge discharge chute		by others
EN Grade of plate of drum rollers (if stainless steel)		N/A
Grade of plate of drum rollers; corrosion protection system & dry film thickness (if carbon steel):		mild steel, Vestosin / rubber coated up to the bearings
Mass of heaviest drum roller	kg	190
Material of bearing housings and corrosion protection system		steel hot galvanized
Details of bearing housing and seal arrangement		Massive bearing housing triple labyrinth seal
Washwater requirement	m³/hr @ kPa	7,1 @ 600
Overall wet mass of unit	kg	3.900
Requirements for foundation		N/A
Guaranteed performance figures		

[redacted]

Item description	Units	Technical Particulars
M12.3 WAS Gravity belt thickener (linear screen)		
Maximum hydraulic loading	m^3/hr	120 at reduced cake solids and increased polymer consumption
Maximum solids loading	ton DS/hr	0,6 at reduced cake solids and increased polymer consumption
Cake dry solids content	% DS	6
Filtrate	% DS	0,01 - 0,015 (clear filtrate)
Maximum required poly. Consumption	kg/ton DS	6
Recovery	%	95 (based on clear filtrate)
Power consumption	kW	1,05

[redacted]

WAS TRAIN BELT FILTER PRESS

M12.4 WAS belt filter press

Item description	Units	Technical Particulars
M12.4 WAS belt filter press		
Note: that the information stipulated below does not necessarily represent all the information required for this item/system. The tenderer shall provide drawings and/or brochures showing details of the equipment offered and any other relevant information shall be submitted with the tender.		
General information		
Manufacturer		**Bellmer GmbH**
Type		**WinklePress**
Model		**WPK 3 S**
Country of origin		**Germany**
Key operational data		
Make and model		Bellmer GmbH, WPK 3 S
Country of manufacture		Germany
Total Belt Width	m	2,2
Effective belt width	m	2,0
2.5		
Amount of pressure rollers	rollers	14
Operating range (hydraulic)	m³/h	8 - 20
Operating range (solids)	kg DS/h	300 - 500
Overall mass of unit, dry (kg)	kg	12.400
Overall mass of unit, wet (kg)	kg	13.900
Requirements for foundation (size and forces)		according to our dimension sheet WPK 3 S
Sludge Flocculation		
Process Principle		in line mixer
Material of construction		aluminium cast, stainless steel
Number of injection points	points	8
Nominal diameter of mixing unit		DN 150
Pre-dewatering section		
Material of Construction		stainless steel AISI 304
Length of pre-dewatering section (m)	m	4
Area of pre-dewatering section (m2)	m²	7,49
Number of chicane rows	rows	6
Vertical wedge section		
Material of construction		steel hot galvanized (Zandvliet MOC)
Length of dewatering section (m)	m	1,8
Area of dewatering section (m2):	m²	3,72
Is wedge angle adjustable (YES/NO)		YES
Shovel dandy roller		Dandy roller
Material of construction		mild steel Vestosint coated up to the bearings
Roller diameter (m)	m	1

[redacted]

Item description	Units	Technical Particulars
M12.4 WAS belt filter press		
Shaft diameter (m)	m	0,055
Roller surface details:		perforated
Details of internal device for preventing rewetting of sludge		free discharge of produced filtrate
Area of dewatering section (m2)	m²	5,22
Low pressure dewatering section		
Material of construction:		Rollers mild steel Vestosint coated up to the bearings
Corrosion protection		Vestosint coating up to the bearings
Number of rollers	rollers	7
Roller diameters (mm) in order	mm	456 – 342 – 298 – 298 – 272 – 272 - 244
Shaft diameter (mm)	mm	55
Area of dewatering section (m2)	m²	8,84
Plate thickness of drum rollers		12,5 - 8 - 12,5 – 12,5 – 12,5 – 12,5 – 14,2
Yield strength of roller material (MPa)	MPa	345
Maximum deflection at midpoint (mm)	mm	approx. 1,2
Material of end flanges		mild steel Vestosint coated up to the bearings
Plate thickness of end flange	mm	25
Material of stub shafts		mild steel Vestosint coated up to the bearings
Diameter of stub shaft		as specified above
Describe method of securing stub shaft to drum		double heat shrinked and welded double disks
Mass of heaviest drum roller (kg)	kg	approx.1.000
High pressure dewatering section		
Material of construction:		Rollers mild steel Vestosint / rubber coated up to the bearings
Corrosion protection		Vestosint / rubber coating up to the bearings
Number of rollers	rollers	6
Roller diameters (mm) in order	mm	244– 244 – 244 – 218 – 230 – 230
Shaft diameter (mm)	mm	55
Area of dewatering section (m2)	m²	4,66
Plate thickness of drum rollers	mm	14,2 – 14,2 – 14,2 – 12,5 – 17,5 – 17,5
Yield strength of roller material (MPa)	MPa	345
Maximum deflection at midpoint (mm)	mm	approx. 1,5
Material of end flanges		mild steel Vestosint / rubber coated up to the bearings
Plate thickness of end flange	mm	25
Material of stub shafts		mild steel Vestosint / rubber coated up to the bearings
Diameter of stub shaft		as specified above
Describe method of securing stub shaft to drum		double heat shrinked and welded double disks
Mass of heaviest drum roller (kg)	kg	320

[redacted]

Item description	Units	Technical Particulars
M12.4 WAS belt filter press		
Bearings		
Material of construction		steel hot galvanized, coated
Bearing type		Spherical roller bearing (fixed, loose arrangement)
Seal type		triple labyrinth seal
Bearing lifetime (L10)	h	200.000
Bearing mounting position (internal or external)		internal
Frame		
Material of frame structure		stainless steel AISI 304
EN grade (or equivalent) of frame structure		stainless steel AISI 304
Plate thickness (for single piece frames) (mm)	mm	12
Safety flaps material and thickness	mm	AISI 304, 2
Yield strength of frame material (MPa)	MPa	190
Material of filtrate collection trays		stainless steel AISI 304
Material of sludge discharge chute		stainless steel AISI 304
Belt tensioning and tracking		
Type of system		hydraulic unit
Material of construction		tank aluminium cast
Belt cleaning		
Type of system		spray pipes
Washwater requirement (m3/hr @ kPa)		14 @ 600
Belt Details		
Minimum design belt loading		4 N/mm x 2.200 mm = 8.800 N
Minimum length of top belt (mm)	mm	19.600
Maximum length of top belt (mm)	mm	19.600
Minimum length of bottom belt (mm)	mm	19.600
Maximum length of bottom belt (mm)	mm	19.600
Belt drive unit, make and model		Bellmer / Stiebel 4295
Belt drive unit, torque rating	Nm	2 x 4000
Rated power for drive motor (kW)	kW	4,0
Variable frequency convertor rating for drive motor (kW)	kW	5,5 (by others)
Description of filter belt weave		Woven belt
Nominal filter belt aperture (mm)	mm	N/A
Material of filter belt		PE
Belt joint type		clipper seam
Belt speed range (m/min to m/min)		0,9 - 6,0
Is belt tension adjustable (YES/NO)		YES
Guaranteed performance figures		
Maximum hydraulic loading	m3/hr	30 at reduced cake solids and increased polymer consumption
Maximum solids loading	ton DS/hr	0,6 at reduced cake solids and increased polymer consumption
Cake dry solids content	% DS	16

[redacted]

Item description	Units	Technical Particulars
M12.4 WAS belt filter press		
Filtrate	% DS	0,015 (clear filtrate)
Maximum required poly. Consumption	kg/ton DS	6
Recovery	%	95 (based on clear filtrate)
Power consumption	kW	3,06

[redacted]

PRIMARY SLUDGE TRAIN BELT FILTER PRESS TRAIN

M12.5 Primary sludge belt filter press

Item description	Units	Technical Particulars
M12.5 Primary sludge belt filter press		
Note: that the information stipulated below does not necessarily represent all the information required for this item/system. The tenderer shall provide drawings and/or brochures showing details of the equipment offered and any other relevant information shall be submitted with the tender.		
General information		
Manufacturer		Bellmer GmbH
Type		WinklePress
Model		WPG 3 S
Country of origin		Germany
Key operational data		
Make and model		Bellmer GmbH, WPG 3 S
Country of manufacture		Germany
Total Belt Width	m	2,2
Effective belt width	m	2,0
Amount of pressure rollers	rollers	10
Operating range (hydraulic)	m³/h	20 - 50
Operating range (solids)	kg DS/h	480 - 800
Overall mass of unit, dry (kg)	kg	8.000
Overall mass of unit, wet (kg)	kg	9.500
Requirements for foundation (size and forces)		according to our dimension sheet WPG 3 S
Sludge Flocculation		
Process Principle		in line mixer
Material of construction		aluminium cast, stainless steel
Number of injection points	points	8
Nominal diameter of mixing unit		DN 150
Pre-dewatering section		
Material of Construction		stainless steel AISI 304
Length of pre-dewatering section (m)	m	3
Area of pre-dewatering section (m²)	m²	6
Number of chicane rows	rows	6
Vertical wedge section		Wedge section
Material of construction		HDPE
Length of dewatering section (m)	m	1,2
Area of dewatering section (m²):	m²	2,4
Is wedge angle adjustable (YES/NO)		NO
Shovel dandy roller		Dandy roller
Material of construction		mild steel Vestosint coated up to the bearings
Roller diameter (m)	m	1
Shaft diameter (m)	m	0,055
Roller surface details:		perforated

Item description	Units	Technical Particulars
M12.5 Primary sludge belt filter press		
Details of internal device for preventing rewetting of sludge		free discharge of produced filtrate
Area of dewatering section (m^2)		6,61
Low pressure dewatering section		
Material of construction:		Rollers mild steel Vestosint coated up to the bearings
Corrosion protection		Vestosint coating up to the bearings
Number of rollers	rollers	7
Roller diameters (mm) in order	mm	456 – 342 – 298 – 244 – 218 – 230 - 230
Shaft diameter (mm)	mm	55
Area of dewatering section (m2)	m^2	7,16
Plate thickness of drum rollers		12,5 - 8 - 12,5 – 14,2 – 12,5 – 17.5 – 17,5
Yield strength of roller material (MPa)	MPa	345
Maximum deflection at midpoint (mm)	mm	approx. 1
Material of end flanges		mild steel Vestosint coated up to the bearings
Plate thickness of end flange	mm	25
Material of stub shafts		mild steel Vestosint coated up to the bearings
Diameter of stub shaft		as specified above
Describe method of securing stub shaft to drum		double heat shrinked and welded double disks
Mass of heaviest drum roller (kg)	kg	approx.1.000
High pressure dewatering section		
Material of construction:		Rollers mild steel rubber coated up to the bearings
Corrosion protection		rubber coating up to the bearings
Number of rollers	rollers	2
Roller diameters (mm) in order	mm	244 - 218
Shaft diameter (mm)	mm	55
Area of dewatering section (m2)	m^2	1,33
Plate thickness of drum rollers		14,2 – 12,5
Yield strength of roller material (MPa)	MPa	345
Maximum deflection at midpoint (mm)	mm	approx. 1,2
Material of end flanges		mild steel Vestosint / rubber coated up to the bearings
Plate thickness of end flange	mm	25
Material of stub shafts		mild steel Vestosint / rubber coated up to the bearings
Diameter of stub shaft		as specified above
Describe method of securing stub shaft to drum		double heat shrinked and welded double disks
Mass of heaviest drum roller (kg)	kg	320
Bearings		
Material of construction		steel hot galvanized, coated
Bearing type		Spherical roller bearing (fixed, loose arrangement)
Seal type		triple labyrinth seal

[redacted]

Item description	Units	Technical Particulars
M12.5 Primary sludge belt filter press		
Bearing lifetime (L10)	h	200.000
Bearing mounting position (internal or external)		internal
Frame		
Material of frame structure		stainless steel AISI 304
EN grade (or equivalent) of frame structure		stainless steel AISI 304
Plate thickness (for single piece frames) (mm)	mm	12
Safety flaps material and thickness	mm	AISI 304, 2
Yield strength of frame material (MPa)	MPa	190
Material of filtrate collection trays		stainless steel AISI 304
Material of sludge discharge chute		stainless steel AISI 304
Belt tensioning and tracking		
Type of system		hydraulic unit
Material of construction		tank aluminium cast
Belt cleaning		
Type of system		Spray pipes
Washwater requirement (m3/hr @ kPa)		14 @ 600
Belt Details		
Minimum design belt loading		3 N/mm x 2.200 mm = 6.600 N
Minimum length of top belt (mm)	mm	14.800
Maximum length of top belt (mm)	mm	14.800
Minimum length of bottom belt (mm)	mm	16.150
Maximum length of bottom belt (mm)	mm	16.150
Belt drive unit, make and model		2x SEW FA87
Belt drive unit, torque rating	Nm	2 x 3000
Rated power for drive motor (kW)	kW	2 x 2,2
Variable frequency convertor rating for drive motor (kW)	KW	2x 3,0 (by others)
Description of filter belt weave		Woven belt
Nominal filter belt aperture (mm)	mm	N/A
Material of filter belt		PE
Belt joint type		clipper seam
Belt speed range (m/min to m/min)		0,9 - 6,0
Is belt tension adjustable (YES/NO)		YES
Guaranteed performance figures		
Maximum hydraulic loading	m^3/hr	55 at reduced cake solids and increased polymer consumption
Maximum solids loading	ton DS/hr	0,9 at reduced cake solids and increased polymer consumption
Cake dry solids content	% DS	25
Filtrate	% DS	0,015 (clear filtrate)
Maximum required poly. consumption for design requirements	kg/ton DS	4
Recovery	%	95 (based on clear filtrate)
Power consumption	kW	3,3

[redacted]

WAS TRAIN HORIZONTAL SCREW CONVEYORS

[redacted]

M12.6 WAS cake horizontal screw conveyors

Item description	Units	Technical Particulars
M12.6 WAS cake horizontal screw conveyors		
Note: that the information stipulated below does not necessarily represent all the information required for this item/system. The tenderer shall provide drawings and/or brochures showing details of the equipment offered and any other relevant information shall be submitted with the tender.		
General information		
Manufacturer		**S.A.M.E.**
Type		**Triple U-420**
Model		**U/OK - 420**
Country of origin		**RSA**
Key operational data		
Operating capacity (kg/hr)		9300 kg / hr
Operating capacity (m^3/hr)		93m3/hr
Length of screw (m)		6.5 meter
Nominal diameter of screw (mm)		360 OD
Rated motor power (kW)		1.5 kW
Power required by unit at design point (kW)		1.0
Gearbox make and model		MOTOVARIO, B103
Gearbox service factor		1.5
Gearbox output torque (N.m)		955 Nm
Gearbox output speed (rpm)		15 RPM
Screw material		High Tensile Micro Alloy Steel
Screw material thickness (mm)		50 x 20 outer c/w 40 x 16 insert
Trough material		316 SS
Trough material thickness (mm)		4.5mm
Material of trough liner		10mm HDPE Visi-Liner
Overall mass (kg)		2 metric tons
Overall length (m)		7 meters
Description of trip lines		None, totally enclosed unit

PRIMARY SLUDGE TRAIN HORIZONTAL SCREW CONVEYOR

[redacted]

M12.7 Primary sludge cake horizontal screw conveyors

Item description	Units	Technical Particulars
M12.7 Primary sludge cake horizontal screw conveyors		
Note: that the information stipulated below does not necessarily represent all the information required for this item/system. The tenderer shall provide drawings and/or brochures showing details of the equipment offered and any other relevant information shall be submitted with the tender.		
General information		
Manufacturer		**S.A.M.E**
Type		**Twin U - 420**
Model		**U/OK - 420**
Country of origin		**RSA**
Key operational data		
Operating capacity (kg/hr)		9300 kg/hr
Operating capacity (m3/hr)		93 m3 / hr
Length of screw (m)		6.5 meter
Nominal diameter of screw (mm)		360 OD
Rated motor power (kW)		1.5 kW
Power required by unit at design point (kW)		1.0 kW
Gearbox make and model		MOTOVARIO, B103
Gearbox service factor		1.5
Gearbox output torque (N.m)		955 Nm
Gearbox output speed (rpm)		15 RPM
Screw material		High Tensile Micro Alloy Steel
Screw material thickness (mm)		50 x 20 outer c/w 40 x 16 insert
Trough material		316 SS
Trough material thickness (mm)		4.5mm
Material of trough liner		HDPE Visi-Liner
Overall mass (kg)		2 metric tons
Overall length (m)		7
Description of trip lines		None, totally enclosed

[redacted]

WAS CAKE SILO LIVE BOTTOM

M12.8 WAS cake silo live bottom system

Item description	Units	Technical Particulars
M12.8 WAS cake silo live bottom system		
Note: that the information stipulated below does not necessarily represent all the information required for this item/system. The tenderer shall provide drawings and/or brochures showing details of the equipment offered and any other relevant information shall be submitted with the tender.		
General information		
Manufacturer		**Spirotech International**
Type		**Shaftless Screw Conveyor**
Model		**UOK 500 Triple Live Bottom**
Country of origin		**South Africa**
Key operational data		
Screw Conveyors:		
Number of sets required		**2**
Number of parallel screw conveyors per set		**3**
Manufacturer:		**Spirotech International**
Country of manufacture:		**South Africa**
Type of screw:		**Shafttess**
Mass of screw kg:		**590**
Screw diameter mm:		**440**
Screw flight thickness mm:		**25**
Total length of screw mm:		**6 250**
Material screw:		**CQ Steel**
Speed of rotation rpm:		**14**
Capacity m^3/min:		**1.33**
Electric motor:		**5.5kW**
Make:		**Motovario**
Rating:		**IP66**
Enclosure:		**TEFC**
Conveyor cradle assembly / box structure:		
Number of units required		**N/A**
Material:		**N/A**
Plate thickness mm:		**N/A**
Gearboxes		
Make:		**Motovario**
Country of manufacture:		**South Africa**
Type:		**Parallel Shaft Helical Gear**
Model No.:		**S143**
AGMA Rating:		
Thermal Rating:		
Reduction stages:		
Ratio:		**98.81**
Total length:		**402 mm**

[redacted]

Item description	Units	Technical Particulars
M12.8 WAS cake silo live bottom system		
Conveyor speed:		14
Gearbox for conveyor:		
Make:		Motovario
Rating:		N/A
Enclosure:		N/A
Sludge control valve:		
Make:		N/A
Country of manufacture:		N/A
Type:		N/A
Model No.:		N/A
Diameter mm:		N/A
Actuators: :		
Make:		N/A
Country of manufacturer		N/A
Type:		N/A
Model No.:		N/A
Operational mode:		N/A
Supplier details:		N/A
Delivery Period:		
Screw Conveyor:	weeks	8 - 10
Screw cradle assemblies:	weeks	N/A
Gearboxes::	weeks	8 - 10
Isolation valves (knife gate-type):	weeks	N/A
Actuators (pneumatic):	weeks	N/A

[redacted]

PRIMARY CAKE SILO LIVE BOTTOM

M12.9 Primary sludge cake silo live bottom system

Item description	Units	Technical Particulars
M12.9 Primary sludge cake silo live bottom system		
Note: that the information stipulated below does not necessarily represent all the information required for this item/system. The tenderer shall provide drawings and/or brochures showing details of the equipment offered and any other relevant information shall be submitted with the tender.		
General information		
Manufacturer		**Spirotech International**
Type		**Shaftless Screw Conveyor**
Model		**UOK 500 Triple Live Bottom**
Country of origin		**South Africa**
Key operational data		
Screw Conveyors:		
Number of sets required		**2**
Number of parallel screw conveyors per set		**3**
Manufacturer:		**Spirotech International**
Country of manufacture:		**South Africa**
Type of screw:		**Shaftless**
Mass of screw kg:		**590**
Screw diameter mm:		**440**
Screw flight thickness mm:		**25**
Total length of screw mm:		**6 250**
Material screw:		**CQ Steel**
Speed of rotation rpm:		**14**
Capacity m^3/min:		**1.33**
Electric motor:		**5.5kW**
Make:		**Motovario**
Rating:		**IP66**
Enclosure:		**TEFC**
Conveyor cradle assembly / box structure:		
Number of units required		**N/A**
Material:		**N/A**
Plate thickness mm:		**N/A**
Gearboxes		
Make:		**Motovario**
Country of manufacture:		**South Africa**
Type:		**Parallel Shaft Helical Gear**
Model No.:		**S143**
AGMA Rating:		
Thermal Rating:		
Reduction stages:		
Ratio:		**98.81**
Total length:		**402 mm**

[redacted]

Item description	Units	Technical Particulars
M12.9 Primary sludge cake silo live bottom system		
Conveyor speed:		**14**
Gearbox for conveyor:		
Make:		**Motovario**
Rating:		
Enclosure:		
Sludge control valve:		
Make:		**N/A**
Country of manufacture:		**N/A**
Type:		**N/A**
Model No.:		**N/A**
Diameter mm:		**N/A**
Actuators: :		
Make:		**N/A**
Country of manufacturer		**N/A**
Type:		**N/A**
Model No.:		**N/A**
Operational mode:		**N/A**
Supplier details:		**N/A**
Delivery Period:		
Screw Conveyor:	weeks	**8 - 10**
Screw cradle assemblies:	weeks	**N/A**
Gearboxes::	weeks	**8 - 10**
Isolation valves (knife gate-type):	weeks	**N/A**
Actuators (pneumatic):	weeks	**N/A**

[redacted]

POLY STORAGE AREA DEHUMIDIFIER

M12.10 Dehumidifier

Item description	Units	Technical Particulars
M12.10 Dehumidifier		
Note: that the information stipulated below does not necessarily represent all the information required for this item/system. The tenderer shall provide drawings and/or brochures showing details of the equipment offered and any other relevant information shall be submitted with the tender.		
General information		
Manufacturer		**ECOR Pro**
Type		**DH3500 Desiccant dehumidifier**
Model		**DH3500 Pro INOX – Stainless Steel**
Country of origin		**United Kingdom**
Key operational data		
Power Supply		230v
Average Operating Consumption (W)		@27 °C/60%rh – 1.5kW
Operating Temperature Range		-20°C - +40°C
Moisture removal at 27°C and 65%RH (Litre / 24h)		1.4
Moisture removal at 27°C and 80%RH (Litre / 24h)		1.52
Condensate Tank Capacity (litre)		
Mass (kg)		24.4kg GROSS
Dimensions (mm x mm x mm)		630 x 352 x 345
Sound Level (dBA)		

[redacted]

SLUDGE DEWATER EQUIPMENT OPERATIONAL EXPENSES (OPEX) ANALYSES

[redacted]

M12.11 '24 Sludge Dewatering Equipment Operational Expenses (OPEX) Analysis

Item description	Units	Technical Particulars
M12.11 '24 Sludge Dewatering Equipment Operational Expenses (OPEX) Analysis		
Note: that the information stipulated below does not necessarily represent all the information required for this item/system. The tenderer shall provide drawings and/or brochures showing details of the equipment offered and any other relevant information shall be submitted with the tender.		
PRIMARY SLUDGE TRAIN		
Guaranteed Solids Capture Efficiency:		**95% (based on clear filtrate)**
Guaranteed Cake dryness	**%DS/ton**	**25%**
Guaranteed Chemical Consumption [1]:		
Poly Electrolyte (0.2%-0.5% mass/mass)	ℓ/year	*0 powder used*
	kg/year	*56064 kg/year*
Guaranteed Absorbed Power Requirements [2]:		
Primary sludge feed pumps	kW	5.25kW x 5 = 26.25kW for duty pumps
Belt Filter Press (BFP) units	kW	3.3kW x 5 = 16.5kW for duty presses
Poly dosing pumps (sludge feed only)	kW	1.05kW x 5 = 5.25kW for duty pumps
Guaranteed Power Consumption [3]:		
Primary sludge feed pumps	kWh/d	*5.25 x 5 x 14hrs/day = 367.5kWh/d*
Belt Filter Press (BFP) units	kWh/d	*3.3 x 5 x 14hrs/day = 231kWh/d*
Poly dosing pumps (sludge feed only)	kWh/d	*1.05 x 5 x 14hrs/day = 73.5kWh/d*
Total Daily Consumption	kWh/d	*672kW/d*
Specific Consumption at 40,000 m^3/d (ADF) with 6 trains in operation	kWh/m^3	0.02016kW/m3
Specific Consumption at 65,000 m^3/d (AWWF) with 6 trains in operation	kWh/m^3	No discernible difference as AWWF solids loading is diluted meaning no significant additional load.
Membrane Module Replacement Price - Prorated Replacement		
Membrane module replacement price (MMRP)[5]	ZAR	*Included in M8.9*
Guaranteed life span of membrane equipment	Years	*Included in M8.9*
Notes.		
1. Consumption based on solids loading of 40,000 m^3/d with all trains in operation. 2. Consumption based on flows of 40,000 m^3/d with all trains in operation. 3. Consumption based on flows of 40,000 m^3/d with all trains in operation. 4. The inflation adjustment for replacement cost shall be calculated based on an average inflation of 2.5% and a discount rate of 6%.		

[redacted]

Process Control Air Systems

[redacted]

MBR PROCESS AIR EQUIPMENT SYSTEM

[redacted]

M13.1 MBR process air equipment (If required)

Item description	Units	Technical Particulars
M13.1 MBR process air equipment (if required)		
Note: that the information stipulated below does not necessarily represent all the information required for this item/system. The tenderer shall provide drawings and/or brochures showing details of the equipment offered and any other relevant information shall be submitted with the tender.		
General information		
Manufacturer		**Compair**
Type		**Screw**
Model		**L29**
Country of origin		**Germany**
Key operational data		
Compressor type:		Lubricated screw compressor
Compressor capacity:	m3/hr	252.6
Compressor operating speed:	rpm	4109
Compressor motor:	kW	30
Air receiver capacity:		2000l
Air drier / cooler type:		Refrigerant dryer
Pipework details: (Material and diameter)		EN 10226-1 R 1 1/4 (DIN 2999-R 1 1/4)
Valve details:		
Control panel details:		
Delivery pressure:	kPa	1000
Noise level dB (A)	dBa	
Dimensions (length x width x height)	mm	1345 x 880 x 1612
Delivery period to site:	weeks	8-12weeks
Total mass	kg	681

[redacted]

PRESSURIZED UF PROCESS AIR EQUIPMENT SYSTEM

M13.2 Pressurized UF process air equipment (if required)

Item description	Units	Technical Particulars
M13.2 Pressurized UF process air equipment (if required)		
Note: that the information stipulated below does not necessarily represent all the information required for this item/system. The tenderer shall provide drawings and/or brochures showing details of the equipment offered and any other relevant information shall be submitted with the tender.		
General information		
Manufacturer		CompAir
Type		**Rotary screw compressor**
Model		**CompAir L11 Fixed speed**
Country of origin		**UF**
Key operational data		
Compressor type:		Rotary screw
Compressor capacity:	m^3/hr	64.8
Compressor operating speed:	rpm	2950
Compressor motor:	kW	11
Air receiver capacity:	ℓ	3000
Air drier / cooler type:		Refrigerated dryer
Pipework details: (Material and diameter)		SS316, DN25mm
Valve details:		SS316, DN25mm
Control panel details:		Delco compressor controller
Delivery pressure:	kPa	800
Noise level dB (A)	dBa	70
Dimensions (length x width x height)	mm	667x630x1050
Delivery period to site:	weeks	16
Total mass	kg	220

[redacted]

SLUDGE DEWATERING PROCESS AIR EQUIPMENT

[redacted]

M13.3 Sludge management process air equipment system

Item description	Units	Technical Particulars
M13.3 Sludge management process air equipment system		
Note: that the information stipulated below does not necessarily represent all the information required for this item/system. The tenderer shall provide drawings and/or brochures showing details of the equipment offered and any other relevant information shall be submitted with the tender.		
General information		
Manufacturer		Ingersol Rand
Type		Air Compressor
Model		7.5kW
Country of origin		USA
Key operational data		
Compressor type:		Air Compressor
Compressor capacity:	m^3/hr	63.6
Compressor operating speed:	rpm	
Compressor motor:	kW	7.5
Air receiver capacity:	ℓ	350
Air drier / cooler type:		As per spec
Pipework details: (Material and diameter)		SS304 15mm
Valve details:		
Control panel details:		
Delivery pressure:	kPa	10 bar
Noise level dB (A)	dBa	40
Dimensions (length x width x height)	mm	As per spec
Delivery period to site:	weeks	8
Total mass	kg	

[redacted]

Sluice & Channel Gates

[redacted]

CHANNEL / SLUICE GATES

M14.1 Sluice gates

Item description	Units	Technical Particulars
M14.1 Sluice gates		
Note: that the information stipulated below does not necessarily represent all the information required for this item/system. The tenderer shall provide drawings and/or brochures showing details of the equipment offered and any other relevant information shall be submitted with the tender.		
General information		
Manufacturer		Lektratek Water Technology
Type		Wall Mount Penstock
Model		PWG
Country of origin		RSA
Key operational data		
Material of frame and door		316 Stainless Steel
Material of seals		Neoprene Rubber
Material of thrust nut		Phosphor Bronze
Material of rising spindle		316 Stainless Steel
Material of guides		316 Stainless Steel + HDPE
Material of spindle cover		316 Stainless Steel
Material of fasteners		316 Stainless Steel
Recess requirements		N/A
Actuator (electric open/close)		
Make and model		IQ3
Motor rating (kW)		0.26 – 1.63
Max. available operating torque (N.m)		68 - 610
Max. proposed operating torque in this application (N.m)		56 - 600
Material of construction		AL
Corrosion protection		Polyester

[redacted]

M14.2 Channel gates

Item description	Units	Technical Particulars
M14.2 Channel gates		
Note: that the information stipulated below does not necessarily represent all the information required for this item/system. The tenderer shall provide drawings and/or brochures showing details of the equipment offered and any other relevant information shall be submitted with the tender.		
General information		
Manufacturer		Lektratek Water Technology
Type		Channel Mount Gate
Model		PCG
Country of origin		RSA
Key operational data		
Material of frame and door		316 Stainless Steel
Material of seals		Neoprene Rubber
Material of thrust nut		Phosphor Bronze
Material of rising spindle		316 Stainless Steel
Material of guides		316 Stainless Steel + HDPE
Material of spindle cover		316 Stainless Steel
Material of fasteners		316 Stainless Steel
Recess requirements		120mm (W) x 80mm (D)
Actuator (electric open/close)		
Make and model		IQ3 - Rotork
Motor rating (kW)		0.26 – 1.63
Max. available operating torque (N.m)		68 - 610
Max. proposed operating torque in this application (N.m)		56 - 600
Material of construction		AL
Corrosion protection		Polyester

[redacted]

Lifting Equipment

[redacted]

TRASH RACK

M15.1 Lifting equipment: Trash rack

Item description	Units	Technical Particulars
M15.1 Lifting equipment: Trash rack		
Note: that the information stipulated below does not necessarily represent all the information required for this item/system. The tenderer shall provide drawings and/or brochures showing details of the equipment offered and any other relevant information shall be submitted with the tender.		
General Information		
Manufacturer		SWF Krantechnik
Type		Electric Chain Hoist & Trolley
Model		AB-045.2P-N
Country of origin		Germany
Key operational data		-
Safe Working Load	kg	950kg
Maximum load for this application	kg	950kg
Test Load	kg	1187kg
Standard used for design of structure		BS466
Grade of steel for structure		350WA
Corrosion protection		Galvanized Crawl Beam
Hoist make and model		AB-045.2P-N
Hoist rated motor power	kW	0.72kW
Hoist gearbox service factor		6.1
Crawl trolley make and model		AB-045.2P-N
Crawl trolley rated motor power	kW	0.15kW
Crawl trolley gearbox service factor		6.1
End carriages make and model		n/a
End carriages rated motor power	kW	n/a
End carriages gearbox service factor		n/a

[redacted]

INLET WORKS

M15.2 Lifting equipment: '24 Inlet works

Item description	Units	Technical Particulars
M15.2 Lifting equipment: '24 Inlet works		
Note: that the information stipulated below does not necessarily represent all the information required for this item/system. The tenderer shall provide drawings and/or brochures showing details of the equipment offered and any other relevant information shall be submitted with the tender.		
General information		
Manufacturer		SWF Krantechnik
Type		Electronic Chain Hoist & Trolley
Model		CE-046.2P-N
Country of origin		Germany
Key operational data		-
Safe Working Load	kg	4000kg
Maximum load for this application	kg	4000kg
Test Load	kg	5000kg
Standard used for design of structure		BS466
Grade of steel for structure		350WA
Corrosion protection		Galvanized Crawl Beam
Hoist make and model		CE-046.2P-N
Hoist rated motor power	kW	3.6kW
Hoist gearbox service factor		6.1
Crawl trolley make and model		CE-046.2P-N
Crawl trolley rated motor power	kW	n/a
Crawl trolley gearbox service factor		n/a
End carriages make and model		n/a
End carriages rated motor power	kW	n/a
End carriages gearbox service factor		n/a

[redacted]

'24 RAW SEWAGE PUMP STATION

M15.3 Lifting equipment: '24 Raw sewage pump station

Item description	Units	Technical Particulars
M15.3 Lifting equipment: '24 Raw sewage pump station		
Note: that the information stipulated below does not necessarily represent all the information required for this item/system. The tenderer shall provide drawings and/or brochures showing details of the equipment offered and any other relevant information shall be submitted with the tender.		
General information		
Manufacturer		BB Cranes
Type		Single Girder Overhead Crane
Model		BB Cranes
Country of origin		South Africa
Key operational data		
Safe Working Load	kg	3500
Maximum load for this application	kg	3500
Test Load	kg	4375
Standard used for design of structure		FEM 1.001
Grade of steel for structure		S355JR
Corrosion protection		Shot blast, Zinc. Epoxy coating
Hoist make and model		Condra 11
Hoist rated motor power	kW	4/1
Hoist gearbox service factor		
Crawl trolley make and model		Condra
Crawl trolley rated motor power	kW	0.4 / 0.13
Crawl trolley gearbox service factor		
End carriages make and model		Condra 125 x 2000wb
End carriages rated motor power	kW	2 x 0.44 / 0.13
End carriages gearbox service factor		

[redacted]

'24 A-RECYCLE PUMPS

[redacted]

M15.4.1 Lifting equipment: A-recycle mixed liquor pump stations

Item description	Units	Technical Particulars
M15.4.1 Lifting equipment: A-recycle mixed liquor pump stations		
Note: that the information stipulated below does not necessarily represent all the information required for this item/system. The tenderer shall provide drawings and/or brochures showing details of the equipment offered and any other relevant information shall be submitted with the tender.		
General information		
Manufacturer		Burncrete
Type		11 v/a
Model		-
Country of origin		China
Key operational data		
Safe Working Load	kg	1000
Maximum load for this application	kg	1000
Test Load	kg	1250
Standard used for design of structure		n/a
Grade of steel for structure		n/a
Corrosion protection		HDG
Hoist make and model		ilula manual
Hoist rated motor power	kW	n/a
Hoist gearbox service factor		n/a
Crawl trolley make and model		Rola Crawl
Crawl trolley rated motor power	kW	n/a
Crawl trolley gearbox service factor		n/a
End carriages make and model		n/a
End carriages rated motor power	kW	n/a
End carriages gearbox service factor		n/a

[redacted]

'24 R-RECYCLE PUMPS

[redacted]

M15.4.2 Lifting equipment: R-recycle mixed liquor pump stations

Item description	Units	Technical Particulars
M15.4.2 Lifting equipment: R-recycle mixed liquor pump stations		
Note: that the information stipulated below does not necessarily represent all the information required for this item/system. The tenderer shall provide drawings and/or brochures showing details of the equipment offered and any other relevant information shall be submitted with the tender.		
General information		
Manufacturer		Burncrete
Type		ilula
Model		-
Country of origin		China
Key operational data		
Safe Working Load	kg	2000
Maximum load for this application	kg	2000
Test Load	kg	2500
Standard used for design of structure		n/a
Grade of steel for structure		n/a
Corrosion protection		HDG
Hoist make and model		ilula
Hoist rated motor power	kW	n/a
Hoist gearbox service factor		n/a
Crawl trolley make and model		Rola Crawl
Crawl trolley rated motor power	kW	n/a
Crawl trolley gearbox service factor		n/a
End carriages make and model		n/a
End carriages rated motor power	kW	n/a
End carriages gearbox service factor		n/a

[redacted]

'24 MEMBRANE FEED PUMP STATION

[redacted]

M15.4.3 Lifting equipment: '24 MBR feed pump stations

Item description	Units	Technical Particulars
M15.4.3 Lifting equipment: '24 MBR feed pump stations		
Note: that the information stipulated below does not necessarily represent all the information required for this item/system. The tenderer shall provide drawings and/or brochures showing details of the equipment offered and any other relevant information shall be submitted with the tender.		
General information		
Manufacturer		Burncrete
Type		ilula
Model		
Country of origin		China
Key operational data		
Safe Working Load	kg	1000
Maximum load for this application	kg	1000
Test Load	kg	1250
Standard used for design of structure		n/a
Grade of steel for structure		n/a
Corrosion protection		HDG
Hoist make and model		ilula
Hoist rated motor power	kW	n/a
Hoist gearbox service factor		n/a
Crawl trolley make and model		Rola Crawl
Crawl trolley rated motor power	kW	n/a
Crawl trolley gearbox service factor		n/a
End carriages make and model		n/a
End carriages rated motor power	kW	n/a
End carriages gearbox service factor		n/a

[redacted]

MIXED LIQUOR MIXING UNITS (GANTRY CRANES)

[redacted]

M15.5 Lifting equipment: '24 Mixed liquor mixing units (Gantry cranes)

Item description	Units	Technical Particulars
M15.5 Lifting equipment: '24 Mixed liquor mixing units (Gantry cranes)		
Note: that the information stipulated below does not necessarily represent all the information required for this item/system. The tenderer shall provide drawings and/or brochures showing details of the equipment offered and any other relevant information shall be submitted with the tender.		
General information		
Manufacturer		Burncrete
Type		ilula
Model		
Country of origin		China
Key operational data		
Safe Working Load	kg	5000
Maximum load for this application	kg	5000
Test Load	kg	6250
Standard used for design of structure		n/a
Grade of steel for structure		n/a
Corrosion protection		HDG
Hoist make and model		ilula
Hoist rated motor power	kW	n/a
Hoist gearbox service factor		n/a
Crawl trolley make and model		Rola Crawl
Crawl trolley rated motor power	kW	n/a
Crawl trolley gearbox service factor		n/a
End carriages make and model		n/a
End carriages rated motor power	kW	n/a
End carriages gearbox service factor		n/a

[redacted]

'24 MEMBRANE TANKS (CASSETTES)

[redacted]

M15.6 Lifting equipment: '24 Membrane tanks

Item description	Units	Technical Particulars
M15.6 Lifting equipment: '24 Membrane tanks		
Note: that the information stipulated below does not necessarily represent all the information required for this item/system. The tenderer shall provide drawings and/or brochures showing details of the equipment offered and any other relevant information shall be submitted with the tender.		
General information		
Manufacturer		BB Cranes (PTY) Ltd
Type		Double girder crane
Model		Condra
Country of origin		South Africa
Key operational data		
Safe Working Load	kg	5000
Maximum load for this application	kg	5000
Test Load	kg	6250
Standard used for design of structure		Install and Maintenance
Grade of steel for structure		S355JR
Corrosion protection		Shot blast, Zinc spray, Epoxy coating
Hoist make and model		Condra
Hoist rated motor power	kW	4/1
Hoist gearbox service factor		n/a
Crawl trolley make and model		Condra
Crawl trolley rated motor power	kW	0.4 / 0.13
Crawl trolley gearbox service factor		n/a
End carriages make and model		Condra 200 x 5000 WB
End carriages rated motor power	kW	2 x 0.9 /0.3
End carriages gearbox service factor		n/a

[redacted]

'24 MBR BLOWER ROOM

[redacted]

M15.7 Lifting equipment: '24 MBR blower room

Item description	Units	Technical Particulars
M15.7 Lifting equipment: '24 MBR blower room		
Note: that the information stipulated below does not necessarily represent all the information required for this item/system. The tenderer shall provide drawings and/or brochures showing details of the equipment offered and any other relevant information shall be submitted with the tender.		
General information		
Manufacturer		BB Cranes (PTY) Ltd
Type		Double Girder Crane
Model		Condra
Country of origin		South Africa
Key operational data		
Safe Working Load	kg	12 000
Maximum load for this application	kg	12 000
Test Load	kg	15 000
Standard used for design of structure		Install and Maintenance
Grade of steel for structure		S355JR
Corrosion protection		Shot blast, Zinc spray, Epoxy coating
Hoist make and model		Condra 16
Hoist rated motor power	kW	11 / 36
Hoist gearbox service factor		n/a
Crawl trolley make and model		Condra
Crawl trolley rated motor power	kW	0.9 /0.3
Crawl trolley gearbox service factor		n/a
End carriages make and model		Condra 200 x 2500wb
End carriages rated motor power	kW	2 x 0.6 /0.2
End carriages gearbox service factor		n/a

[redacted]

'24 MBR MCC

[redacted]

M15.8 Lifting equipment: '24 MBR MCC room

Item description	Units	Technical Particulars
M15.8 Lifting equipment: '24 MBR MCC room		
Note: that the information stipulated below does not necessarily represent all the information required for this item/system. The tenderer shall provide drawings and/or brochures showing details of the equipment offered and any other relevant information shall be submitted with the tender.		
General information		
Manufacturer		BB Cranes (PTY) Ltd
Type		Single Girder
Model		Condra
Country of origin		South Africa
Key operational data		
Safe Working Load	kg	5000
Maximum load for this application	kg	5000
Test Load	kg	6250
Standard used for design of structure		Install and Maintenance
Grade of steel for structure		S355JR
Corrosion protection		Shot blast, Zinc spray, Epoxy coating
Hoist make and model		Condra
Hoist rated motor power	kW	4 / 1
Hoist gearbox service factor		n/a
Crawl trolley make and model		Condra
Crawl trolley rated motor power	kW	0.4 /0.13
Crawl trolley gearbox service factor		n/a
End carriages make and model		Condra 125 x 2000wb
End carriages rated motor power	kW	2 x 0.4 /0.13
End carriages gearbox service factor		n/a

[redacted]

'24 MBR CHEMICAL STORAGE AND DOSING ROOM

M15.9 Lifting equipment: '24 MBR chemical storage and dosing rooms

Item description	Units	Technical Particulars
M15.9 Lifting equipment: '24 MBR chemical storage and dosing rooms		
Note: that the information stipulated below does not necessarily represent all the information required for this item/system. The tenderer shall provide drawings and/or brochures showing details of the equipment offered and any other relevant information shall be submitted with the tender.		
General information		
Manufacturer		BB Cranes (PTY) Ltd
Type		Single Girder
Model		King
Country of origin		South Africa
Key operational data		
Safe Working Load	kg	2000
Maximum load for this application	kg	2000
Test Load	kg	2500
Standard used for design of structure		Install and Maintenance
Grade of steel for structure		S30RSS
Corrosion protection		Shot blast, Zinc spray, Epoxy coating
Hoist make and model		King FM2000
Hoist rated motor power	kW	0.8
Hoist gearbox service factor		n/a
Crawl trolley make and model		King Crawl
Crawl trolley rated motor power	kW	0.4
Crawl trolley gearbox service factor		n/a
End carriages make and model		Condra 125 x 1600wb
End carriages rated motor power	kW	0.4 /0.13
End carriages gearbox service factor		n/a

[redacted]

'24 MBR PERMEATE PUMP ROOM

M15.10 Lifting equipment: '24 MBR permeate pump room

Item description	Units	Technical Particulars
M15.10 Lifting equipment: '24 MBR permeate pump room		
Note: that the information stipulated below does not necessarily represent all the information required for this item/system. The tenderer shall provide drawings and/or brochures showing details of the equipment offered and any other relevant information shall be submitted with the tender.		
General information		
Manufacturer		Burncrete
Type		ilula
Model		ilula Manual
Country of origin		China
Key operational data		
Safe Working Load	kg	2000
Maximum load for this application	kg	2000
Test Load	kg	2500
Standard used for design of structure		n/a
Grade of steel for structure		n/a
Corrosion protection		HDG
Hoist make and model		ilula
Hoist rated motor power	kW	n/a
Hoist gearbox service factor		n/a
Crawl trolley make and model		ilula Rola crawl
Crawl trolley rated motor power	kW	n/a
Crawl trolley gearbox service factor		n/a
End carriages make and model		n/a
End carriages rated motor power	kW	n/a
End carriages gearbox service factor		n/a

[redacted]

PRESSURISED UF MICRO SCREENING STATION

M15.11 Lifting equipment: '24 UF micro screen facility

Item description	Units	Technical Particulars
M15.11 Lifting equipment: '24 UF micro screen facility		
Note: that the information stipulated below does not necessarily represent all the information required for this item/system. The tenderer shall provide drawings and/or brochures showing details of the equipment offered and any other relevant information shall be submitted with the tender.		
General information		
Manufacturer		SWF Krantechnik
Type		SG EOTC
Model		Single Girder
Country of origin		Germany
Key operational data		
Safe Working Load	kg	7200kg
Maximum load for this application	kg	7200kg
Test Load	kg	9000kg
Standard used for design of structure		BS466
Grade of steel for structure		350WA
Corrosion protection		Galvanized Crane Girder
Hoist make and model		BD04L
Hoist rated motor power	kW	9 / 1.4kW
Hoist gearbox service factor		6.1
Crawl trolley make and model		GEK106P7BOF06MA104
Crawl trolley rated motor power	kW	0.3 / 0.05kW
Crawl trolley gearbox service factor		6.1
End carriages make and model		ETN14-25 64
End carriages rated motor power	kW	0.3kW
End carriages gearbox service factor		6.1

[redacted]

PRESSURISED UF FEED PUMP STATION

M15.12 Lifting equipment: '24 UF Feed pump station

Item description	Units	Technical Particulars
M15.12 Lifting equipment: '24 UF Feed pump station		
Note: that the information stipulated below does not necessarily represent all the information required for this item/system. The tenderer shall provide drawings and/or brochures showing details of the equipment offered and any other relevant information shall be submitted with the tender.		
General information		
Manufacturer		SWF Krantechnik
Type		SG EOTC
Model		Single Girder
Country of origin		Germany
Key operational data		
Safe Working Load	kg	3000kg
Maximum load for this application	kg	3000kg
Test Load	kg	3750kg
Standard used for design of structure		BS466
Grade of steel for structure		350WA
Corrosion protection		Galvanized Crane Girder
Hoist make and model		BB04L
Hoist rated motor power	kW	3.6 / 0.5kW
Hoist gearbox service factor		6.1
Crawl trolley make and model		GEK106P71BOFMA104
Crawl trolley rated motor power	kW	0.3 / 0.05Kw
Crawl trolley gearbox service factor		6.1
End carriages make and model		ESN09-16 50
End carriages rated motor power	kW	0.3kW
End carriages gearbox service factor		6.1

[redacted]

PRESSURISED UF REJECT RETURN PUMP STATION

M15.13 Lifting equipment: '24 UF reject return pump station

Item description	Units	Technical Particulars
M15.13 Lifting equipment: '24 UF reject return pump station		
Note: that the information stipulated below does not necessarily represent all the information required for this item/system. The tenderer shall provide drawings and/or brochures showing details of the equipment offered and any other relevant information shall be submitted with the tender.		
General information		
Manufacturer		SWF Krantechnik
Type		Manual Chain Block & Trolley
Model		MHS-ZFC-010-H LHT-FKH
Country of origin		Germany
Key operational data		
Safe Working Load	kg	1000kg
Maximum load for this application	kg	1000kg
Test Load	kg	1250kg
Standard used for design of structure		BS466
Grade of steel for structure		350WA
Corrosion protection		Galvanized Goal Post Structure
Hoist make and model		MHS-ZFC-010-H LHT-FKH
Hoist rated motor power	kW	n/a
Hoist gearbox service factor		n/a
Crawl trolley make and model		n/a
Crawl trolley rated motor power	kW	n/a
Crawl trolley gearbox service factor		n/a
End carriages make and model		n/a
End carriages rated motor power	kW	n/a
End carriages gearbox service factor		n/a

[redacted]

PRESSURISED UF BUILDING

[redacted]

M15.14 Lifting equipment: '24 Pressurised UF building

Item description	Units	Technical Particulars
M15.14 Lifting equipment: '24 Pressurised UF building		
Note: that the information stipulated below does not necessarily represent all the information required for this item/system. The tenderer shall provide drawings and/or brochures showing details of the equipment offered and any other relevant information shall be submitted with the tender.		
General information		
Manufacturer		SWF Krantechnik
Type		SG EOTC
Model		Single Girder
Country of origin		Germany
Key operational data		
Safe Working Load	kg	6000kg
Maximum load for this application	kg	6000kg
Test Load	kg	7500kg
Standard used for design of structure		BS466
Grade of steel for structure		350WA
Corrosion protection		Galvanized Crane Girder
Hoist make and model		8C04L
Hoist rated motor power	kW	4.5 / 0.7kW
Hoist gearbox service factor		6.1
Crawl trolley make and model		GEK106PT1BOF06MA106
Crawl trolley rated motor power	kW	0.3 / 0.05kW
Crawl trolley gearbox service factor		6.1
End carriages make and model		ETN14-25 64
End carriages rated motor power	kW	0.3kW
End carriages gearbox service factor		6.1

[redacted]

PRESSURISED UF CHEMICAL STORAGE AND DOSING ROOM

[redacted]

M15.15 Lifting equipment: '24 Pressurised UF chemical storage and dosing facility

Item description	Units	Technical Particulars
M15.15 Lifting equipment: '24 Pressurised UF chemical storage and dosing facility		
Note: that the information stipulated below does not necessarily represent all the information required for this item/system. The tenderer shall provide drawings and/or brochures showing details of the equipment offered and any other relevant information shall be submitted with the tender.		
General information		
Manufacturer		SWF Krantechnik
Type		Manual Chain Block & Geared Crawl
Model		MHS-ZFC-010-H LHT FKH
Country of origin		Germany
Key operational data		
Safe Working Load	kg	1000kg
Maximum load for this application	kg	1000kg
Test Load	kg	1250kg
Standard used for design of structure		BS466
Grade of steel for structure		350WA
Corrosion protection		Galvanized Crawl Beam
Hoist make and model		MHS-ZFC-010-H LHT FKH
Hoist rated motor power	kW	n/a
Hoist gearbox service factor		n/a
Crawl trolley make and model		n/a
Crawl trolley rated motor power	kW	n/a
Crawl trolley gearbox service factor		n/a
End carriages make and model		n/a
End carriages rated motor power	kW	n/a
End carriages gearbox service factor		n/a

[redacted]

PRESSURISED UF CIP PUMP STATION

M15.16 Lifting equipment: '24 Pressurised UF CIP pump station

Item description	Units	Technical Particulars
M15.16 Lifting equipment: '24 Pressurised UF CIP pump station		
Note: that the information stipulated below does not necessarily represent all the information required for this item/system. The tenderer shall provide drawings and/or brochures showing details of the equipment offered and any other relevant information shall be submitted with the tender.		
General information		
Manufacturer		SWF Krantechnik
Type		Manual Chain Block & Trolley
Model		MHS-ZFC-020-H MHS LHT FKH
Country of origin		Germany
Key operational data		
Safe Working Load	kg	1800kg
Maximum load for this application	kg	1800lg
Test Load	kg	2250kg
Standard used for design of structure		BS466
Grade of steel for structure		350WA
Corrosion protection		Galvanized Crawl Beam
Hoist make and model		MHS-ZFC-020-H MHS LHT FKH
Hoist rated motor power	kW	n/a
Hoist gearbox service factor		n/a
Crawl trolley make and model		n/a
Crawl trolley rated motor power	kW	n/a
Crawl trolley gearbox service factor		n/a
End carriages make and model		n/a
End carriages rated motor power	kW	n/a
End carriages gearbox service factor		n/a

[redacted]

'24 PRESSURISED UF AIR SCOUR BLOWER ROOM

M15.17 Lifting equipment: '24 Pressurised UF air scour blower room

Item description	Units	Technical Particulars
M15.17 Lifting equipment: '24 Pressurised UF air scour blower room		
Note: that the information stipulated below does not necessarily represent all the information required for this item/system. The tenderer shall provide drawings and/or brochures showing details of the equipment offered and any other relevant information shall be submitted with the tender.		
General information		
Manufacturer		SWF Krantechnik
Type		Manual Chain Block & Trolley
Model		MHS-ZFC-020-H MHS LHT FKH
Country of origin		Germany
Key operational data		
Safe Working Load	kg	1800kg
Maximum load for this application	kg	1800kg
Test Load	kg	2250kg
Standard used for design of structure		BS466
Grade of steel for structure		350WA
Corrosion protection		Galvanized Crawl Beam
Hoist make and model		MHS-ZFC-020-H MHS LHT FKH
Hoist rated motor power	kW	n/a
Hoist gearbox service factor		n/a
Crawl trolley make and model		n/a
Crawl trolley rated motor power	kW	n/a
Crawl trolley gearbox service factor		n/a
End carriages make and model		n/a
End carriages rated motor power	kW	n/a
End carriages gearbox service factor		n/a

[redacted]

PRESSURISED UF UV SYSTEM

[redacted]

M15.18 Lifting equipment: '24 Pressurised UF UV system

Item description	Units	Technical Particulars
M15.18 Lifting equipment: '24 Pressurised UF UV system		
Note: that the information stipulated below does not necessarily represent all the information required for this item/system. The tenderer shall provide drawings and/or brochures showing details of the equipment offered and any other relevant information shall be submitted with the tender.		
General information		
Manufacturer		SWF Krantechnik
Type		Manual Chain Block & Trolley
Model		MHS-ZFC-010-H MHS LHT FKH
Country of origin		Germany
Key operational data		
Safe Working Load	kg	600kg
Maximum load for this application	kg	600kg
Test Load	kg	750kg
Standard used for design of structure		BS466
Grade of steel for structure		350WA
Corrosion protection		Galvanized Crawl Beam
Hoist make and model		MHS-ZFC-010-H MHS LHT FKH
Hoist rated motor power	kW	n/a
Hoist gearbox service factor		n/a
Crawl trolley make and model		n/a
Crawl trolley rated motor power	kW	n/a
Crawl trolley gearbox service factor		n/a
End carriages make and model		n/a
End carriages rated motor power	kW	n/a
End carriages gearbox service factor		n/a

[redacted]

TERTIARY TREATMENT REUSE PUMP STATION

M15.19 Lifting equipment: '24 Tertiary treatment reuse pump station

Item description	Units	Technical Particulars
M15.19 Lifting equipment: '24 Tertiary treatment reuse pump station		
Note: that the information stipulated below does not necessarily represent all the information required for this item/system. The tenderer shall provide drawings and/or brochures showing details of the equipment offered and any other relevant information shall be submitted with the tender.		
General information		
Manufacturer		SWF Krantechnik
Type		SG EOTC
Model		Single Girder
Country of origin		Germany
Key operational data		
Safe Working Load	kg	4000kg
Maximum load for this application	kg	4000kg
Test Load	kg	5000kg
Standard used for design of structure		BS466
Grade of steel for structure		350WA
Corrosion protection		Galvanized Crane Girder
Hoist make and model		BC04L
Hoist rated motor power	kW	4.5 / 0.7kW
Hoist gearbox service factor		6.1
Crawl trolley make and model		GEK106PT1BOF06MA104
Crawl trolley rated motor power	kW	0.3kW
Crawl trolley gearbox service factor		6.1
End carriages make and model		ETN11-20 52
End carriages rated motor power	kW	0.3kW
End carriages gearbox service factor		6.1

[redacted]

'24 MBR REUSE PUMP STATION

M15.20 Lifting equipment: '24 MBR reuse pump station

Item description	Units	Technical Particulars
M15.20 Lifting equipment: '24 MBR reuse pump station		
Note: that the information stipulated below does not necessarily represent all the information required for this item/system. The tenderer shall provide drawings and/or brochures showing details of the equipment offered and any other relevant information shall be submitted with the tender		
General Information		6 Ton x 14 meter
Manufacturer		BB Cranes
Type		Single Girder Overhead Crane
Model		Condra
Country of origin		South Africa
Key operational data		
Safe Working Load	kg	6000
Maximum load for this application	kg	6000
Test Load	kg	7500
Standard used for design of structure		Install and Maintenance
Grade of steel for structure		S355JR
Corrosion protection		Shot blast, Zinc spray ,Epoxy coatings
Hoist make and model		Condra 5 k 11
Hoist rated motor power	kW	6 / 2
Hoist gearbox service factor		n/a
Crawl trolley make and model		Condra
Crawl trolley rated motor power	kW	0,4 / 0,13
Crawl trolley gearbox service factor		n/a
End carriages make and model		Condra 125 x 200WB
End carriages rated motor power	kW	2 x 0.4 / 0.13
End carriages gearbox service factor		n/a

[redacted]

DEWATERING BUILDING - MAIN GBT / BFP ROOM

M15.21 Lifting equipment: '24 Dewatering building

Item description	Units	Technical Particulars
M15.21 Lifting equipment: '24 Dewatering building		
Note: that the information stipulated below does not necessarily represent all the information required for this item/system. The tenderer shall provide drawings and/or brochures showing details of the equipment offered and any other relevant information shall be submitted with the tender.		
General information		
Manufacturer		SWF Krantechnik
Type		SG EOTC
Model		Single Girder
Country of origin		Germany
Key operational data		
Safe Working Load	kg	15000kg
Maximum load for this application	kg	15000kg
Test Load	kg	18 750kg
Standard used for design of structure		BS466
Grade of steel for structure		350WA
Corrosion protection		Galvanized Crane Girder
Hoist make and model		ND06N
Hoist rated motor power	kW	9 / 1.4kW
Hoist gearbox service factor		6.1
Crawl trolley make and model		GEK106PT1BOF06MA200
Crawl trolley rated motor power	kW	0.3kW
Crawl trolley gearbox service factor		6.1
End carriages make and model		ETN32-40 69
End carriages rated motor power	kW	1.1kW
End carriages gearbox service factor		6.1

[redacted]

DEWATERING BUILDING POLY MAKE UP AND STORAGE ROOM

[redacted]

M15.22 Lifting equipment: '24 Dewatering building poly make-up and storage room

Item description	Units	Technical Particulars
M15.22 Lifting equipment: '24 Dewatering building poly make-up and storage room		
Note: that the information stipulated below does not necessarily represent all the information required for this item/system. The tenderer shall provide drawings and/or brochures showing details of the equipment offered and any other relevant information shall be submitted with the tender.		
General information		
Manufacturer		SWF Krantechnik
Type		SG EOTC
Model		Single Girder
Country of origin		Germany
Key operational data		
Safe Working Load	kg	1200kg
Maximum load for this application	kg	1200kg
Test Load	kg	1500kg
Standard used for design of structure		BS466
Grade of steel for structure		350WA
Corrosion protection		Galvanized Crane Girder
Hoist make and model		BB04L
Hoist rated motor power	kW	1.8 / 0.25W
Hoist gearbox service factor		6.1
Crawl trolley make and model		GEK106PT1BOF06MA104-5380N
Crawl trolley rated motor power	kW	0.3 / 0.05kW
Crawl trolley gearbox service factor		6.1
End carriages make and model		ETN11-25 52
End carriages rated motor power	kW	0.3kW
End carriages gearbox service factor		6.1

[redacted]

'24 OVERFLOW DAM RECYCLE PUMP STATION

[redacted]

M15.23 Lifting equipment: '24 Overflow dam recycle pump station

Item description	Units	Technical Particulars
M15.23 Lifting equipment: '24 Overflow dam recycle pump station		
Note: that the information stipulated below does not necessarily represent all the information required for this item/system. The tenderer shall provide drawings and/or brochures showing details of the equipment offered and any other relevant information shall be submitted with the tender.		
General information		
Manufacturer		Morris Material Handling
Type		Monorail Goalpost Structure
Model		Morris
Country of origin		South Africa
Key operational data		
Safe Working Load	kg	1000
Maximum load for this application	kg	1000
Test Load	kg	1250
Standard used for design of structure		BS 2853
Grade of steel for structure		S355 JR
Corrosion protection		Galvanized
Hoist make and model		ilula
Hoist rated motor power	kW	Manual
Hoist gearbox service factor		Annual
Crawl trolley make and model		ilula
Crawl trolley rated motor power	kW	Manual
Crawl trolley gearbox service factor		N/A
End carriages make and model		N/A
End carriages rated motor power	kW	N/A
End carriages gearbox service factor		N/A

[redacted]

EMERGENCY OVERFLOW RECYCLE PUMP STATION

M15.24 Lifting equipment: '24 Emergency overflow recycle pump station

Item description	Units	Technical Particulars
M15.24 Lifting equipment: '24 Emergency overflow recycle pump station		
Note: that the information stipulated below does not necessarily represent all the information required for this item/system. The tenderer shall provide drawings and/or brochures showing details of the equipment offered and any other relevant information shall be submitted with the tender.		
General information		
Manufacturer		SWF Krantechnik
Type		Manual Chain Block & Trolley
Model		MHS-ZFC-010-H MHS LHT FKH
Country of origin		Germany
Key operational data		
Safe Working Load	kg	1000kg
Maximum load for this application	kg	1000kg
Test Load	kg	1250kg
Standard used for design of structure		BS466
Grade of steel for structure		350WA
Corrosion protection		Galvanized Crawl Beam
Hoist make and model		MHS-ZFC-010-H MHS LHT FKH
Hoist rated motor power	kW	n/a
Hoist gearbox service factor		n/a
Crawl trolley make and model		n/a
Crawl trolley rated motor power	kW	n/a
Crawl trolley gearbox service factor		n/a
End carriages make and model		n/a
End carriages rated motor power	kW	n/a
End carriages gearbox service factor		n/a

[redacted]

PRIMARY SLUDGE PUMP STATION

M15.25 Lifting equipment: '24 Primary sludge pump station

Item description	Units	Technical Particulars
M15.25 Lifting equipment: '24 Primary sludge pump station		
Note: that the information stipulated below does not necessarily represent all the information required for this item/system. The tenderer shall provide drawings and/or brochures showing details of the equipment offered and any other relevant information shall be submitted with the tender.		
General information		
Manufacturer		SWF Krantechnik
Type		Manual Chain Block & Trolley
Model		MHS-ZFC-010-H MHS LHT FKH
Country of origin		Germany
Key operational data		
Safe Working Load	kg	1000kg
Maximum load for this application	kg	1000kg
Test Load	kg	1250kg
Standard used for design of structure		BS466
Grade of steel for structure		350WA
Corrosion protection		Galvanized Crawl Beam
Hoist make and model		MHS-ZFC-010-H MHS LHT FKH
Hoist rated motor power	kW	n/a
Hoist gearbox service factor		n/a
Crawl trolley make and model		n/a
Crawl trolley rated motor power	kW	n/a
Crawl trolley gearbox service factor		n/a
End carriages make and model		n/a
End carriages rated motor power	kW	n/a
End carriages gearbox service factor		n/a

[redacted]

WAS RING MAIN PUMP STATION

[redacted]

M15.26 Lifting equipment: '24 WAS ring main pump station

Item description	Units	Technical Particulars
M15.26 Lifting equipment: '24 WAS ring main pump station		
Note: that the information stipulated below does not necessarily represent all the information required for this item/system. The tenderer shall provide drawings and/or brochures showing details of the equipment offered and any other relevant information shall be submitted with the tender.		
General information		
Manufacturer		
Type		
Model		
Country of origin		
Key operational data		
Safe Working Load	kg	
Maximum load for this application	kg	
Test Load	kg	
Standard used for design of structure		
Grade of steel for structure		
Corrosion protection		
Hoist make and model		
Hoist rated motor power	kW	
Hoist gearbox service factor		
Crawl trolley make and model		
Crawl trolley rated motor power	kW	
Crawl trolley gearbox service factor		
End carriages make and model		
End carriages rated motor power	kW	
End carriages gearbox service factor		

As per DMS 48.1.31, the '24 WAS ring main pump station lifting equipment is combined with the '24 Primary sludge ring main pump station lifting equipment to service both pump stations. Refer to TDS 15.29

[redacted]

WAS SLUDGE TANK MIXING UNITS

M15.27 Lifting equipment: '24 WAS sludge storage tank mixing units

Item description	Units	Technical Particulars
M15.27 Lifting equipment: '24 WAS sludge storage tank mixing units		
Note: that the information stipulated below does not necessarily represent all the information required for this item/system. The tenderer shall provide drawings and/or brochures showing details of the equipment offered and any other relevant information shall be submitted with the tender.		
General information		
Manufacturer		Grundfos
Type		Manual operating lifting davit
Model		LD1
Country of origin		Hungary
Key operational data		
Safe Working Load	kg	100kg
Maximum load for this application	kg	77kg
Test Load	kg	200kg
Standard used for design of structure		
Grade of steel for structure		316SS
Corrosion protection		None
Hoist make and model		LDW1
Hoist rated motor power	kW	N/A
Hoist gearbox service factor		N/A
Crawl trolley make and model		N/A
Crawl trolley rated motor power	kW	N/A
Crawl trolley gearbox service factor		N/A
End carriages make and model		N/A
End carriages rated motor power	kW	N/A
End carriages gearbox service factor		N/A

[redacted]

EMERGENCY WAS RECYCLE PUMP STATION

M15.28 Lifting equipment: '24 Emergency WAS recycle pump station

Item description	Units	Technical Particulars
M15.28 Lifting equipment: '24 Emergency WAS recycle pump station		
Note: that the information stipulated below does not necessarily represent all the information required for this item/system. The tenderer shall provide drawings and/or brochures showing details of the equipment offered and any other relevant information shall be submitted with the tender.		
General information		
Manufacturer		SWF Krantechnik
Type		Manual Chain Block & Trolley
Model		MHS-ZFC-010-H MHS LHT FKH
Country of origin		Germany
Key operational data		
Safe Working Load	kg	1000kg
Maximum load for this application	kg	1000kg
Test Load	kg	1250kg
Standard used for design of structure		BS466
Grade of steel for structure		350WA
Corrosion protection		Galvanized Crawl Beam
Hoist make and model		MHS-ZFC-010-H MHS LHT FKH
Hoist rated motor power	kW	n/a
Hoist gearbox service factor		n/a
Crawl trolley make and model		n/a
Crawl trolley rated motor power	kW	n/a
Crawl trolley gearbox service factor		n/a
End carriages make and model		n/a
End carriages rated motor power	kW	n/a
End carriages gearbox service factor		n/a

[redacted]

PRIMARY SLUDGE RING MAIN PUMP STATION

[redacted]

M15.29 Lifting equipment: '24 Primary sludge ring main pump station

Item description	Units	Technical Particulars
M15.29 Lifting equipment: '24 Primary sludge ring main pump station		
Note: that the information stipulated below does not necessarily represent all the information required for this item/system. The tenderer shall provide drawings and/or brochures showing details of the equipment offered and any other relevant information shall be submitted with the tender.		
General information		
Manufacturer		SWF Krantechnik
Type		Manual Chain Block & Trolley
Model		MHS-ZFC-015-H MHS LHT FKH
Country of origin		Germany
Key operational data		
Safe Working Load	kg	1500kg
Maximum load for this application	kg	1500kg
Test Load	kg	1875kg
Standard used for design of structure		BS466
Grade of steel for structure		350WA
Corrosion protection		Galvanized Crawl Beam
Hoist make and model		MHS-ZFC-015-H MHS LHT FKH
Hoist rated motor power	kW	n/a
Hoist gearbox service factor		n/a
Crawl trolley make and model		n/a
Crawl trolley rated motor power	kW	n/a
Crawl trolley gearbox service factor		n/a
End carriages make and model		n/a
End carriages rated motor power	kW	n/a
End carriages gearbox service factor		n/a

[redacted]

PRIMARY SLUDGE MIXING PUMP STATION

[redacted]

M15.30 Lifting equipment: '24 Primary sludge mixing pump station

Item description	Units	Technical Particulars
M15.30 Lifting equipment: '24 Primary sludge mixing pump station		
Note: that the information stipulated below does not necessarily represent all the information required for this item/system. The tenderer shall provide drawings and/or brochures showing details of the equipment offered and any other relevant information shall be submitted with the tender.		
General information		
Manufacturer		SWF Krantechnik
Type		Manual Chain Block & Trolley
Model		MHS-ZFC-015-H MHS LHT FKH
Country of origin		Germany
Key operational data		
Safe Working Load	kg	1500kg
Maximum load for this application	kg	1500kg
Test Load	kg	1875kg
Standard used for design of structure		BS466
Grade of steel for structure		350WA
Corrosion protection		Galvanized Crawl Beam
Hoist make and model		MHS-ZFC-015-H MHS LHT FKH
Hoist rated motor power	kW	n/a
Hoist gearbox service factor		n/a
Crawl trolley make and model		n/a
Crawl trolley rated motor power	kW	n/a
Crawl trolley gearbox service factor		n/a
End carriages make and model		n/a
End carriages rated motor power	kW	n/a
End carriages gearbox service factor		n/a

[redacted]

WAS FILTRATE PUMP STATION

M15.31 Lifting equipment: '24 WAS filtrate return pump station

Item description	Units	Technical Particulars
M15.31 Lifting equipment: '24 WAS filtrate return pump station		
Note: that the information stipulated below does not necessarily represent all the information required for this item/system. The tenderer shall provide drawings and/or brochures showing details of the equipment offered and any other relevant information shall be submitted with the tender.		
General information		
Manufacturer		
Type		
Model		
Country of origin		
Key operational data		
Safe Working Load	kg	
Maximum load for this application	kg	
Test Load	kg	
Standard used for design of structure		
Grade of steel for structure		
Corrosion protection		
Hoist make and model		
Hoist rated motor power	kW	
Hoist gearbox service factor		
Crawl trolley make and model		
Crawl trolley rated motor power	kW	
Crawl trolley gearbox service factor		
End carriages make and model		
End carriages rated motor power	kW	
End carriages gearbox service factor		

As per DMS 48.1.36, one set of lifting equipment is provided for the '24 Filtrate return pump station, servicing both the '24 WAS filtrate & '24 Primary sludge filtrate return pumps. Refer to TDS 15.32

[redacted]

PRIMARY SLUDGE FILTRATE PUMP STATION

M15.32 Lifting equipment: '24 Primary sludge filtrate return pump station

Item description	Units	Technical Particulars
M15.32 Lifting equipment: '24 Primary sludge filtrate return pump station		
Note: that the information stipulated below does not necessarily represent all the information required for this item/system. The tenderer shall provide drawings and/or brochures showing details of the equipment offered and any other relevant information shall be submitted with the tender.		
General information		
Manufacturer		SWF Krantechnik
Type		Manual Chain Block & Trolley
Model		MHS-ZFC-010-H MHS LHT FKH
Country of origin		Germany
Key operational data		
Safe Working Load	kg	1000kg
Maximum load for this application	kg	1000kg
Test Load	kg	1250kg
Standard used for design of structure		BS466
Grade of steel for structure		350WA
Corrosion protection		Galvanized Crawl Beam
Hoist make and model		MHS-ZFC-010-H MHS LHT FKH
Hoist rated motor power	kW	n/a
Hoist gearbox service factor		n/a
Crawl trolley make and model		n/a
Crawl trolley rated motor power	kW	n/a
Crawl trolley gearbox service factor		n/a
End carriages make and model		n/a
End carriages rated motor power	kW	n/a
End carriages gearbox service factor		n/a

[redacted]

Valves, Fittings & Actuators (General)

[redacted]

VALVES: KNIFE GATE VALVES

[redacted]

M16.1 Valves: Knife gate valves

Item description	Units	Technical Particulars
M16.1 Valves: Knife gate valves		
Note: that the information stipulated below does not necessarily represent all the information required for this item/system. The tenderer shall provide drawings and/or brochures showing details of the equipment offered and any other relevant information shall be submitted with the tender.		
General information		
Manufacturer		Bovaco
Type		Knife Gate Valves
Model		-
Country of origin		South Africa
Key operational data		
Material of body		Ductile Iron
Material of blade		304 S/Steel
Material of seat		304 S/Steel
Material of seal		EPDM
Material of spindle		304 S/Steel
Corrosion protection of valve (External)	Type	FBE
Corrosion protection of valve (External)	µm	250
Corrosion protection of valve (Internal)	Type	FBE
Corrosion protection of valve (Internal)	µm	250
Material of fasteners		316 S/Steel
Pressure rating	PN	10
Temperature Rating	°C	100
Leak tight seal	Yes/No	YES

[redacted]

VALVES: RESILIENT SEAL GATE VALVE

M16.2 Valves: Resilient Seal Gate Valve

Item description	Units	Technical Particulars
M16.2 Valves: Resilient Seal Gate Valve		
Note: that the information stipulated below does not necessarily represent all the information required for this item/system. The tenderer shall provide drawings and/or brochures showing details of the equipment offered and any other relevant information shall be submitted with the tender.		
General information		
Manufacturer		DFC/VOSA
Type		Rising Spindle RSV
Model		9754
Country of origin		South Africa
Key operational data		
Material of body		Ductile iron
Material of blade		Cast Iron / EPDM Covered
Material of seat		Cast Iron
Material of seal		EPDM
Material of spindle		316 S/Steel
Corrosion protection of valve (External)	Type	FBE
Corrosion protection of valve (External)	µm	250
Corrosion protection of valve (Internal)	Type	FBE
Corrosion protection of valve (Internal)	µm	250
Material of fasteners		316 S/Steel
Pressure rating	PN	16
Temperature Rating	°C	80
Leak tight seal	Yes/No	YES

[redacted]

VALVES: BUTTERFLY VALVE

M16.3 Valves: Butterfly Valve

Item description	Units	Technical Particulars
M16.3 Valves: Butterfly Valve		
Note: that the information stipulated below does not necessarily represent all the information required for this item/system. The tenderer shall provide drawings and/or brochures showing details of the equipment offered and any other relevant information shall be submitted with the tender.		
General information		
Manufacturer		AVK
Type		Double Eccentric
Model		Series 756
Country of origin		South Africa
Key operational data		
Material of seal retaining ring		N/A
Corrosion protection of valve (External)		FBE
Corrosion protection of valve (External)	µm	250
Corrosion protection of valve (Internal)		FBE
Corrosion protection of valve (Internal)	µm	250
Material of fasteners		316 S/Steel
Pressure rating	PN	10
Temperature Rating	°C	Ambient
Leak tight seal	Yes/No	YES
Bidirectional Seal	Yes/No	YES
Gearbox ratio		4- 1
Torque-slip device	Yes/No	No
Torque limit	Yes/No	No

[redacted]

VALVES: DIAPHRAGM VALVES

M16.4 Valves: Diaphragm valves

Item description	Units	Technical Particulars
M16.4 Valves: Diaphragm valves		
Note: that the information stipulated below does not necessarily represent all the information required for this item/system. The tenderer shall provide drawings and/or brochures showing details of the equipment offered and any other relevant information shall be submitted with the tender.		
General information		
Manufacturer		Bermad
Type		700
Model		WW-735-55-M
Country of origin		Isreal
Key operational data		
Material of body		DI FB COATED
Material of disc (or equivalent)		SS 410
Material of seat (or equivalent)		SS 304
Material of spring (or equivalent)		SS 302
Seat removal procedure		Retaining Ring
Material of seal		EPDM Fabric Reinforced
Corrosion protection of valve body	µ	FBE to EN 1563
Material of fasteners		SS 316
Maximum working pressure	kPa	2500
Maximum permissible velocity through valve	m/s	5.5 to15 M/S for Surge Valve
Opening pressure range (kPa)	kPa	100 to 2500
Reseating pressure (kPa)	kPa	100
Pressure setting Tolerance	%	1.2%
Pressure rating (kPa)	PN	2500

[redacted]

VALVES: NON RETURN VALVE (DOUBLE DOOR)

NOT REQUIRED IN SPECIFICATIONS

[redacted]

VALVES: NON RETURN VALVE (SWING CHECK)

[redacted]

M16.6 Valves: Non return valve (Swing check)

Item description	Units	Technical Particulars
M16.6 Valves: Non return valve (Swing check)		
Note: that the information stipulated below does not necessarily represent all the information required for this item/system. The tenderer shall provide drawings and/or brochures showing details of the equipment offered and any other relevant information shall be submitted with the tender.		
General information		
Manufacturer		**DFC / VOSA**
Type		Swing Check Single Door
Model		6254 L+W
Country of origin		South Africa
Key operational data		
Description of anti-slam design features		Lever & weight
Seat Angle from hinge pin horizontal plane		3°
Material of body		Ductile Iron
Material of disc		Cast Iron
Material of seal		Nitrile
Material of hinge pin		S/Steel
Material of bearings		Bronze
Corrosion protection of valve (External)		Twin Pack Epoxy
Corrosion protection of valve (External)	µm	250
Corrosion protection of valve (Internal)		Twin Pack Epoxy
Corrosion protection of valve (Internal)	µm	250
Material of fasteners		316 S/Steel
Velocity to open check valve fully	m/s	2.5
Pressure rating	PN	16
Temperature Rating	°C	80
Leak tight seal	Yes/No	Yes

[redacted]

PIPE COUPLING/FLANGE ADAPTER

[redacted]

M16.7 Pipe coupling/flange adapter

Item description	Units	Technical Particulars
M16.7 Pipe coupling/flange adapter		
Note: that the information stipulated below does not necessarily represent all the information required for this item/system. The tenderer shall provide drawings and/or brochures showing details of the equipment offered and any other relevant information shall be submitted with the tender.		
General information		
Manufacturer		REXUS / Kamflex Pipe Couplings
Type		Mechanical
Model		N/A
Country of origin		South Africa
Key operational data		
Pressure rating	PN	10 or 16
Material of body		S/Steel
Material of seal		EPDM
Corrosion protection of valve body		N/A
Fastener material		316 S/Steel
Flange drilling specification		1000 or 1600

[redacted]

ACTUATORS (ELECTRICAL)

[redacted]

M16.8 Actuators (Electrical)

Item description	Units	Technical Particulars
M16.8 Actuators (Electrical)		
Note: that the information stipulated below does not necessarily represent all the information required for this item/system. The tenderer shall provide drawings and/or brochures showing details of the equipment offered and any other relevant information shall be submitted with the tender.		
General information		
Manufacturer		**Rotork**
Type		**IQ**
Model		**IQ**
Country of origin		**United Kingdom**
Key operational data		
Motor rating	kW	0.26 – 1.63
Motor Class of Insulation		F
Max. available operating torque	N.m	56 - 600
Protection available		Torque Switch
Type of over-temperature protection		Thermostat
Minimum Design Life: On-Off / Inching duties	No. Cycles	25 000
Minimum Design Life: Modulating duties	No. Cycles	1 800 000
Gearbox ratio		6:1
Construction materials		AL
Corrosion protection		Polyester
Ingress Protection	IP	68
Corrosion Protection		Polyester
Paint Colour		Grey
Overall mass of unit	kg	30.87 – 74.91
Control		
REMOTE SIGNALS REQUIRED		
Valve Fully Open	Yes/No	Yes
Valve Fully Closed	Yes/No	Yes
Valve Intermediate Position	Yes/No	Yes
Locked out (by switch disconnector)	Yes/No	Yes
Valve Position Monitor (4-20mA) Provided /Required	Yes/No	Yes
Actuator Torque Monitor (4-20mA) Provided / Required	Yes/No	No
Fieldbus Compatibility	Yes/No	Yes
Two-Wire Current Position Controller	Yes/No	Yes
4 and 20mA to Correspond to Fully Closed and Fully Open	Yes/No	Yes

[redacted]

ACTUATORS (PHEUMATIC)

M16.9 Actuators (Pneumatic)

Item description	Units	Technical Particulars
M16.9 Actuators (Pneumatic)		
Note: that the information stipulated below does not necessarily represent all the information required for this item/system. The tenderer shall provide drawings and/or brochures showing details of the equipment offered and any other relevant information shall be submitted with the tender.		
General information		
Manufacturer		Aumanat
Type		Cam Act
Model		CA20-80; CA50-160; CA80-250
Country of origin		South Africa
Key operational data		
Material of Piston Rod		Stainless Steel 316
Material of Piston		Aluminium alloy 6082
Material of return spring		N/A
Fastener materials		Stainless Steel
Corrosion protection		Epoxy Powder Coated- Anodised
Ingress Protection	IP	IP68
Overall mass of unit	kg	CA20-80 (3.45kg); CA50-160 (26kg); CA80-250 (65kg)
Control		
REMOTE SIGNALS REQUIRED		
Valve Fully Open	Yes/No	Yes- With Switch box
Valve Fully Closed	Yes/No	Yes- With Switch box
Valve Intermediate Position	Yes/No	N/A
Locked out (by switch disconnector)	Yes/No	N/A
Valve Position Monitor (4-20mA) Provided /Required	Yes/No	No
Actuator Torque Monitor (4-20mA) Provided / Required	Yes/No	No
Fieldbus Compatibility	Yes/No	Yes
Two-Wire Current Position Controller	Yes/No	No
4 and 20mA to Correspond to Fully Closed and Fully Open	Yes/No	No

[redacted]

Motors (General)

[redacted]

MOTORS

M17 Motors

Item description	Units	Technical Particulars
M17.1 Motors		
Note: that the information stipulated below does not necessarily represent all the information required for this item/system. The tenderer shall provide drawings and/or brochures showing details of the equipment offered and any other relevant information shall be submitted with the tender.		
General information		
Manufacturer		WEG
Type		IE3
Model		W22
Country of origin		Brazil
ELECTRICAL OPERATING CONDITIONS		
Supply voltage (nominal)	V	400V
Number of phases		3PH
Frequency	Hz	50Hz
Voltage and frequency variations	%	As per IEC Tolerance
Supply voltage harmonic voltage factor		As per IEC Tolerance
Supply voltage negative sequence component	%	As per IEC Tolerance
Supply neutral earthed directly/resistively (high/low)		N/A
SITE OPERATING CONDITIONS		
Altitude a.s.l.	m	1000 m.a.s.l
Maximum ambient temperature	°C	+40°C
Minimum ambient temperature	°C	-20°C
MOTOR RATING		
Rated output	kW	As per WEG Data Sheets
Duty class		S1
Output margin above load absorbed power	%	Absorbed powers not given by PCI
Speed (synchronous)	rpm	3000 & 1500
Speed at rated output, voltage and frequency	rpm	As per WEG Data Sheets
Rated voltage	V	As per WEG Data Sheets
Full load current	A	As per WEG Data Sheets
Efficiency class (IE1/2/3)		IE3
Rated torque	Nm	As per WEG Data Sheets
ENCLOSURE, CONSTRUCTION & MOUNTING		
Ingress protection rating		IP66
Cooling method		TEBC – IC416
Construction and mounting arrangement		B3R(E)
Terminal box location (R/B/L/T)		RHS
Cable entry location		Bottom of T/Box Downward
Cable type and size		As per WEG T/Box Standard
Corrosion protection (standard/corrosive environment)		WEG 212P Corrosive paint plan
WINDINGS TYPE, INSULATION & TEMPERATURE RISE		
Insulation and impregnation system		WEG WISE / Continuous Resin flow
Insulation thermal class	(F/H)	H
Temperature rise class	(B/F)	B
Maximum temperature rise at rated output (Zone A supply)	K	
Maximum temperature rise at rated output (Zone C supply)	K	

[redacted]

Item description	Units	Technical Particulars
M17.1 Motors		
Windings thermal protection (thermistor/PT100) per winding		PTC thermistors: 01 per phase (55kw to 150kW) and Resistance temperature detectors type PT100: 02 per phase (150kW & above)
GENERAL PERFORMANCE		
Efficiency at rated output	%	As per WEG Data Sheets
Efficiency at rated 75% output	%	As per WEG Data Sheets
Efficiency at rated 50% output	%	As per WEG Data Sheets
Power factor at rated output	pu	As per WEG Data Sheets
Power factor at 75% rated output	pu	As per WEG Data Sheets
Power factor at 50% rated output	pu	As per WEG Data Sheets
Sound power level at rated load	dBA	As per WEG Data Sheets
Silencer required		N/A
STARTING PERFORMANCE		
Starting method		VSD
Motor moment of inertia	$kg.m^2$	As per WEG Data Sheets
Number of starts per hour (cold/hot)		
Starting current (x full load current)	A	As per WEG Data Sheets
Starting torque (x rated torque)	N m	As per WEG Data Sheets
Pull-up torque (x rated torque)	N m	As per WEG Data Sheets
Breakdown torque (x rated torque)	N m	As per WEG Data Sheets
Starting power factor	pu	As per WEG Data Sheets
Run up time of driven load (state pu starting current)	s	As per WEG Data Sheets
DRIVEN LOAD AND COUPLING		
Load type		Pump
Load moment of inertia at motor speed	$kg.m^2$	To be given by PCI
Coupling method (direct/gearbox/v-belt)		Direct
BEARINGS		
Manufacturer		As per WEG standard
DE bearing type (ball/roller/sleeve)		As per WEG Data Sheets
DE bearing lubrication type (sealed/regreasable)		As per WEG Data Sheets
DE bearing life (L10)	h	40000
DE bearing regrease interval	h	As per WEG Data Sheets
NDE bearing type (ball/roller/sleeve)		As per WEG Data Sheets
NDE bearing lubrication type (sealed/regreasable)		As per WEG Data Sheets
NDE bearing life (L10)	h	40000
NDE bearing regrease interval	h	As per WEG Data Sheets
Bearing thermal protection (thermistor/PT100)		None
DIMENSIONS AND WEIGHT		
Motor frame number		As per WEG Data Sheets
Motor weight	kg	As per WEG Data Sheets
VARIABLE SPEED APPLICATIONS		
Operating speed range	rpm	@ 5Hz
Maximum safe operating speed	rpm	@ 50Hz
Peak voltage withstand level	V	1600
Voltage gradient withstand level	V/s	5200V/µs
Separately-powered cooling fan		Forced cooling (400V)
OPTIONAL ITEMS		
Anti-condensation heaters		Anti-condensation heaters – 110 / 220 Volt (75kW & above)
Slide rails (for v-belt drives)		N/A
Surge protection devices		N/A

[redacted]

Item description	Units	Technical Particulars
M17.1 Motors		
Adjusting bolts required		N/A
FACTORY TESTS		
Routine tests in addition to SANS 1804-2 requirements		Motors will be supplied with factory issued Unwitnessed Type, Routine & Vibration Test Certificates in accordance with IEC 60034-2.
Insulation resistance check		**Unwitnessed Routine Test = per motor**
Vibration velocity measurement		**Unwitnessed Vibration Test = per motor**
Type tests in addition to SANS 1804-2 requirements		Motors will be supplied with factory issued Unwitnessed Type, Routine & Vibration Test Certificates in accordance with IEC 60034-2.
Current vs speed curve		**Unwitnessed Type Test = 1 per batch**
Torque vs speed curve		**Unwitnessed Type Test = 1 per batch**
DRAWINGS/CURVES TO BE PROVIDED WITH TENDER		
Motor general arrangement with dimensions		Drawing with forced cooling will only be available after order stage
Main terminal box with fault rating indicated		3kA for 0.25s
Current vs speed curve		As per WEG Data Sheets
Torque vs speed curve		As per WEG Data Sheets

[redacted]

MINIATURE SUBSTATIONS

[redacted]

E.1 MINIATURE SUBSTATIONS

Item no.	Description	Units	Specified	Technical Particulars
E.1 MINIATURE SUBSTATIONS				
1	**GENERAL**			
1.1	Manufacturer			Actom or similar
1.2	Country of Origin			South Africa
1.3	**Mini Sub Rating**			
1.3.1	Power Rating	*kVA*	500	500 and or 800
1.3.2	Number of Phases		3	3
1.3.3	Frequency - As per System Electrical			
	Conditions	*Hz*	50	50
1.4	**Voltages**			
1.4.1	Primary Voltage	*kV*	11000	11500
1.4.2	Secondary Voltage	*kV*	420	420
1.5	**Insulation Level**			
1.5.1	Primary Voltage	*kV*	95	95
1.5.2	Secondary Voltage	*kV*	30	30
1.6	Electrical System Operating Parameters		See Project Specs	As per spec
1.7	Physical and Climatic Site Conditions		Outdoors, Coastal,	As per spec
			very corrosive	
			conditions	
2	**CONSTRUCTION AND FITTINGS**			
2.1	Minisub Type	*A/B*	B	B
2.2	Minisub Design (Modular/Unitary)		Unitary	Unitary
2.3	Enclosure Material		3CR12	3CR12
2.4	**Base**			
2.4.1	Base type			
2.4.2	Is a base with removable section required	*Yes/No*	Yes	Yes
2.4.3	Black epoxy tar paint required	*Yes/No*		
2.5	Are roof lifting lugs required	*Yes/No*	Yes	Yes
2.6	Padlock protection facility	*Yes/No*	Yes	Yes
2.7	10mm Allen cap screw for doors	*Yes/No*	Yes	Yes
3	**MV COMPARTMENT**			
3.1	Earth fault indicators	*Yes/No*	Yes	Yes
3.2	**Cables to be Terminated**			
3.2.1	Three Core or Single Core		Three core	Three core
3.2.2	Type of cable (PILC/XLPE)		PILC/XLPE	XLPE
3.2.3	Cable size	*mm²*	2 x 185	2 x 185
3.2.4	Cable Support (Gland plate / cable clamps)			

[redacted]

Item no.	Description	Units	Specified	Technical Particulars
E.1 MINIATURE SUBSTATIONS				
3.3	**Switchgear**			
3.3.1	Manufacturer		ABB SafePlus or	ABB SafePlus or
			approved equivalent	approved equivalent
3.3.2	Country of Origin			
3.3.3	Configuration			
3.3.4	Voltage present indication system on all			
	switching devices	*Yes/No*	Yes	Yes
3.3.5	Insulating Medium	*Oil/SF6*	SF6	SF6
3.3.6	Auxilliary contacts required	*Yes/No*	Yes	Yes
3.3.7	**Local feeder (T-off) protection**			
3.3.7.1	Circuit breaker or fuse-switch-disconnector		Circuit Breaker	Circuit Breaker
3.3.7.2	Rating	*A*	200	200
3.3.7.3	CB type	*Oil/*		
		Vacuum	Vacuum	Vacuum
3.3.8	**Ring Switching Device**			
3.3.8.1	Circuit breaker or fuse-switch-disconnector		Fuse-Switch-	Fuse-Switch-
			Disconnector	Disconnector
3.3.8 2	Rating	*A*	630	630
3.3.8.3	Fuse-switch-disconnector type	*Oil/*		
		Vacuum	Vacuum	Vacuum
4	**TRANSFORMER COMPARTMENT**			
4.1	Manufacturer			
4.2	Country of Origin			
4.3	Transformer Type	*Oil-type/*		
		Dry-type	Oil Type	Oil Type
4.4	Oil-level gauge	*Yes/No*	Yes	Yes
4.5	Indicating Thermometer	*Yes/No*	Yes	Yes
4.6	**Transformer Rating**			
4.6.1	Continuous Overload Capacity	%	10	10
4.6.2	Impedance	%		
4.6.3	Vector Group		Dyn 11	Dyn 11
4.6.4	Cooling method	*ONAN /*		
		ONAF	ONAN	ONAN
4.6.4	**Losses**			
4.6.4.1	No-load Losses	*W*		
4.6.4.2	Full load Losses	*W*		
4.7	**Tapping Method**			
4.7.1	Number of Taps	*No*	5	5
4.7.2	Tapping Range	%	0±2.5; ±5	0±2.5; ±5

[redacted]

Item no.	Description	Units	Specified	Technical Particulars
E.1 MINIATURE SUBSTATIONS				
4.7.3	Switch or Bolted Links	*Off-load*	Switch	Switch
4.8	**Terminations**			
4.8.1	**Medium Voltage Bushings**			
4.8.1.1	Material			
4.8.1.2	Creepage Distance	*mm*		
4.8.1.3	Basic Insulation Level (BIL)	*kV*	95	95
4.8.1.4	Type		C	C
4.8.2	**Low Voltage Bushings**			
4.8.2.1	Material			
4.8.2.2	Creepage Distance	*mm*		
4.8.2.3	Basic Insulation Level (BIL)	*kV*	30	30
5	**LV COMPARTMENT**			
5.1	Separate LV earth bar required	*Yes/No*	Yes	Yes
5.2	Main LV circuit breaker	*Yes/No*	Yes	Yes
5.3	Main LV switch disconnector	*Yes/No*	No	No
5.4	Number of LV feeders		See Project Specs	As per project spec
5.5	**LV feeder protection**			
5.5.1	MCCBs or fuses to be used		See Project Specs	As per project spec
5.5.2	Rating of protection for each feeder	*A*	See Project Specs	As per project spec
5.6	**LV Metering**			
5.6.1	Main LV Meter required	*Yes/No*	Yes	Yes
5.6.2	Manufacturer and model Number			
5.6.3	Metering on each feeder required	*Yes/No*	No	No
5.6.4	Manufacturer and model Number			
5.6.5	CT Ratio			
5.6.6	CT Class			
5.7	LV ammeters for all three phases (Maximum			
	Demand Type with 0 - 800A scale)	*Yes/No*	No	No
5.8	One voltmeter (200 - 500V scale) with selector			
	switch to enable any one of phase voltages to			
	be read (complete with HRC fuses)	*Yes/No*	No	No
5.9	Single Phase 16A three pin socket outlet			
	complete with earth leakage required	*Yes/No*	No	No
5.10	LV compartment lampholder required	*Yes/No*	No	No
5.11	Street lighting panel provided	*Yes/No*	No	No
5.12	Cable Support (Gland plate / cable clamps)			
6	**CONFIRMATION OF MINI SUB TESTS CONDUCTED**			

[redacted]

Item no.	Description	Units	Specified	Technical Particulars
E.1 MINIATURE SUBSTATIONS				
6.1	Minisub routine test certificate provided	*Yes/No*	Yes	Yes
6.2	Minisub type test certificate provided	*Yes/No*	Yes	Yes
6.3	**Transformer Type Tested to IEC 60076-11**			
a	Temperature-rise Test (IEC 60076-2)	*Yes / No*	Yes	Yes
b	Dielectric Type Test (IEC 60076-3)	*Yes / No*	Yes	Yes
c	Determination of Sound Level (IEC 60076-10)			
	for each method of cooling for which a			
	guaranteed sound level is specified	*Yes / No*	Yes	Yes
d	Measurement of power taken by the fan			
	and liquid pump motors	*Yes / No*	Yes	Yes
e	Measurement of No Load Loss and Current at			
	90% and 110% of Rated Voltage	*Yes / No*	Yes	Yes
6.4	**Transformer Routine Test to be Conducted**			
a	Measurement of winding resistance	*Yes / No*	Yes	Yes
b	Measurement of voltage ratio and check			
	of phase displacement	*Yes / No*	Yes	Yes
c	Measurement of short-circuit impedance			
	and load loss	*Yes / No*	Yes	Yes
d	Measurement of no-load loss and current	*Yes / No*	Yes	Yes
e	Dielectric routine test (IEC 60076-3)	*Yes / No*	Yes	Yes
f	Test on on-load tap-changers, where			
	appropriate	*Yes / No*	Yes	Yes
g	Leak testing with pressure for liquid-immersed			
	transformers (tightness test)	*Yes / No*	Yes	Yes
h	Tightness tests and pressure tests for tanks for			
	gas-filled transformers (refer to 60076-15)	*Yes / No*	Yes	
i	check for the ratio and polarity of built-in			
	current transformers	*Yes / No*	Yes	
j	Check of core and frame insulation for liquid			
	immersed transformers with core or frame			
	insulation	*Yes / No*	Yes	

[redacted]

Item no.	Description	Units	Specified	Technical Particulars
E.1 MINIATURE SUBSTATIONS				
6.5	**Special Tests to IEC 60076-14**			
a	Dielectric Special Test (IEC 60076-3)	*Yes / No*	No	No
b	Winding Hot-Spot Temperature Rise			
	Measurement	*Yes / No*	No	No
c	Determination of capacitances windings-to-			
	earth and between windings	*Yes / No*	No	No
d	Measurement of dissipation factor tag ò of			
	the insulation system capacitance	*Yes / No*	No	No
e	Determination of transient voltage transfer			
	characteristics (Annex B of IEC 60076-3:2000)	*Yes / No*	No	No
f	Measurement of zero sequence			
	impedance(s) on three phase transformers			
	(11.6)	*Yes / No*	No	No
g	Short Circuit withstand test (IEC 60076-5)	*Yes / No*	No	No
h	Measurement of d.c insulation resistance each			
	winding to earth and between windings	*Yes / No*	No	No
i	vacuum deflection test on liquid immersed			
	transformers (11.9)	*Yes / No*	No	No
j	Pressure deflection test on liquid immersed			
	transformers (11.10)	*Yes / No*	No	No
k	Vacuum tightness test on site on liquid			
	immersed transformers (1.11)	*Yes / No*	No	No
l	Measurement of frequency response			
	(Frequency Response Analysis or FRA). The			
	test procedure shall be agreed between			
	manufacturer and purchaser.	*Yes / No*	No	No
m	Check of external coating (ISO			
	2178 and ISO 2409 or as specialised)	*Yes / No*	No	No
n	Measurement of dissolved gasses in			
	dielectric liquid	*Yes / No*	No	No
o	Mechanical test or assessment of tank for			
	suitability for transport (to customer			

[redacted]

Item no.	Description	Units	Specified	Technical Particulars
E.1 MINIATURE SUBSTATIONS				
	specification)	*Yes / No*	No	No
p	Determination of weight with transformer			
	Arranged for transport. For transformer up to			
	1.6MVA by measurement. For larger			
	transformers by measurement or calculation			
	as agreed between manufacturer and			
	purchaser.	*Yes / No*	No	No
7	Labelling and Marking to SANS 1029	*Yes/No*	Yes	Yes
8	**RATING PLATES**			
8.1	Rating plates to SANS 1029	*Yes/No*	Yes	Yes
9	**OVERALL DIMENSIONS**			
9.1	Length	*mm*		
9.2	Width	*mm*		
9.3	Height	*mm*		
9.4	Total mass	*kg*		
10	**FINISHING**			
10.1	Colour of Minisub to SANS 1091		C12 Avocado Green	C12 Avocado Green
10.2	Paintwork finish		Matt	Matt
11	**DATA SHEET**	*Yes/No*	Yes	To be confirmed

[redacted]

MV CABLES AND CABLE SYSTEMS

[redacted]

E.2 MV CABLES AND CABLE SYSTEMS

Item no.	Description	Units	Specified	Offered
E.2 MV CABLES AND CABLE SYSTEMS				
1	**MEDIUM VOLTAGE CABLES**			
1.1	Manufacturer			Helukabel or similar
1.2	Country of Origin			Germany
1.3	Operating Voltage	*kV*	11	11kV
1.4	Number of Cores	*No*	3	2
1.5	Size	*mm²*	Various	Various
1.6	Conductor Type	*Cu/Al*	Cu	Cu
1.7	Insulation	*PILC/ XLPE*	PILC	XLPE
1.8	Armouring		DSTA for PILC	As per specification
1.9	Serving		PVC	PVC
1.10	Full Load Current	*A*		TBC
1.11	Earth Fault Current	*A*		TBC
1.12	Bear SANS Mark	*Yes/No*	Yes	SANS and/or IEC
2	**MEDIUM VOLTAGE CABLE TERMINATION KIT**			
2.1	Manufacturer			Helukabel or Similar
2.2	Country of Origin			Germany
2.3	Operating Voltage	*kV*	11	11kV
2.4	Size	*mm²*	95, 185	95mm² & 185mm²
2.5	Cable Conductors	*Cu/Al*	Cu	Cu
2.6	Type of Lugs		Shear-off	Torque Sheer
2.7	Full Earth Kit required	*Yes/No*	Yes	Yes
2.8	Heat Shrink Type required	*Yes/No*	Yes	Yes
2.9	Complete Kit by one Manufacturer	*Yes/No*	Yes	Yes
2.10	Type Test Certificate	*Yes/No*	Yes	Yes
2.11	Bear SANS Mark	*Yes/No*		SANS and/or IEC
3	**MEDIUM VOLTAGE CABLE JOINT KIT**			
3.1	Manufacturer			Isotech Systems
3.2	Country of Origin			RSA
3.3	Operating Voltage	*kV*	11	**11kV**
3.4	Size	*mm²*	95, 185	95mm² & 185mm²
3.5	Cable Conductors	*Cu/Al*	Cu	**Cu**
3.6	Type of Ferrules		Shear-off	**Shear off**
3.7	Full Earth Kit required	*Yes/No*	Yes	Yes
3.8	Type required (Heatshrink / Cast Iron)		Heatshrink	Heatshrink

[redacted]

Item no.	Description	Units	Specified	Offered
E.2 MV CABLES AND CABLE SYSTEMS				
3.9	Complete Kit by one Manufacturer	*Yes/No*	Yes	Yes
3.10	Type Test Certificate	*Yes/No*	Yes	**Yes**
3.11	Bear SANS Mark	*Yes/No*	Yes	SANS and/or IEC
4	**INSTALLATION**			
4.1	Depth	*mm (to cable centre)*	1000	As per specification
4.2	Outdoor Cable Markers	*Yes/No*	Yes	Yes
5	**DATA SHEET**	*Yes/No*	Yes	Yes

[redacted]

LV CABLE SYSTEMS FOR MOTOR AND EQUIPMENT

E.3 LV CABLE SYSTEMS FOR MOTOR AND EQUIPMENT

Item no.	Description	Units	Specified	Offered
E.3 LV CABLE SYSTEMS FOR MOTOR AND EQUIPMENT				
1	**LOW VOLTAGE CABLES**			
1.1	Manufacturer			Helukable or Similar
1.2	Operating Voltage	*V*	600/1000	600V/1000V
1.3	Number of Cores	*No*	See Project Specs and BOQ	As per specifications
1.4	Size	*mm²*		As per specifications
1.5	Conductor Type	*Cu/Al*		As per specifications
1.6	Cable Type			As per specifications
1.7	Full Load Current	*A*		As per specifications
1.8	Armouring	*Yes/No*	Yes, SWA or AWA	SWA
			for single cores	
1.9	Depth of installation	*mm (to*	800	As per specifications
		cable centre)		
1.10	Outdoor Cable Markers	*Yes/No*	No	No
2	**ENCAPSULATED BUSBAR SYSTEM FOR MBR MCC**			
2.1	Manufacturer			Busbar Installations
2.2	IP rating		IP68	IP68
2.3	Conductive material		Cu	Cu
3	**CABLE LADDER**			
3.1	Manufacturer			OBO Bettermann Holding
3.2	Type			As per specification
3.3	Material		Stainless Steel 316	Stainless Steel 316
3.4	Duty	Heavy /		
		Medium	Heavy	Heavy duty
3.5	Application		LV cables	As per specification
4	**DATA SHEET**	*Yes/No*	Yes	YES

[redacted]

GENERATOR SET

E.4 GENERATOR SET

Item no.	Description	Units	Specified	Offered
E.4 GENERATOR SET				
1	**GENSET RATINGS**	-	-	
-	-	-	-	
1.1	Typical generator power output (COP)	*kVA*		
1.2	Typical generator power output (PRP)	*kVA*	2000	2000
1.3	Typical generator power output (LTP)	*kVA*		2200
2	**ENGINE**			-
			-	-
2.1	Manufacturer			Perkins
2.2	Type			4016
2.3	Model			4016TAG2A
3	**FUEL TANK**	-	-	
-	-	-	-	
3.1	Fuel lines/pipes – type		Black Steel	Hydraulic
3.2	Fuel tank material			Mild steel
3.3	Fuel tank filter type			OEM
3.4	Fuel tank size:			
3.4.1	*Litres*	*ℓ*		As per specification
3.4.2	*Height*	*mm*		As per specification
3.4.3	*Length*	*mm*		As per specification
3.4.4	*Width*	*mm*		As per specification
3.5	Hand fuel pump	*Yes/No*	Yes	No
4	**EXHAUST TYPE**	-	-	
4.1	Type of exhaust system		Industrial	industrial
4.2	Exhaust emission tier level		Tier 2	Not regulated
4.3	Material for lagging		Stainless Steel 316	316L
5	**CANOPY**	-	-	
5.1	Type of air vents – inlet air flow	*m^3/hr*		N/A
5.2	Type of air vents – outlet air flow	*m^3/hr*		N/A
5.3	Canopy – type of material / steel			N/A
5.4	Size of canopy:			N/A
5.4.1	*Height*	*mm*		N/A
5.4.2	*Length*	*mm*		N/A
5.4.3	*Width*	*mm*		N/A

[redacted]

Item no.	Description	Units	Specified	Offered
E.4 GENERATOR SET				
6	ALTERNATOR	-	-	
6.1	Make			-
6.2	Model			stamford
6.3	Prime power	*kVA*		2000
6.4	Standby power	*kVA*		2200
6.5	Phase	*1 or 3*	3	3
6.6	Supply Voltage	*V*	400	400V
6.7	Supply Frequency	*Hz*	50	50Hz
7	CONTROL PANEL	-	-	
7.1	Automatic / Manual		Automatic	Automatic
7.2	Remote / Local		Local	Local
7.3	Type of controller		DSE8920	8920
7.4	Make of controller		Deap Sea	Deep sea
7.5	Model of controller			
7.6	Remote monitoring	*Yes / No*	Yes, interface	yes
			with PLC	P890
7.7	Automatic Mains Sensing incorporated	*Yes / No*	Yes	yes
7.8	Change over switch incorporated		No, in Assemblies	No Separate
8	DUMMY LOADS			
8.1	Dummy loads required	*Yes / No*	Yes, to keep loads	No
			at minimum 50%	
8.2	Size of Dummy Load	*% of Generator*		N/A
		Capacity		N/A
9	LOUVRES			
9.1	Intake louvres size according to			As per specification
	manufacturers requirements	*mm X mm*		
9.2	Outlet louvres size according to			As per specification
	manufacturers requirements	*mm X mm*		
9.3	Type		Double Acoustic	Double Acoustic
9.4	Material of Construction		Aluminium	Al
9.5	Sound level at 7m		70dBA	70dBA
10	GENERAL	-	-	
10.1	Datasheet from manufacturer			yes

Item no.	Description	Units	Specified	Offered
E.4 GENERATOR SET				
	included			
	with tender	*Yes/No*	Yes	
11	**DATA SHEET**	*Yes/No*	Yes	yes

[redacted]

LV SWITCHGEAR AND CONTROL GEAR ASSEMBLIES - MCCs AND DISTRIBUTION BOARDS

[redacted]

E.5 LV SWITCHGEAR AND CONTROL GEAR ASSEMBLIES - MCCs and Distribution Boards

Item no.	Description	Units	Preferred	Specified	Offered
E.5 LV SWITCHGEAR AND CONTROL GEAR ASSEMBLIES - MCCs and Distribution Boards					
1	ASSEMBLY CONSTRUCTION	-	-	-	-
1.1	Manufacturer				Sabelco
1.2	Access	*Back/Front/*			Yes
		Side		Front & Rear	
1.3	Doors / Removable Panels			Doors	Yes
1.4	Hinges	*Yes / No*		Yes	Yes
1.5	Hinges - Type		Perano		Standard
1.6	Hinges - Material			Stainless Steel 316	Yes
1.7	Stays at 95° opening	*Yes / No*	Yes		Standard
1.8	Door Locks	*Yes / No*			
1.9	Door Locks - Type				
1.10	Door Locks - Material			Stainless Steel 316	Yes
1.11	Door Interlock per compartment	*Yes / No*		Yes	Yes
1.12	Cable Entry	*Top /*			
		Bottom		Bottom	Yes
1.13	Size of Panel:				
1.13.1	*Height*	*mm*		Max 2100	Yes
1.13.2	*Length*	*mm*			
1.13.3	*Width*	*mm*			
1.14	Spare Space Required	*%*		>=10	Yes
1.15	Estimated Weight	*kg*			
1.16	Type Tested with Stated Deviations to				
	SANS 1973-1 & 3	*Yes/No*		Yes	Yes
1.17	Deviations from original Type Tested Assembly:	*Specify*			
1.18	Type Test Certificate Required	*Yes / No*		Yes	Yes
1.19	Motor Starter Circuits	*Withdrawable /*			
		Fixed	Fixed	Fixed	Yes
1.20	Ingress Protection (doors closed)	*IP*	42	55	Yes
1.21	Form of Internal Separation			3b/4a	Yes
1.22	Method of Installation: *Floor standing / Wall*				
	mounted / Flush / Pedastal Mounted / Kiosk /				
	Architrave / Surface Mounted			Floor Standing	Yes
1.23	Material of Construction: 2*mm Mild Steel /*				

[redacted]

Item no.	Description	Units	Preferred	Specified	Offered
E.5 LV SWITCHGEAR AND CONTROL GEAR ASSEMBLIES - MCCs and Distribution Boards					
	2.0mm Mild Steel / Electro Galvanized /				
	Stainless Steel / 3CR12 / Fibre Glass			3CR12	Yes
1.24	Epoxy Powder Coated	*Yes / No*		Yes	Yes
1.25	Incomer Section Required	*Yes / No*		Yes	Yes
1.26	Essential Section Required	*Yes / No*		No	No
1.27	UPS Section Required	*Yes / No*		No	No
1.28	Colour of Assembly:				
1.28.1	*Doors*			electric orange	Yes
1.28.2	*Normal Section*			electric orange	Yes
1.28.3	*Essential Section*			-	
1.28.4	*UPS Section*			-	
2	**COMPONENTS**				
2.1	**Busbars**				
2.1.1	Material			Copper	Yes
2.1.2	Tinned	*Yes / No*		Yes	Yes
2.1.3	Current Density	*A/mm²*		As type test require	Yes
2.2	**Air Circuit Breakers**	-	-	-	
2.2.1	Manufacturer		Schneider		Siemens
2.2.2	Type			Withdrawable	Yes
2.2.3	Model				3WL
2.2.4	Rated Current	*A*		See Project Specs	As per Specs
2.2.5	Service short-circuit breaking capacity (Ics)	*kA*		See Project Specs	As per Specs
2.2.6	Overload release			Electronic	As per Specs
2.2.7	Short-circuit release			Electronic	As per Specs
2.2.8	Motorised	*Yes/No*		Yes	Yes
2.3	**Moulded Case Circuit Breakers**	-	-	-	
2.3.1	Manufacturer		Schneider		Siemens
2.3.2	Type			Fixed	Yes
2.3.3	Model				3RV23
2.3.4	Rated Current	*A*		See Project Specs	As per Specs
2.3.5	Service short-circuit breaking capacity (Ics)	*kA*			As per Specs

[redacted]

Item no.	Description	Units	Preferred	Specified	Offered
E.5 LV SWITCHGEAR AND CONTROL GEAR ASSEMBLIES - MCCs and Distribution Boards					
2.3.6	Overload release		Thermo-		
			magnetic	Thermal/ electronic	As per Specs
2.3.7	Short-circuit release			Magnetic/ electronic	As per Specs
2.4	**Miniature Circuit Breakers**	-	-	-	
2.4.1	Manufacturer		Schneider		Siemens
2.4.2	Type				
2.4.3	Model				5SL4
2.4.4	Rated Current	*A*	Various		As per Specs
2.4.5	Service short-circuit breaking capacity (Ics)	*kA*			As per Specs
2.4.6	Tripping Curve			See Project Specs	As per Specs
2.5	**Fuse-Switch-Disconnector**	-	-	-	
2.5.1	Manufacturer		Schneider		Siemens
2.5.2	Model				Sentron
2.6	**High Rupture Capacity (HRC) Fuse Links**	-	-	-	
2.6.1	Manufacturer				As per Specs
2.6.2	Model				As per Specs
2.7	**Contactors**	-	-	-	
2.7.1	Manufacturer		Scheinder		Siemens
2.7.2	Model				As per Specs
2.7.3	Contactor rating			See Project Specs	As per Specs
2.7.4	Coordination			Type 2	As per Specs
2.8	**Overload Relays**	-	-	-	
		-			
2.8.1	Manufacturer		Schneider		Siemens
2.8.2	Type				
2.8.3	Model				
2.8.4	Rated Current	*A*	Various		As per Specs
2.8.5	Resetable from front of Panel	*Yes / No*		Yes	As per Specs
2.9	**Miniature Relays**	-	-	-	

[redacted]

Item no.	Description	Units	Preferred	Specified	Offered
E.5 LV SWITCHGEAR AND CONTROL GEAR ASSEMBLIES - MCCs and Distribution Boards					
2.9.1	Manufacturer		Scheinder		Siemens
2.9.2	Model				LZS
2.10	**Pushbutton and Selector Switches**	-	-	-	
2.10.1	Manufacturer				Siemens
2.10.2	Model				3SB61
2.11	**Indicator Lamps**	-	-	-	
2.11.1	Manufacturer				Siemens
2.11.2	Model				3SB62
2.12	**Surge Arrestors**	-	-	-	
2.12.1	Power Circuits - Manufacturer			See Project Specs	DEHN
2.12.2	Power Circuits - Model				As per Specs
2.12.3	Power Circuits - Rating	*kA*			As per Specs
2.12.4	Remote Indication to PLC	*Yes / No*			As per Specs
2.12.5	Control Circuits - Manufacturer				As per Specs
2.12.6	Control Circuits - Model				As per Specs
2.12.7	Remote Indication to PLC	*Yes / No*			As per Specs
3	**POWER FACTOR CORRECTION**	-	-	-	
3.1	Controller				VISHAY
3.1.1	Manufacturer				Electric Systems
3.1.2	Model				As per Specs
3.2	Capacitors				As per Specs
3.2.1	Manufacturer				As per Specs
4	**ACTIVE HARMONIC FILTER (if applicable)**				
4.1	Manufacturer				Merus
4.2	Model				A2
4.3	Type				As per Specs
4.4	Datasheets included with tender	*Yes / No*	**Yes**		Yes
5	**SOFT STARTERS**				

[redacted]

Item no.	Description	Units	Preferred	Specified	Offered
E.5 LV SWITCHGEAR AND CONTROL GEAR ASSEMBLIES - MCCs and Distribution Boards					
5.1	Manufacturer				Siemens
5.2	Model				3RW55
5.3	Integrated bypass contactor	*Yes / No*		Yes	As per Specs
6	FIELD E-STOP/START LOCAL CONTROL STATIONS		-	-	
6.1	Method of Installation: Wall mounted / Flush /				As per Specs
	Pedestal Mounted			Pedestal	Yes
6.2	Manufacturer				As per Specs
6.3	Model				As per Specs
6.4	Height above final ground level	*mm*		See Project Specs	As per Specs
6.5	Keyswitch Required	*Yes / No*		No	No
6.6	Canopy required	*Yes / No*		Yes	Yes
6.7	Material			316 S/S	Yes
6.8	IP rating	*IP*		65	Yes
7	AIR CONDITIONING MCC'S ROOM	-	-	-	
7.1	Manufacturer				As per Specs
7.2	Model				
7.3	Rating				
7.4	Type				
7.5	Number of units				
9	DATA SHEET	*Yes/No*	Yes		

[redacted]

LV SWITCHGEAR AND CONTROL GEAR ASSEMBLIES - LOCAL CONTROL PANELS

[redacted]

E.6 LV SWITCHGEAR AND CONTROLGEAR ASSEMBLIES - LOCAL CONTROL PANELS

Item no.	Description	Units	Specified	Offered
E.6 LV SWITCHGEAR AND CONTROLGEAR ASSEMBLIES - LOCAL CONTROL PANELS				
1	GENERAL			
	-			
1.1	Distribution Board Manufacturer			Devcotech
1.2	Control Voltage	230V/ 24VDC		24Vdc
	-			
2	CONSTRUCTION REQUIREMENTS	-	-	-
2.1	Steel Work Manufacturer			Sabelco
2.2	Form of Internal Separation		1	As per Specs
2.3	Material of Construction		Stainless Steel 316	As per Specs
2.4	Ingress Protection (doors closed)	*IP*	55	As per Specs
2.5	Method of Installation		Flush	As per Specs
2.6	Epoxy Powder Coated	*Yes / No*	Yes	Yes
2.7	Colour of Assembly			
2.8	Size of Panel	*HxWxD*		
2.9	Spare Space Required	*%*	30	As per Specs
2.10	Access	*Back / Front /*		
		Side	Front	As per Specs
2.11	Cable Entry	*Top / Bottom*	Bottom / Top	As per Specs
2.12	Doors / Removable Panels		Doors	As per Specs
2.13	Door Locks	*Yes / No*		
2.14	Door Locks - Type			
2.15	Door Locks - Material		Stainless Steel 316	As per Specs
2.16	Incomer Section Required	*Yes / No*	Yes	As per Specs
2.17	Corrosion protection		S6 solder	As per Specs
			tinned	As per Specs
2.18	Gland Plates		Not painted	As per Specs
3	ELECTRICAL COMPONENTS			
3.1	Moulded Case Circuit Breakers	-	-	
3.1.1	Manufacturer			Siemens
3.1.2	Type		Fixed	Yes
3.1.3	Model			3RV23
3.1.4	Rated Current	*A*	See Project Specs	As per Specs
3.1.5	Service short-circuit breaking capacity (Ics)	*kA*	See Project Specs	As per Specs
3.1.6	Overload release		Thermal/ electronic	As per Specs

[redacted]

Item no.	Description	Units	Specified	Offered
E.6 LV SWITCHGEAR AND CONTROLGEAR ASSEMBLIES - LOCAL CONTROL PANELS				
3.1.7	Short-circuit release		Magnetic/ electronic	As per Specs
3.2	**Miniature Circuit Breakers**	-	-	
3.2.1	Manufacturer			Siemens
3.2.2	Type			
3.2.3	Model			5SL4
3.2.4	Rated Current	*A*		As per Specs
3.2.5	Service short-circuit breaking capacity (Ics)	*kA*		As per Specs
3.2.6	Tripping Curve			
3.3	**Fuse-Switch-Disconnector**	-	-	
3.3.1	Manufacturer			Siemens
3.3.2	Model			Sentron
3.4	**High Rupture Capacity (HRC) Fuse Links**	-	-	
3.4.1	Manufacturer			As per Specs
3.4.2	Model			As per Specs
3.5	**Surge Arrestors**	-	-	
3.5.1	Power Circuits - Manufacturer			Dehn
3.5.2	Power Circuits - Model			As per Specs
3.5.3	Power Circuits - Rating	*kA*		As per Specs
3.5.4	Remote Indication	*Yes / No*		As per Specs
3.5.5	Control Circuits - Manufacturer			As per Specs
3.5.6	Control Circuits - Model			As per Specs
3.5.7	Remote Indication	*Yes / No*		As per Specs
3.6	**Contactors**	-	-	
3.6.1	Manufacturer			Siemens
3.6.2	Model			
3.6.3	Contactor rating		AC3	As per Specs
3.6.4	Coordination		Type 2	As per Specs
3.7	**Overload Relays**	-	-	
3.7.1	Manufacturer			Siemens
3.7.2	Type			
3.7.3	Model			
3.7.4	Rated Current	*A*		As per Specs
3.7.5	Resetable from front of Panel	*Yes / No*	Yes	As per Specs

[redacted]

Item no.	Description	Units	Specified	Offered
E.6 LV SWITCHGEAR AND CONTROLGEAR ASSEMBLIES - LOCAL CONTROL PANELS				
3.8	**Miniature Relays**	-	-	
3.8.1	Manufacturer			As per Specs
3.8.2	Model			LZS
3.9	**Control switches and pushbuttons**	-	-	
3.9.1	Manufacturer			Siemens
3.9.2	Model			3SB61
3.10	**Indicating Lamps**	-	-	
3.10.1	Manufacturer			Siemens
3.10.2	Model			3SB62
3.10.3	Type		LED	As per Specs
3.11	**Control-Circuit and auxiliary supply transformer**			
3.11.1	Manufacturer			As per Specs
4	**FIELD E-STOP/START LOCAL CONTROL STATIONS**		-	
4.1	Method of Installation		See Project Specs	Pedestal
4.2	Material of Construction		Stainless Steel 316	As per Specs
4.3	Manufacturer			
4.4	Keyswitch Required	*Yes / No*	No	No
4.5	IP rating	*IP*	65	Yes
5	**DATA SHEET**	*Yes/No*	Yes	

[redacted]

VARIABLE FREQUENCY DRIVES: <100kW

[redacted]

E.7 VARIABLE FREQUENCY DRIVES : <100kW

Item no.	Description	Units	Specified	Offered
E.7 VARIABLE FREQUENCY DRIVES : <100kW				
1	**GENERAL**			
1.1	Manufacturer			*Siemens*
1.2	Model			*G120X*
1.3	Place of manufacture			*Germany*
1.4	Expected life (for spares availability)	*Years*		*10 years*
2	**ELECTRICAL SERVICE CONDITIONS**			
2.1	Normal service conditions varied in Project			
	Specification	*Yes/No*	*No*	*No*
2.2	Unusual electrical service conditions specified	*Yes/No*	*No*	*No*
2.3	Supply network characteristics			
2.3.1	Voltage (nominal)	*V*	400	*400*
2.3.2	Frequency	*Hz*	*50*	*50*
3	**ENVIRONMENTAL SERVICE CONDITIONS**			
3.1	Standard climatic conditions varied in			
	Project Specification	*Yes/No*	*No*	*As per Specs*
3.2	Forced ventilation or air conditioning			
	in VFC room	*FV/AC*	*AC*	*As per Specs*
3.3	Unusual mechanical installation			
	conditions specified	*Yes/No*	*No*	*As per Specs*
3.4	Unusual environmental service			
	conditions specified	*Yes/No*	*No*	*As per Specs*
3.5	Airflow required per VFC	*m³/s*		
3.6	Heat load per VFC	*kW*		
4	**LOAD DETAILS**			
4.1	Type of motor-driven load		*Various*	Pump / Fans
4.2	Load torque characteristic			
4.3	Number of operation quadrants			2 Quadrants Drive
4.4	Dynamic braking required			
4.5	Operating speed range		*As per mechanical*	*As per Specs*
			specification	
5	**CONVERTER TRANSFORMER**			**N/A**
5.1	Type (oil-filled or dry)			
5.2	Number of secondary windings			
5.3	Primary rated voltage	*V*		
5.4	Secondary rated voltage	*V*		

[redacted]

Item no.	Description	Units	Specified	Offered
E.7 VARIABLE FREQUENCY DRIVES : <100kW				
5.5	Rated power	kVA		
5.6	Free-standing (FS) or integral (I) to VFC	FS/I		
5.7	No-load losses	W		
5.8	Load losses	W		
6	CONVERTER CONFIGURATION			
6.1	Form of converter (package/chassis/			
	cabinet unit)		Package	As per Specs
6.2	Rectifier type: diode- or active front			6 Pulse Rectifier Diode
	end (DFE/AFE)		DFE	As per Specs
6.3	Rectifier pulse number		12	6
6.4	Bypass/redundancy arrangement specified	Yes/No	No	No
6.5	Input air circuit-breaker	Yes/No	No	As per Specs
6.6	Input switch-disconnector	Yes/No	No	As per Specs
6.7	Input semi-conductor fuses	Yes/No	Yes	As per Specs
6.8	Input contactor	Yes/No	Yes	As per Specs
6.9	Input earthing switch	Yes/No	No	As per Specs
7	CONVERTER FILTERS			
7.1	Line-side reactor	Yes/No	Yes for >20kW	As per Specs
7.2	Line-side reactor relative short-circuit voltage	%		
7.3	Line harmonic filters (LHF)	Yes/No	Yes	As per Specs
7.4	LHF free-standing (FS) or integral to VFC (I)	FS/I		
7.5	Motor-side reactor	Yes/No	Yes	Yes where necessary
7.6	Motor-side dv/dt filter	Yes/No	Yes	As per Specs
7.7	Motor-side sine filter	Yes/No		As per Specs
7.8	Motor-side common-mode filter	Yes/No	Yes	As per Specs
8	CONVERTER PROTECTION			
8.1	Overcurrent and overload	Yes/No	Yes	As per Specs
8.2	Undervoltage and overvoltage	Yes/No	Yes	As per Specs
8.3	Phase loss and unbalance	Yes/No	Yes	As per Specs
8.4	Earth fault	Yes/No	Yes	As per Specs
8.5	Over-temperature	Yes/No	Yes	As per Specs
8.6	DC link overvoltage and overcurrent	Yes/No	Yes	As per Specs
8.7	Over-temperature of DC link reactor			As per Specs
	(if installed)	Yes/No	Yes	As per Specs
9	MOTOR PROTECTION			NA

[redacted]

Item no.	Description	Units	Specified	Offered
E.7 VARIABLE FREQUENCY DRIVES : <100kW				
9.1	Short-circuit	*Yes/No*	*Yes*	
9.2	Start(max starting time)/Stall	*Yes/No*	*Yes*	
9.3	Earth fault	*Yes/No*	*Yes*	
9.4	Overload	*Yes/No*	*Yes*	
9.5	Number of starts	*Yes/No*	*Yes*	
9.6	Loss of phase	*Yes/No*	*Yes*	
9.7	Unbalance	*Yes/No*	*Yes*	
9.8	Loss of load/undercurrent	*Yes/No*	*Yes*	
9.9	Thermal by means of motor thermistors/RTDs	*Yes/No*	*Yes*	
10	**CONVERTER RATINGS**			
10.1	Rated system voltage	*V*	*400*	400
10.2	Line-side rated current	*A*		Range 2,3 to 734A
10.3	input total power factor	*pu*		Range 0.70 ..... 0.93
10.4	Line-side displacement power factor	*pu*		
10.5	Rated continuous output current	*A*		
10.6	Overload capability and time	*A & s*		110% base load current IL for 60 s in a 300 s cycle time
10.7	Efficiency of complete drive module	*%*		
10.8	Total losses of complete drive module	*W*		0.043kW - 8.8kW
11	**CONTROL PERFORMANCE REQUIREMENTS**			
11.1	Open loop speed control	*Yes/No*	*Yes*	*As per Specs*
11.2	Steady state deviation band	*%*	*±1 to ±2*	*As per Specs*
11.3	Closed loop speed control with			
	indirect feedback	*Yes/No*	*No*	*As per Specs*
11.4	Steady state deviation band	*%*		
11.5	Closed loop speed control with direct feedback	*Yes/No*	*No*	*As per Specs*
11.6	Steady state deviation band	*%*		
12	**PROCESS CONTROL INTERFACE**			
12.1	Compliant with SANS 61800-7	*No/Yes*	*Yes*	*As per Specs*
12.2	Communications Interface Quantity	*No.*		
12.3	Communications Interface Type(s)			
	and Connector(s)	*No.*		
12.4	Communications Interface Protocol(s)	*No.*		
12.5	Communications Interface Power Drive	*Process /*		
	System Profile	*Drive / Motion*		

[redacted]

Item no.	Description	Units	Specified	Offered
E.7 VARIABLE FREQUENCY DRIVES : <100kW				
		Control	*Process*	*As per Specs*
12.6	Communications Interface Message Structure		*Yes*	*As per Specs*
	to SANS 61800-7			
13	SPECIAL CONTROL FEATURES			
13.1	Automatic restart facility	*Yes/No*	*Yes*	*As per Specs*
13.2	Flying restart facility	*Yes/No*	*Yes*	*As per Specs*
13.3	Adjustable ramp times			
	(acceleration/deceleration)	*Yes/No*	*Yes*	*As per Specs*
13.4	Dip ride-through using load kinetic energy	*Yes/No*	*Yes*	*As per Specs*
14	TESTING			
	Where indicated the following tests shall be			*Stikland*
	carried out in addition to the specified			
	mandatory tests.			
14.1	Special Tests for Converter			
14.1.1	Overcurrent capability	*Yes/No*	*No*	*No*
14.1.2	Measurement of ripple voltage and current	*Yes/No*	*No*	*No*
14.1.3	Power factor measurement	*Yes/No*	*No*	*No*
14.1.4	Measurement of inherent voltage regulation	*Yes/No*	*No*	*No*
14.1.5	Audible noise	*Yes/No*	*No*	*No*
14.1.6	Additional tests	*Yes/No*	*No*	*No*
14.2	Drive System Site Tests			
14.2.1	Load duty	*Yes/No*	*No*	*No*
14.2.2	Allowable full load current versus speed	*Yes/No*	*No*	*No*
14.2.3	Temperature rise	*Yes/No*	*No*	*No*
14.2.4	Efficiency	*Yes/No*	*No*	*No*
14.2.5	Current sharing	*Yes/No*	*No*	*No*
14.2.6	Voltage division	*Yes/No*	*No*	*No*
14.2.7	Shaft current - bearing insulation	*Yes/No*	*No*	*No*
14.2.8	Audible noise	*Yes/No*	*No*	*No*
14.2.9	Motor vibration	*Yes/No*	*No*	*No*
14.2.10	EMC tests	*Yes/No*	*No*	*No*
14.2.11	Harmonic content of CDM output	*Yes/No*	*No*	*No*
14.2.12	Current limit and current loop	*Yes/No*	*No*	*No*
14.2.13	Speed loop	*Yes/No*	*No*	*No*
14.2.14	Torque pulsation	*Yes/No*	*No*	*No*
14.2.15	Automatic restart	*Yes/No*	*No*	*No*
14.2.16	System full load test	*Yes/No*	*No*	*No*
14.2.17	Overall drive system efficiency	*Yes/No*	*No*	*No*
14.3	Witnessed factory acceptance test	*Yes/No*	*Yes*	*No*

[redacted]

VARIABLE FREQUENCY DRIVES: >100kW

[redacted]

E.8 VARIABLE FREQUENCY DRIVES: >100kW

Item no.	Description	Units	Specified	Offered
E.8 VARIABLE FREQUENCY DRIVES: >100kW				
1	**GENERAL**			
1.1	Manufacturer			*Schneider Electric*
1.2	Model			*ATV6000*
1.3	Place of manufacture			*China*
1.4	Expected life (for spares availability)	*Years*		*As per spec*
2	**ELECTRICAL SERVICE CONDITIONS**			
2.1	Normal service conditions varied in			
	Project Specification	*Yes/No*	*No*	*No*
2.2	Unusual electrical service conditions specified	*Yes/No*	*No*	*No*
2.3	Supply network characteristics			
2.3.1	Voltage (nominal)	*V*	11000	*11000*
2.3.2	Frequency	*Hz*	*50*	*50*
3	**ENVIRONMENTAL SERVICE CONDITIONS**			
3.1	Standard climatic conditions varied in			TBC
	Project Specification		*No*	No
3.2	Forced ventilation or air conditioning			TBC
	in VFC room		*AC*	AC
3.3	Unusual mechanical installation			TBC
	conditions specified		*No*	No
3.4	Unusual environmental service			TBC
	conditions specified		*No*	No
3.5	Airflow required per VFC	*m³/s*		TBC
4	**LOAD DETAILS**			
4.1	Type of motor-driven load		*Blower*	Blower
4.2	Load torque characteristic			TBC
4.3	Number of operation quadrants		*1*	1
4.4	Dynamic braking required		*No*	No
4.5	Operating speed range		*As per mechanical*	As per spec
			specification	
5	**CONVERTER TRANSFORMER**			**N/A**
5.1	Type (oil-filled or dry)			
5.2	Number of secondary windings			
5.3	Primary rated voltage	*V*		
5.4	Secondary rated voltage	*V*		

[redacted]

Item no.	Description	Units	Specified	Offered
E.8 VARIABLE FREQUENCY DRIVES: >100kW				
5.5	Rated power	*kVA*		640kW
5.6	Free-standing (FS) or integral (I) to VFC	*FS/I*		FS
5.7	No-load losses	*W*		TBC
5.8	Load losses	*W*		TBC
6	**CONVERTER CONFIGURATION**			
6.1	Form of converter (package/chassis/			TBC
	cabinet unit)		*Cabinet Unit*	**Cabinet unit**
6.2	Rectifier type: diode- or active front end			**TBC**
	(DFE/AFE)			**TBC**
6.3	Rectifier pulse number		*12*	**12**
6.4	Bypass/redundancy arrangement specified	*Yes/No*	*Yes*	*Yes*
6.5	Input air circuit-breaker	*Yes/No*	*Yes*	*Yes*
6.6	Input switch-disconnector	*Yes/No*	*Yes*	*Yes*
6.7	Input semi-conductor fuses	*Yes/No*	*Yes*	*Yes*
6.8	Input contactor	*Yes/No*	*Yes*	*Yes*
6.9	Input earthing switch	*Yes/No*	*Yes*	*Yes*
7	**CONVERTER FILTERS**			
7.1	Line-side reactor	*Yes/No*	Yes	*Yes*
7.2	Line-side reactor relative short-circuit voltage	*%*		*TBC*
7.3	Line harmonic filters (LHF)	*Yes/No*	Yes	*Yes*
7.4	LHF free-standing (FS) or integral to VFC (I)	*FS/I*		
7.5	Motor-side reactor	*Yes/No*	Yes	*Yes*
7.6	Motor-side dv/dt filter	*Yes/No*	Yes	*Yes*
7.7	Motor-side sine filter	*Yes/No*	Yes	*Yes*
7.8	Motor-side common-mode filter	*Yes/No*	Yes	*Yes*
8	**CONVERTER PROTECTION**			
8.1	Overcurrent and overload	*Yes/No*	*Yes*	*Yes*
8.2	Undervoltage and overvoltage	*Yes/No*	*Yes*	*Yes*
8.3	Phase loss and unbalance	*Yes/No*	*Yes*	*Yes*
8.4	Earth fault	*Yes/No*	*Yes*	*Yes*
8.5	Over-temperature	*Yes/No*	*Yes*	*Yes*
8.6	DC link overvoltage and overcurrent	*Yes/No*	*Yes*	*Yes*
8.7	Over-temperature of DC link reactor (if			
	installed)	*Yes/No*	*Yes*	*Yes*
9	**MOTOR PROTECTION**			**Indicate if provided by VFC or MPR**

[redacted]

Item no.	Description	Units	Specified	Offered
E.8 VARIABLE FREQUENCY DRIVES: >100kW				
9.1	Short-circuit	*Yes/No*	*Yes*	*Yes*
9.2	Start(max starting time)/Stall	*Yes/No*	*Yes*	*Yes*
9.3	Earth fault	*Yes/No*	*Yes*	*Yes*
9.4	Overload	*Yes/No*	*Yes*	*Yes*
9.5	Number of starts	*Yes/No*	*Yes*	*Yes*
9.6	Loss of phase	*Yes/No*	*Yes*	*Yes*
9.7	Unbalance	*Yes/No*	*Yes*	*Yes*
9.8	Loss of load/undercurrent	*Yes/No*	*Yes*	*Yes*
9.9	Thermal by means of motor thermistors/RTDs	*Yes/No*	*Yes*	*Yes*
10	**CONVERTER RATINGS**			
10.1	Rated system voltage	*V*	*11000*	**11000**
10.2	Line-side rated current	*A*		**TBC**
10.3	Input total power factor	*pu*		**TBC**
10.4	Line-side displacement power factor	*pu*		**TBC**
10.5	Rated continuous output current	*A*		**TBC**
10.6	Overload capability and time	*A & s*		**TBC**
10.7	Efficiency of complete drive module	*%*		**TBC**
10.8	Total losses of complete drive module	*W*		**TBC**
11	**CONTROL PERFORMANCE REQUIREMENTS**			
11.1	Open loop speed control	*Yes/No*	*Yes*	*Yes*
11.2	Steady state deviation band	*%*	*±1 to ±2*	*±1 to ±2*
11.3	Closed loop speed control with indirect feedback	*Yes/No*	*No*	No
11.4	Steady state deviation band	*%*		TBC
11.5	Closed loop speed control with direct feedback	*Yes/No*	*No*	No
11.6	Steady state deviation band	*%*		TBC
12	**PROCESS CONTROL INTERFACE**			
12.1	Compliant with SANS 61800-7	*Yes/No*	*Yes*	Yes
12.2	Communications Interface Quantity	*No.*		TBC
12.3	Communications Interface Type(s)			TBC
	and Connector(s)	*No.*		TBC
12.4	Communications Interface Protocol(s)	*No.*		TBC
12.5	Communications Interface Power Drive	*Process / Drive/*		
	System Profile	*Motion Control*	*Process*	**Process**
12.6	Communications Interface Message Structure			*TBC*

[redacted]

Item no.	Description	Units	Specified	Offered
E.8 VARIABLE FREQUENCY DRIVES: >100kW				
	to SANS 61800-7		*Yes*	*Yes*
13	**SPECIAL CONTROL FEATURES**			
13.1	Automatic restart facility	*Yes/No*	*Yes*	*Yes*
13.2	Flying restart facility	*Yes/No*	*Yes*	*Yes*
13.3	Adjustable ramp times			
	(acceleration/deceleration)	*Yes/No*	*Yes*	*Yes*
13.4	Dip ride-through using load kinetic energy	*Yes/No*	*Yes*	*Yes*
14	**TESTING**			
	Where indicated the following tests shall be			TBC
	carried out in addition to the specified			TBC
	mandatory tests.			TBC
14.1	Special Tests for Converter			
14.1.1	Overcurrent capability	*Yes/No*	*Yes*	Yes
14.1.2	Measurement of ripple voltage and current	*Yes/No*	*Yes*	Yes
14.1.3	Power factor measurement	*Yes/No*	*Yes*	Yes
14.1.4	Measurement of inherent voltage regulation	*Yes/No*	*Yes*	Yes
14.1.5	Audible noise	*Yes/No*	*Yes*	Yes
14.1.6	Additional tests	*Yes/No*	*Yes*	Yes
14.2	Drive System Site Tests			
14.2.1	Load duty	*Yes/No*	*Yes*	Yes
14.2.2	Allowable full load current versus speed	*Yes/No*	*Yes*	Yes
14.2.3	Temperature rise	*Yes/No*	*Yes*	Yes
14.2.4	Efficiency	*Yes/No*	*Yes*	Yes
14.2.5	Current sharing	*Yes/No*	*Yes*	Yes
14.2.6	Voltage division	*Yes/No*	*Yes*	Yes
14.2.7	Shaft current - bearing insulation	*Yes/No*	*Yes*	Yes
14.2.8	Audible noise	*Yes/No*	*Yes*	Yes
14.2.9	Motor vibration	*Yes/No*	*Yes*	Yes
14.2.10	EMC tests	*Yes/No*	*Yes*	Yes
14.2.11	Harmonic content of CDM output	*Yes/No*	*Yes*	Yes
14.2.12	Current limit and current loop	*Yes/No*	*Yes*	Yes
14.2.13	Speed loop	*Yes/No*	*Yes*	Yes
14.2.14	Torque pulsation	*Yes/No*	*Yes*	Yes
14.2.15	Automatic restart	*Yes/No*	*Yes*	Yes
14.2.16	System full load test	*Yes/No*	*Yes*	Yes
14.2.17	Overall drive system efficiency	*Yes/No*	*Yes*	Yes
14.3	Witnessed factory acceptance test	*Yes/No*	*Yes*	Yes

[redacted]

STREETLIGHTS

[redacted]

E.9 STREETLIGHTS

Item no.	Description	Units	Specified	Offered
E.9 STREETLIGHTS				
1	**STREETLIGHTING KIOSKS**			
1.1	Manufacturer			Womsebenzi
1.2	Type			As per the specification
1.3	Details		See Project Specs	As per the specification
1.4	Surge Arrestors	*Yes/No*	Yes	YES
1.5	SANS compliant	*Yes/No*	Yes	YES
2	**STREETLIGHTS**			
2.1	Manufacturer		Beka or similar and approved	BEKA
2.2	Type			As per the specification
2.3	Power	*W*	53	53W
2.4	Lamp Type	*LED*	LED	LED
2.5	Switching		Day/night switch (photocell)	YES
3	**POLES**			
3.1	Material	*GRP / Steel*	STEEL	STEEL
3.2	Manufacturer /Supplier		BEKA or similar and approved	SECTIONAL POLES
3.3	Height		4m	As per the specification
4	**DATA SHEET**	*Yes/No*	Yes	YES

[redacted]

CONTROL, INSTRUMENTATION AND DATA CABLES

[redacted]

E.10 CONTROL, INSTRUMENTATION AND DATA CABLES

Item no.	Description	Units	Specified	Offered
E.10 CONTROL, INSTRUMENTATION AND DATA CABLES				
1	**CONTROL CABLES**			
1.1	Manufacturer			Helukabel or similar
1.2	Size (minimum size)	mm^2	1.5	1.5
1.3	Rated Voltage	*V*	24VDC/230VAC	24VDC/230VAC
1.4	Number of Cores	*No*	See Project Specs and BOQ	As per spec
1.5	Size	mm^2		As per spec
1.6	Conductor Type	*Cu/Al*		As per spec
1.7	Cable Type			As per spec
1.8	Full Load Current	*A*		As per spec
1.9	Armouring	*Yes/No*	Yes, SWA	Yes, SWA
2	**INSTRUMENTATION CABLES**			
2.1	Manufacturer			Helukabel or similar
2.2	Rated Voltage	*V*	24VDC/230VAC	24VDC/230VAC
2.3	Size (minimum size)	mm^2	1.5	1.5
2.4	Cable Type		Twisted Pair	Twisted Pair
2.5	Screened		Individually and Overall	Individually and Overall
			(Aluminium)	(Aluminium)
2.6	Armouring	*Yes/No*	Yes / SWA	Yes / SWA
3	**WIRE MESH CABLE TRAY**			
3.1	Manufacturer			Obo bettermann holding
3.2	Type			As per spec
3.3	Material		Stainless Steel 316	Stainless Steel 316
			(outdoors) / Galvanised	(outdoors) / Galvanised
			Steel (indoors)	Steel (indoors)
3.4	Duty	Heavy / Medium	Medium	Medium
3.5	Application		Instrumentation Cables	Instrumentation Cables
4	**FIBRE OPTIC**			
4.1	Manufacturer			Helukabel or similar
4.2	Type		Multimode	Multimode
4.3	Armouring	Yes/No	Yes, for all outdoor and	Yes, for all outdoor and exposed cables
			exposed cables	
4.3	Cores	No.	12	12
4.4	Termination Type		ST / Industrial LC	ST / Industrial LC
4.7	Cable Category		min OM 2	min OM 2
4.8	Modal Bandwidth	*MHz.km*	min 500 / 500	min 500 / 500

[redacted]

Item no.	Description	Units	Specified	Offered
E.10 CONTROL, INSTRUMENTATION AND DATA CABLES				
5	**ETHERNET COPPER CABLES**			
5.1	Manufacturer			Helukabel or similar
5.2	Type		CAT6	CAT6
5.3	Armouring	Yes/No	Yes	Yes
5.4	Termination Type		Industrial Earthed RJ45	Industrial Earthed RJ45
6	**FIELDBUS CABLING**			
6.1	Fieldbus Protocol			As per spec
6.2	Manufacturer			Helukabel or similar

[redacted]

PROGRAMMABLE LOGIC CONTROLLER

[redacted]

E.11 PROGRAMMABLE LOGIC CONTROLLER

Item no.	Description	Units	Specified	Offered
E.11 PROGRAMMABLE LOGIC CONTROLLER				
1	**PROGRAMMABLE LOGIC CONTROLLERS**			
1.1	Manufacturer		Schneider	Siemens as per Notice 4
1.2	Model		See Project Specs	S7-1500
1.3	Digital Inputs	No.		16
1.4	Digital Outputs	No.		16
1.5	Analogue Inputs	No.		8
1.6	Analogue Outputs	No.		4
1.7	Fieldbus interface	Yes/No	Yes	Yes
1.8	Fieldbus protocol	E.g. Profibus,		ProfiNet
		Modbus		
1.9	ASI Bus interface	Yes/No	No	No
1.7	Spare I/O	%	20%	As per specs
1.8	Ports			
1.8.1	Ethernet	No.		
1.8.2	Serial	No.		
1.8.3	Other	No.		
1.9	Software			
1.10	All engineering software included with PLC	*Yes / No*	Yes	As per specs
1.11	Annual Software License renewal required	*Yes / No*	No, should be once	
1.12	Programming Language		Unity Pro Platform	TIA portal
1.13	Backplate		Schneider; common X80	Siemens
			I/O module	
1.14	**Datasheets included with tender**	***Yes / No***	Yes	Yes
		-		
2	**PLC PANEL**	-		-
2.1	Enclosure Material		316 S/S inside MCC	3CR12 As per specs
2.2	Enclosure Colour		Orange	Yes
2.3	Enclosure Rating	*IP*	55	Yes
2.4	Enclosure Mounting	*Floor Standing / wall mounted*	Floor Standing	Yes
2.5	Supply and Control Circuit Voltages	*V*	230V AC	24Vdc As per specs
2.6	Wire Colours			
2.7	Termination Preferences		Phoenix screw terminals	As per specs
			(or approved	

[redacted]

Item no.	Description	Units	Specified	Offered
E.11 PROGRAMMABLE LOGIC CONTROLLER				
			equivalent)	
2.8	Glanding preferences		Pratley (or approved	As per specs
			equivalent)	
2.9	Power Supply Unit vendor preferences		Phoenix (or approved	As per specs
			equivalent)	
2.10	Panel light required	*Yes / No*	Yes, LED	Yes
2.11	Socket outlet required	*Yes / No*	Yes	Yes
2.12	Physical spare space	%	30	As per specs
		-		-
3	**HUMAN MACHINE INTERFACE (HMI)**	-		-
3.1	Manufacturer		Schneider	Siemens as per Notice 4
3.2	Model		Magelis	TP Comfort range
3.3	Screen Size	*Inches*	See Project Specs	As per specs
3.1	Screen Type	Colour/		
		Monochrome	See Project Specs	
3.2	Resolution	Pixels	See Project Specs	
3.5	Touch Screen	*Yes / No*	Yes	Yes
3.6	Type of Touch Screen	*Capacitive/*		
		Resistive	See Project Specs	
3.7	Touch Screen grid size		See Project Specs	
3.3	Backlight		See Project Specs	
3.5	Memory (Flash EPROM)		See Project Specs	
3.6	Data Backup (SRAM)		See Project Specs	
3.7	Interfaces Protocol		See Project Specs	
3.8	Interface Port		See Project Specs	
3.9	Sound (for Alarm)		See Project Specs	
3.10	Data Transfer		See Project Specs	
3.11	Printer Port		See Project Specs	
3.12	Enclosure Rating	*IP*	See Project Specs	
3.13	Position of Installation	*Inside Panel /*		
		Flush Fronted /		
		Front Access	Flush Fronted	
3.14	Software			
3.15	**Datasheets included with tender**	***Yes / No***	**Yes**	Yes
4	**UPS**			
4.1	Manufacturer			Riello
4.2	Model			Sentinel Pro ER
4.3	Place of manufacture			

[redacted]

Item no.	Description	Units	Specified	Offered
E.11 PROGRAMMABLE LOGIC CONTROLLER				
4.4	Type		Industrial inline double	Yes
			conversion with full	
			static bypass; floor	
			standing box type	
4.5	Power	W	Load + 30%	As per specs
4.6	Backup Time	min	60	Yes
4.7	Output Voltage	V	230V +-5%	
4.8	Nominal Frequency	Hz	50	
4.9	Output Waveform		Pure sine wave	
4.9	Number of Phases	1 or 3	1	Yes
4.10	Communication		Serial/Ethernet	Yes
4.11	Battery Life	Years		
4.12	Battery Type		Lithium	VRLA AGM maintenance-free lead based; Supercaps
4.13	**Datasheets included with tender**	***Yes / No***	**Yes**	Yes
5	**NETWORK SWITCHES**			
5.1	Manufacturer			As per specs or Ubiquiti
5.2	Model			
5.3	Type		Industrial	Yes
5.4	Ports - RJ45	*No.*		
5.5	Fibre ports - SFP	*No.*	min 4	Yes
5.6	Rack mounted	*Yes/No*	DIN rail box type	As per specs
5.7	Power Supply	*VAC*	230V	As per specs
5.8	Speed	*Mbit*	1000	As per specs
5.9	**Datasheet included with tender**	***Yes / No***	**Yes**	Yes
6	**FIELDBUS GATEWAYS (if applicable)**			N/A
6.1	Manufacturer			
6.2	Model			
6.3	Type			

[redacted]

SCADA

[redacted]

E.12 SCADA

Item no.	Description	Units	Specified	Offered
E.12 SCADA				
1	DESKTOP COMPUTER			
1.1	Manufacturer			As per specs
1.2	Model			-
1.3	CPU			
1.3.1	Type		See Project Specs	
1.3.2	Speed	*GHz*	See Project Specs	
1.4	Memory	*MB*	See Project Specs	
1.5	Hard Drive Storage	*GB*	See Project Specs	
1.6	Operating System		See Project Specs	
1.8	Optical Storage		DVD-RW	
1.9	Network Card		Ethernet 10/100/1000	
1.10	Graphics Card		See Project Specs	
1.11	Keyboard		Yes	
1.12	Mouse		Yes	
1.13	Form Factor			
2	HOT-STANDBY SERVER			
2.1	Manufacturer			As per specs
2.2	Model			-
2.3	CPU			As per specs
2.3.1	Type		See Project Specs	Intel Xeon Silver
2.3.2	Speed	*GHz*	See Project Specs	As per specs
2.4	Memory	*MB*	See Project Specs	As per specs
2.5	Hard Drive Storage	*GB*	See Project Specs	As per specs
2.6	Motherboard		Industrial motherboard,	As per specs
			conformal coating	As per specs
2.7	Hard drives		Raid hot swappable	As per specs
2.8	Power supplies		Hot swappabe	As per specs
2.9	Operating System		See Project Specs	As per specs
2.10	Optical Storage		DVD-RW	As per specs
2.11	Network Card		Ethernet 10/100/1000	As per specs
2.12	Graphics Card		>256MB, Dual output to	As per specs
			drive 2 displays	As per specs
2.13	Keyboard		Yes	As per specs
2.14	Mouse		Yes	As per specs
2.15	KVM Switch			
2.15.1	Class		DDM	As per specs
2.15.2	Manufacturer			

[redacted]

Item no.	Description	Units	Specified	Offered
E.12 SCADA				
2.15.3	Type			
2.15.4	USB	*Yes/No*	Yes	As per specs
2.15.5	HDMI	*Yes/No*	Yes	As per specs
	VGA	*Yes/No*	Yes	As per specs
3	**DISPLAY**			
3.1	Manufacturer			Samsung
3.2	Model			As per specs
3.3	Type		See Project Specs	As per specs
3.4	Size No. 1		See Project Specs	27"
3.5	Size No. 2		See Project Specs	65"
4	**SOFTWARE**			
4.1	SCADA software		Latest Adroit , Smart UI	Yes, As per specs
4.2	Amount of Tags	*No.*		50000
4.3	Clients	*No.*	10	Yes
4.4	Anti-Virus Software		Yes	As per specs
4.5	Additional Reporting and Business			
	Intelligence		Yes	As per specs
4.6	Alarm Management Package		Yes	As per specs
5	**PRINTER**			
5.1	Manufacturer			As per specs
5.2	Model			
5.3	Type		Colour Laser	
5.4	Feeding Paper Size		A3	
6	**UPS**			
6.1	Manufacturer			Riello
6.2	Model			Sentinel Pro ER
6.3	UPS Type		Inline floor standing,	
			dual type	Yes
6.4	Load type		SCADA server, operator	
			computers and screens	
6.5	Nominal input voltage	V	230V ± 15%	
6.6	Number of phases	Num	Single	
6.7	Nominal input frequency	Hz	50 Hz ± 5%	

[redacted]

Item no.	Description	Units	Specified	Offered
E.12 SCADA				
6.8	Place of manufacture			
6.9	Rated output power		To suit load plus 30%	
			(minimum 1 kVA)	
7	Configuration		bypass	
7.1	Power	W		
7.2	Backup Time	min	60	Yes
7.3	Communication		Serial / Ethernet interface	Yes
7.4	Battery life	Years		
7.5	Battery type		Lithium	VRLA AGM maintenance-free lead based; Supercaps
7.6	Output Waveform		Pure sine wave	
7.7	**Datasheets included with tender**	*Yes / No*	**Yes**	Yes
8	**SCADA ETHERNET SWITCH**			
8.1	Manufacturer			As per specs or Ubiquiti
8.2	Model			
8.3	Ports	*No.*		
8.4	Fibre ports	*No.*	min 4	Yes
8.5	Rack mounted	*Yes/No*	19" rack mount,	As per specs
8.6	Power Supply	*VAC*	230V	As per specs
8.7	Speed	*Mbit*	1000	As per specs
8.8	**Datasheet included with tender**	*Yes / No*	**Yes**	Yes
9	**WORK STATION FURNITURE**			
9.1	Manufacturer		similar or equal to Evans /	N/A
			Oculus	
9.2	Model			
9.3	**Sketch/Drawing included with tender**	*Yes / No*	**Yes**	

[redacted]

INSTRUMENTATION

[redacted]

E.13 INSTRUMENTATION

Item no.	Description	Units	Specified	Offered
E.13 INSTRUMENTATION				
1.1	LEVEL METER : ULTRASONIC TYPE			
1.1.1	Manufacturer		Endress Hausser,	Endress + Hauser
			similar or equivalent	
1.1.2	Sensor Model			FMU90
1.1.3	Transmitter Model			FDU91
1.1.4	Number of Relay outputs	*No.*	>=4	3 Relays
1.1.5	Level Range	m	Various	10m Liquids 5m Solids
1.1.6	Accuracy	%	1	Yes
1.1.7	Resolution	%/mm	< 0.1%of span or 2mm	Yes
			(greater of the two)	
1.1.8	Repeatability	%	0.2	Yes
1.1.9	Dead band	%	<0.2	Yes
1.1.10	Ambient temperature fluctuation	%/span/10°C	0.5	Yes
1.1.11	Industrial Ethernet Enabled	*Yes / No*	Yes	No
1.1.12	Surge Protection Required	*Yes / No*	Yes	No
1.1.13	Local Indication Required	*Yes / No*	Yes	Yes
1.1.14	**Additional datasheet from manufacturer**			
	included with tender for each ultrasonic level			
	meter type	***Yes / No***	**Yes**	Yes
1.2	LEVEL METER : HYDROSTATIC TYPE			
1.2.1	Manufacturer		Endress Hausser,	
			similar or equivalent	
1.2.2	Sensor Model			
1.2.3	Transmitter Model			
1.2.4	Number of Relay outputs	*No.*	>=4	
1.2.5	Level Range	m	Various	
1.2.6	Accuracy	%	1	
1.2.7	Resolution	%/mm	< 0.1%of span or 2mm	
			(greater of the two)	
1.2.8	Repeatability	%	0.2	
1.2.9	Dead band	%	<0.2	

[redacted]

Item no.	Description	Units	Specified	Offered
E.13 INSTRUMENTATION				
1.2.10	Ambient temperature fluctuation	%/span/10°C	0.5	
1.2.11	Industrial Ethernet Enabled	*Yes / No*	Yes	
1.2.12	Surge Protection Required	*Yes / No*	Yes	
1.2.13	Local Indication Required	*Yes / No*	Yes	
1.2.14	**Additional datasheet from manufacturer**			
	included with tender for each hydrostatic level			
	meter type	***Yes / No***	**Yes**	
1.3	**SLUDGE BLANKET LEVEL METER**			
			-	
1.3.1	Manufacturer			
1.3.2	Sensor Model			
1.3.3	Transmitter Model			
1.3.4	Number of Relay outputs	*No.*	>=4	
1.3.5	Detection Range	m		
1.3.6	Industrial Ethernet Enabled	*Yes / No*	Yes	
1.3.7	Surge Protection Required	*Yes / No*	Yes	
1.3.8	Local Indication Required	*Yes / No*	Yes	
1.3.9	**Additional datasheet from**			
	manufacturer included with tender	***Yes / No***	**Yes**	
1.4	**CAPACITANCE LEVEL METERS**			-
			-	-
1.4.1	Manufacturer			
1.4.2	Sensor Model			
1.4.3	Transmitter Model			
1.4.4	Number of Relay outputs	*No.*	>=4	
1.4.5	Detection Range	m		
1.4.6	Industrial Ethernet Enabled	*Yes / No*	Yes	
1.4.7	Surge Protection Required	*Yes / No*	Yes	
1.4.8	Local Indication Required	*Yes / No*	Yes	
1.4.9	**Additional datasheet from manufacturer included with tender**	***Yes / No***	**Yes**	
2.1	**ELECTROMAGNETIC FLOW METERS**			-
			-	-

[redacted]

Item no.	Description	Units	Specified	Offered
E.13 INSTRUMENTATION				
2.1.1	Manufacturer			Endress + Hauser
2.1.2	Sensor Model			W400
2.1.3	Transmitter Model			W400
2.1.4	Flange Size	*mm / DN*	As indicated on PID	Various
2.1.5	Flow range	m^3/hr	Various	Various
2.1.6	PN Rating		As indicated on PID	Various
2.1.7	Number of Relay outputs	*No.*		No
2.1.8	Industrial Ethernet Enabled	*Yes / No*	Yes	Yes
2.1.9	Local Indication Required	*Yes / No*	Yes	Yes
2.1.10	Surge Protection Required	*Yes / No*	Yes	Yes
2.1.11	**Additional datasheet from manufacturer**			
	included with tender for each flow meter type	***Yes / No***	**Yes**	Yes
2.2	**INSERTION TYPE ULTRASONIC FLOW METER**			
			-	
2.2.1	Manufacturer			
2.2.2.	Model			
2.2.2	Pipe Diameter	*mm / DN*	See mechanical spec	
2.2.2.	Flow range	m^3/hr		
2.2.3	Process Connection		As indicated on PID	
2.2.2.	Number of Relay outputs	*No.*		
2.2.4	Industrial Ethernet Enabled	*Yes / No*	Yes	
2.2.2.	Local Indication Required	*Yes / No*	Yes	
2.2.5	Surge Protection Required	*Yes / No*	Yes	
2.2.2.	**Additional datasheet from manufacturer**			
	included with tender for each flow meter type	***Yes / No***	**Yes**	
2.3	**AREA VELOCITY FLOWMETER**			
			-	
2.3.1	Manufacturer			
2.3.2	Model			
2.3.3	Flow range	m^3/hr		
2.3.4	Number of Relay outputs	*No.*		
2.3.5	Process Connection		As indicated on PID	
2.3.6	Industrial Ethernet Enabled	*Yes / No*	Yes	
2.3.7	Local Indication Required	*Yes / No*	Yes	

[redacted]

Item no.	Description	Units	Specified	Offered
E.13 INSTRUMENTATION				
2.3.8	Surge Protection Required	*Yes / No*	Yes	
2.3.9	**Additional datasheet from manufacturer**			
	included with tender	***Yes / No***	**Yes**	
2.4	**THERMAL MASS FLOW METER**			
			-	
2.4.1	Manufacturer			Endress + Hauser
2.4.2	Model			"T"Mass I500
2.4.3	Flange Size	*mm / DN*	Insetion type	Yes
2.4.4	Flow Rate	m^3/hr		0-7500kg/hr
2.4.5	Process Connection		As indicated on PID	1" BSP Fitting
2.4.6	Number of Relay outputs	*No.*		No
2.4.7	Industrial Ethernet Enabled	*Yes / No*	Yes	No
2.4.8	Local Indication Required	*Yes / No*	Yes	Yes
2.4.9	Surge Protection Required	*Yes / No*	Yes	No
2.4.10	**Additional datasheet from manufacturer**			
	included with tender	***Yes / No***	**Yes**	Yes
2.5	**CORIOLIS MASS FLOW METER**			
			-	
2.5.1	Manufacturer			
2.5.2	Model			
2.5.3	Flange Size	*mm / DN*		
2.5.4	Flow Rate	m^3/hr		
2.5.5	PN Rating		As indicated on PID	
2.5.6	Number of Relay outputs	*No.*		
2.5.7	Industrial Ethernet Enabled	*Yes / No*	Yes	
2.5.8	Local Indication Required	*Yes / No*	Yes	
2.5.9	Surge Protection Required	*Yes / No*	Yes	
2.5.10	**Additional datasheet from manufacturer**			
	included with tender	***Yes / No***	**Yes**	
2.6	**DIFFERENTIAL PITOT TUBE AIR FLOW METER**			
2.6.1	Manufacturer			
2.6.2	Sensor Model			

[redacted]

Item no.	Description	Units	Specified	Offered
E.13 INSTRUMENTATION				
2.6.3	Transmitter Model			
2.6.4	Number of Relay outputs	*No.*	>=2	
2.6.5	Detection Range	m^3/hr		
2.6.6	Industrial Ethernet Enabled	*Yes / No*	Yes	
2.6.7	Surge Protection Required	*Yes / No*	Yes	
2.6.8	Local Indication Required	*Yes / No*	Yes	
2.6.9	**Additional datasheet from manufacturer**			
	Included with tender	***Yes / No***	**Yes**	
3.1	**PIEZOELECTRIC PRESSURE TRANSMITTERS**			
3.1.1	Manufacturer			Endress + Hauser
3.1.2	Sensor Model			PMC 7/B
3.1.3	Transmitter Model			
3.1.4	Detection Range	kPa		0 - 40 Bar
3.1.5	Number of Relay outputs	*No.*		No
3.1.6	Process Connection		As indicated on the P&ID	½ " BSP
3.1.7	Seal type		Built in stainless steel	Ceramic
3.1.8	Industrial Ethernet Enabled	*Yes / No*	Yes	No
3.1.9	Surge Protection Required	*Yes / No*	Yes	No
3.1.10	Local Indication Required	*Yes / No*	No	Yes
3.1.11	**Additional datasheet from manufacturer**			
	included with tender	***Yes / No***	**Yes**	Yes
3.2	**HYDROSTATIC PRESSURE TRANSMITTERS**			
3.2.1	Manufacturer			
3.2.2	Sensor Model			
3.2.3	Transmitter Model			
3.2.4	Detection Range	kPa		
3.2.5	Number of Relay outputs	*No.*		
3.2.6	Process Connection		As indicated on PID	
3.2.7	Seal type		Built in stainless steel	
3.2.8	Industrial Ethernet Enabled	*Yes / No*	Yes	
3.2.9	Surge Protection Required	*Yes / No*	Yes	
3.2.10	Local Indication Required	*Yes / No*	No	

[redacted]

Item no.	Description	Units	Specified	Offered
E.13 INSTRUMENTATION				
3.2.11	**Additional datasheet from manufacturer**			
	included with tender	*Yes / No*	Yes	
4.1	**DISPLACEMENT/POSITION TRANSMITTERS**			
4.1.1	Manufacturer			
4.1.2	Sensor Model			
4.1.3	Transmitter Model			
4.1.4	Detection Range	mm		
4.1.5	Number of Relay outputs	*No.*		
4.1.6	Process Connection		As indicated on PID	
4.1.7	Industrial Ethernet Enabled	*Yes / No*	Yes	
4.1.8	Surge Protection Required	*Yes / No*	Yes	
4.1.9	Local Indication Required	*Yes / No*	No	
4.1.10	**Additional datasheet from manufacturer**			
	included with tender	***Yes / No***	**Yes**	
4.2	**VIBRATION TRANSMITTERS**			
4.2.1	Manufacturer			IFM
4.2.2	Sensor Model			VSA001
4.2.3	Transmitter Model			VSA001
4.2.4	Detection Range	kHz		0.001 to 6
4.2.5	Number of Relay outputs	*No.*		0
4.2.6	Process Connection		As indicated on PID	As indicated on PID
4.2.7	Industrial Ethernet Enabled	*Yes / No*	Yes	Yes
4.2.8	Surge Protection Required	*Yes / No*	Yes	Yes
4.2.9	Local Indication Required	*Yes / No*	No	No
4.2.10	**Additional datasheet from manufacturer**			
	included with tender	***Yes / No***	**Yes**	Yes
5.1	**DISSOLVED OXYGEN PROBES**			
5.1.1	Manufacturer			Endress + Hauser
5.1.2	Sensor Model			COS61D
5.1.3	Transmitter Model			CM442
5.1.4	Number of Relay outputs	*No.*	>=2	No

[redacted]

Item no.	Description	Units	Specified	Offered
E.13 INSTRUMENTATION				
5.1.5	Detection Range	mg/l		0-20mg/l
5.1.6	Process Connection		As indicated on PID	Yes
5.1.7	Self cleaning	*Yes / No*	Yes	yes
5.1.8	Industrial Ethernet Enabled	*Yes / No*	Yes	Modbus 485
5.1.9	Surge Protection Required	*Yes / No*	Yes	No
5.1.10	Local Indication Required	*Yes / No*	Yes	Yes
5.1.11	**Additional datasheet from manufacturer**			
	included with tender	***Yes / No***	**Yes**	Yes
5.2	**pH PROBES**			
5.2.1	Manufacturer			Endress + Hauser
5.2.2	Sensor Model			CPF81E
5.2.3	Transmitter Model			CM442
5.2.4	Number of Relay outputs	*No.*	>=2	2
5.2.5	Detection Range	pH		0-14 ph
5.2.6	Process Connection		As indicated on PID	Yes
5.2.7	Industrial Ethernet Enabled	*Yes / No*	Yes	No - Modbus 485
5.2.8	Surge Protection Required	*Yes / No*	Yes	No
5.2.9	Local Indication Required	*Yes / No*	Yes	Yes
5.2.10	**Additional datasheet from manufacturer**			
	included with tender	***Yes / No***	**Yes**	Yes
5.3	**TURBIDITY METER**			
5.3.1	Manufacturer			Endress + Hauser
5.3.2	Sensor Model			CU552D
5.3.3	Transmitter Model			CM442
5.3.4	Detection Range	NTU		0-1000
5.3.5	Number of Relay outputs	*No.*		0
5.3.6	Process Connection		As indicated on PID	G1&1/4"
5.3.7	Industrial Ethernet Enabled	*Yes / No*	Yes	Yes
5.3.8	Surge Protection Required	*Yes / No*	Yes	Yes
5.3.9	Local Indication Required	*Yes / No*	Yes	Yes
5.3.10	**Additional datasheet from manufacturer**			
	included with tender	***Yes / No***	**Yes**	Yes
5.4	**TEMPERATURE METER**			

[redacted]

Item no.	Description	Units	Specified	Offered
E.13 INSTRUMENTATION				
5.4.1	Manufacturer			
5.4.2	Sensor Model			
5.4.3	Transmitter Model			
5.4.4	Detection Range	Degrees °C		
5.4.5	Number of Relay outputs	*No.*	>=4	
5.4.6	Process Connection		As indicated on PID	
5.4.7	Industrial Ethernet Enabled	*Yes / No*	Yes	
5.4.8	Surge Protection Required	*Yes / No*	Yes	
5.4.9	Local Indication Required	*Yes / No*	Yes	
5.4.10	**Additional datasheet from manufacturer**			
	included with tender	***Yes / No***	**Yes**	
5.5	**NITRATES (NHOX) SENSOR**			
5.5.1	Manufacturer			Endress + Hauser
5.5.2	Sensor Model			CAS80E
5.5.3	Transmitter Model			CA80AM
5.5.4	Detection Range	mg/L		0-100mg/l
5.5.5	Number of Relay outputs			No
5.5.6	Process Connection		As indicated on PID	Yes
5.5.7	Industrial Ethernet Enabled	*Yes / No*	Yes	Modbus 485
5.5.8	Fieldbus Enabled	*Yes / No*	Yes	Yes
5.5.9	Surge Protection Required	*Yes / No*	Yes	No
5.5.10	Local Indication Required	*Yes / No*	Yes	Yes
5.5.11	**Additional datasheet from manufacturer**			
	included with tender	***Yes / No***	**Yes**	Yes
5.6	**AMMONIUM (NH4) SENSOR**			
5.6.1	Manufacturer			Endress + Hauser
5.6.2	Sensor Model			
5.6.3	Transmitter Model			CA80PH Analyzer
5.6.4	Detection Range	mg/L		0.05 – 2.5mg/l
5.6.5	Number of Relay outputs			No
5.6.6	Process Connection		As indicated on PID	Yes
5.6.7	Industrial Ethernet Enabled	*Yes / No*	Yes	Modbus 485
5.6.8	Fieldbus Enabled	*Yes / No*	Yes	Yes

[redacted]

Item no.	Description	Units	Specified	Offered
E.13 INSTRUMENTATION				
5.6.9	Surge Protection Required	*Yes / No*	Yes	No
5.6.10	Local Indication Required	*Yes / No*	Yes	Yes
5.6.11	**Additional datasheet from manufacturer**			
	included with tender	***Yes / No***	**Yes**	Yes
5.7	**PHOSPHATE SENSOR**			
5.7.1	Manufacturer			Endress + Hauser
5.7.2	Sensor Model			
5.7.3	Transmitter Model			CA80PH Analyzer
5.7.4	Detection Range	mg/L		0.05-2.5mg/l
5.7.5	Number of Relay outputs			No
5.7.6	Process Connection		As indicated on PID	Yes
5.7.7	Industrial Ethernet Enabled	*Yes / No*	Yes	Modbus 485
5.7.8	Fieldbus Enabled	*Yes / No*	Yes	Yes
5.7.9	Surge Protection Required	*Yes / No*	Yes	No
5.7.10	Local Indication Required	*Yes / No*	Yes	Yes
5.7.11	**Additional datasheet from manufacturer**			
	included with tender	***Yes / No***	**Yes**	Yes
6	**LEVEL SWITCHES: FLOAT**			
6.1	Manufacturer			Endress + Hauser
6.2	Model			FT520
0.3	Type			Float
7	**LEVEL SWITCHES: CONDUCTIVE TYPE**			
7.1	Manufacturer			
7.2	Model			
7.3	Type			
8	**TORQUE SWITCHES**			
8.1	Manufacturer			
8.2	Model			
8.3	Type		Inductive Proxy	

[redacted]

Item no.	Description	Units	Specified	Offered
E.13 INSTRUMENTATION				
9	LIMIT SWITCHES			
9.1	Manufacturer			
9.2	Model			
9.3	Type		Inductive Proxy	
10	PRESSURE SWITCHES			
10.1	Manufacturer			
10.2	Model			
10.3	Type		Piezoelectric	
10.4	Seal type		Built in stainless steel	
11	FLOW SWITCHES			
11.1	Manufacturer			Endress + Hauser
11.2	Model			DTT31
11.3	Type		Thermal (Calorific)	Yes
12	SURGE PROTECTION			
12.1	Instrument Power Supply Circuits - Manufacturer			
12.2	Instrument Power Supply Circuits - Model			
12.3	Instrument Signal Loop - Manufacturer			
12.4	Instrument Signal Loop Circuits - Model			
12.5	Instrument Transducer Loop - Manufacturer			
12.6	Instrument Transducer Loop Circuits - Model			
13	INSTRUMENT AND CONTROL CABLE JUNCTION BOXES			
13.1	Manufacturer			
13.2	Material of Construction: 1.6mm Mild Steel / 2.0mm Mild Steel / Electro Galvanized / Stainless Steel / 3CR12 / Fibre Glass		3CR12	

[redacted]

Item no.	Description	Units	Specified	Offered
E.13 INSTRUMENTATION				
13.3	Epoxy Powder Coated	*Yes / No*	Yes	
13.4	Colour		Electric Orange	
13.5	IP Rating (Indoor)	*IP*	65	
13.6	IP Rating (Outdoor)	*IP*	65	
14	**INSTRUMENT TRANSMITTER HOUSINGS**			
14.1	Manufacturer			
14.2	Material of Construction: *1.6mm Mild Steel /*		\	
	2.0mm Mild Steel / Electro Galvanized /			
	Stainless Steel / 3CR12 / Fibre Glass		3CR12	
14.3	Epoxy Powder Coated	*Yes / No*	Yes	
14.4	Colour		Electric Orange	
14.5	IP Rating (Indoor)	*IP*	N/A	
14.6	IP Rating (Outdoor)	*IP*	55	

[redacted]

PART 6 SCOPE OF WORKS

[redacted]

Part C3: Scope of Work

Pages

C3.1 Description of the Works .....

C3.2 Engineering .....

C3.3 Procurement .....

C3.4 Construction .....

C3.5 Management .....

C3.6 Annexes (see Volume 3A & 3B) .....

Status

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

1 Project Specifications/Detailed Specifications
2 Amendments to Standard (and Particulate) Specifications
3 Particular Specifications
4 Standard Specifications
5 Drawings
6 Priced 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. 146Q/2021/22

DESIGN – BUILD OF MECHANICAL AND ELECTRICAL WORKS FOR THE UPGRADE AND EXPANSION OF POTSDAM WASTEWATER TREATMENT PLANT

C3.1 Description of the Works

CONTENTS

3.1.1 EMPLOYER'S OBJECTIVES
3.1.2 OVERVIEW OF THE WORKS
3.1.3 EXTENT OF THE WORKS
3.1.4 EXISTING SERVICES
3.1.5 LOCATION OF THE WORKS
3.1.6 CLIMATE INFORMATION
3.1.7 TEMPORARY WORKS
3.1.8 SITE FACILITEIS AND SERVICES AVAILABLE
3.1.9 WORKS TO BE CARRIED OUT BY OTHERS

3.1.1 EMPLOYER'S OBJECTIVES

It is the objective of the Employer to appoint a suitably qualified and experienced mechanical and electrical Contractor for the final design, manufacture, supply, installation and commissioning of the mechanical and electrical equipment associated with the upgrade and expansion of the Potsdam Wastewater Treatment Plant (WWTP), in terms of the FIDIC (yellow) General Conditions of Contact.

The civil and building-related works associated the project will be executed under a separate contract by a Civil contractor. The civil and mechanical/electrical contracts will therefore be implemented in parallel and close liaison between the various contractors will be required and promoted. Installation of mechanical and electrical equipment will only commence once the civil works have progressed to a stage where unhindered and safe access can reasonably Contractor.

The Works shall be done in Sections referenced in the GCC Clause 1.1.5.6 with Sections; Section A: UF Works including UF Reuse system and Reuse site manifold, Section B: Management building and associated site services and parking, and **Section C: whole of the Works excluding Sections A, B, D and including Section C with Sub-section A: sludge storage and dewatering, Section D: Refurbishment of '08 Works and Demolition Of The '97 Works.**

Upon commissioning, the Potsdam WWTP will have an Average Wet Weather Flow (AWWF) capacity of 120 million litres per day. The additional treatment capacity will be attained via the implementation of, inter alia, a new membrane biological reactor train and a new sludge management facility for handling additional sludge generated at the plant.

As mentioned, installation of mechanical and electrical equipment can only commence once the civil works have progressed to a stage where unhindered and safe access can reasonably be given to the Contractor. Therefore, specific details related to the project implementation program for planning purposes has been included under **Part C3.5.5**, and the Contractor shall be deemed to have based his tender price on these program specifications and maximum Time for Completion. Any material deviations from these program specifications shall be clearly noted in the Contractor's tender submission.

Although it is the Employer's objective to implement the full scope of works as included in this tender, certain portions may be omitted at the discretion of the Employer.

3.1.2 OVERVIEW OF THE WORKS

The treatment modules are referenced in terms of their commissioning date. Therefore, any reference to '97, '08 and '24 refers to the modules commissioned in 1997, 2008 and 2024 (anticipated future commissioning date).

The Potsdam WWTP will consists of the following main treatment trains/systems after the upgrade and expansion has been finalised:

- A new head of works for the overall Potsdam WWTP (to be installed as part of this project).
- The '08 activated sludge train (currently in operation).

- A tertiary treatment facility for the '08 supernatant (to be installed as part of this project).
- The '24 membrane biological reactor train (to be installed as part of this project).
- A new sludge management facility (to be installed as part of this project).
- Treated effluent reuse facilities (to be installed as part of this project).

This Contract is for the design, manufacture, supply, delivery, installation, construction, testing, commissioning, training, trial operation and upholding during the Defects Notification Period. The general arrangement of the civil structures as shown on the tender drawings is designed to generally accommodate the mechanical and electrical equipment. After the commencement date the general arrangements may be modified to accommodate the specific equipment offered and ensure the guaranteed performance with changes limited to the practical minimum to keep to the concept layouts as far as possible unchanged. The Contractor is however responsible for the final design including the general arrangement of civil structures to guarantee process performance, OHS and for successful operation and maintenance purposes. These include but are not limited to: pump stations in general, screening installations, the MBR system as a whole, the sludge handling and dewatering facilities and the Ultra Filtration tertiary treatment system as a whole.

The Sections of Works defined in terms of Clause 1.1.5.6 of the General Conditions of Contract is listed below:

Section A: **ULTRA-FILTRATION WORKS**

Section B: **MANAGEMENT BUILDING**

Section C: **Whole of the Works excluding Sections A, B & D**

Sub-Section A: **SLUDGE STORAGE AND DEWATERING**

Section D: REFURBISHMENT OF '08 WORKS AND DEMOLITION OF THE '97 WORKS

Table 3.1.2-1 below list the relevant structure that forms part of the Sections of Works and gives the structure codes to reference across to the applicable drawings:

Table 3.1.2-1: *Sections of Works Structure Reference*

Description	Structure Code[1,4]
SECTION A[2]	
GENERAL ARRANGEMENT ULTRA FILTRATION	AAD
UF MICRO SCREEN AND UF FEED PUMP STATION	WFC
ULTRA FILTRATION PLANT	WOB
UF - BLOWER AND AIR COMPRESSOR BUILDING	WOC
UF FEED PUMP STATION & MICRO SCREEN	WPC
UF REUSE PUMP STATION	WPD
UF REJECT RETURN PUMP STATION	WPE
300mm DIA REJECT RETURN PUMP STATION FLOW METER CHAMBER	SQC
UF FEED AND BACKWASH WATER FLOW METER CHAMBER	SQD
UF – REUSE PUMP STATION 800mm DIAMETER FLOW METER	SQE
UF REUSE PUMP STATION SUBSTATION	WPD
MAIN SUBSTATION	ELA
UF SUBSTATION	ELE
SECTION B[2,3]	
MANAGEMENT BUILDING	SUA
SECTION C SUB-SECTION A[2]	
GENERAL ARRANGEMENT SLUDGE MANAGEMENT FACILITY	AAC
DEWATERING PLANT	WLA
PRIMARY SLUDGE HOLDING TANKS	WKA
WAS SLUDGE HOLDING TANKS	WLB
SLUDGE CAKE SILOS (EAST SIDE)	WLC
SLUDGE CAKE SILOS (WEST SIDE)	WLD
PRIMARY / WAS FILTRATE PUMP STATION	WLF
SLUDGE FEED PUMP INSTALLATION	WLE
SLUDGE MANAGEMENT SUBSTATION	ELD
SECTION D	
EXISITNG RAW SEWAGE PUMP STATION	WPG
Note:	

	Description	Structure Code[1,4]
1	The structure code refers to the three letters included in the drawings number. For example, if the drawing number is 3089.10.01.**AAA**.01.A002, the structure code associated with this drawing is AAA.	
2	It should be noted that although the list shown here highlights the main components of the Sections of Works further details are included in the drawing lists which can form part of the applicable Sections. The Contractor shall familiarise him/herself with the Sections of Works and ensure the all systems associated with these Sections are completed within the given timeframes to avoid penalties in terms of Clause 8.7* & 14.15(b) of the General Conditions of Contract.	
3	The mechanical and electrical scope of works that shall form part of Section B is the HVAC for the Management Building.	
4	Drawings codes of structures not listed here, and which are not relevant to the successful commissioning of the Sections defined here, can be assumed to form part of Section C (i.e. the remainder of the Works).	

This Contract entails work in close proximity to the existing water retaining structures, buildings, operational pipelines, roads, services, etc. The tenderer is obligated to become acquainted with the nature of the proposed Works by visiting the site. This will include examining the conditions under which the work is to be done, means of access, any limitations or restrictions that may be imposed upon the tenderer and generally with all matters which may influence the tender.

The Works shall be designed and constructed to function safely and effectively in conjunction with the infrastructure provided by others for this project (see C3.1.9 titled Work to be Carried Out by others), and where components of the Works (provided by Others) are incorporated into the design, the overall quality of the system shall be of high quality.

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 save 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.

3.1.3 EXTENT OF THE WORKS

The Extent of the Works included in this Contract can be summarised as follow, but shall not be limited to:

3.1.3.1 '24 Head of Works (Section C)

- Supply and installation of THREE stone traps with a gantry system;
- Supply and installation of FOUR coarse mechanical front raked screens, FOUR medium mechanical front raked screens, FOUR fine mechanical perforated belt screens, TWO hydro-type screenings conveyors, FOUR integrated screenings washing and compactor units and FOUR skips fitted on a dolly systems for screening collection;
- Supply and installation of FOUR vortex degritter stirrers and air lift pumps, TWO grit classifier units, FOUR positive displacement blowers, TWO skips fitted on a dolly systems and all pipe work associated with a degritting and collection system;
- Supply and installation of THREE Parshall flumes for flow measurement;
- Supply and installation of all electrical & electronic work, process control, fluid control and maintenance equipment that may be required to ensure save operating conditions and conformance to the operational and control philosophy specified in C3.6.1 for the '24 Head of Works;
- Supply and installation of new odour control system with associated ducting and covers for the '24 Head of Works;
- Supply and install of all lifting equipment required for the '24 Head of Works System.

3.1.3.2 '08 Head of works (Section C)

- Decommissioning, dismantling and servicing of selected mechanical and electrical equipment associated with the existing '08 Head of Works which includes THREE coarse mechanical front rake screens, THREE fine mechanical drum screens, TWO vortex degritter units and TWO Parshall flumes;
- Supply and installation of a raw sewage pump to be installed in the '08 raw sewage pump station;
- Refurbishment of odour equipment associated with the existing '08 Head of Works (including two systems for the '08 Inletworks, '08 Raw Sewage Pump Station and Table View Pump Station);

[redacted]

3.1.3.3 '08 Train (**Section D**)

- **Refurbishment of selected mechanical and electrical equipment associated with the existing '08 Train including new pump systems (low lift and WAS pump station) & mechanical loading equipment;**
- Incorporation of an advanced aeration control philosophy;
- Supply and installation of ferric chloride dosing system for phosphate removal;

3.1.3.4 '24 Emergency Storage and Overflow Dams (Section C)

- Supply and installation of TWO submersible pumps and associated pipe work to recycle sewage back to inlet works from the '24 Emergency Storage Tank;
- Supply and installation of TWO submersible pumps and associated pipe work to recycle sewage back to inlet works from the '24 Overflow Dams;
- Supply and installation of all electrical & electronic work, process control, fluid control and maintenance equipment that may be required to ensure save operating conditions and conformance to the operational and control philosophy specified in C3.6.1 for the '24 Emergency Storage and Overflow Dams;
- Supply and install of new lifting equipment required for the '24 Emergency Storage and Overflow Dam Systems.

3.1.3.5 '24 Raw sewage pump station and Primary sedimentation and ultra-fine screens (Section C)

- Supply and installation of FOUR raw sewage pumps with associated pipework at the '24 Raw Sewage Pump Station;
- Supply and installation of all electrical & electronic work, process control, fluid control and maintenance equipment that may be required to ensure save operating conditions and conformance to the operational and control philosophy specified in C3.6.1 for the '24 Raw sewage pump station;
- Supply and installation of FOUR primary sedimentation rotating full bridge scrappers equipped with scum removal mechanisms, FOUR serrated weirs and scum baffles and all associate inlet, scum and sludge draw off pipework.
- Supply and installation of all electrical & electronic work, process control, fluid control and maintenance equipment that may be required to ensure save operating conditions and conformance to the operational and control philosophy specified in C3.6.1 for the '24 Primary Sedimentation System;
- Supply and installation of SIX ultra-fine screens, TWO screenings conveyor systems and TWO washpress units and FOUR skips on dolly systems for screening collection;
- Supply and installation of all electrical & electronic work, process control, fluid control and maintenance equipment that may be required to ensure save operating conditions and conformance to the operational and control philosophy specified in C3.6.1 for the '24 Ultra-Fine Screening System;
- Supply of TWO and installation of ONE open channel primary sludge macerators;
- Supply and installation of TWO solids handling pumps with associated pipework at the '24 primary sludge pump station;
- Supply and installation of TWO hydro cyclone units with associated pipework, TWO grit classifiers and TWO skips with dolly systems for grit collection at the Primary Sludge Pump Station;
- Supply and installation of FOUR solids handling pumps with associated pipework at the '24 sludge recycle pump station;
- Supply and installation of all electrical & electronic work, process control, fluid control and maintenance equipment that may be required to ensure save operating conditions and conformance to the operational and control philosophy specified in C3.6.1 for the '24 Primary Sludge Pump Station System;
- Supply and installation of new odour control system with associated ducting and covers for the '24 Raw Sewage Pump Station, Primary Sedimentation System and Ultra Fine Screening System;
- Supply and install of lifting equipment required for the '24 Raw sewage pump station and Primary sedimentation and ultra-fine screens System.

3.1.3.6 '24 Biological Nutrient Removal (BNR) Reactor System (Section C)

- Supply and installation of FOUR reactor inlet flow meters with associated pipework to BNR Reactor;
- Supply and installation of FORTY EIGHT new vertical shaft mixers in '24 BNR Reactor;
- Supply and installation of ONE new complete Fine Bubble Diffused Air (FBDA) aeration system, comprising suitable diffuser arrays for four new aeration basins sub-divided into three zones, each with a nominal floor area of 34.75 m x 21.75 m= ± 755.81 m^2 (i.e. 3023.25 m^2 in total), air drop-legs and mains, blower equipment and controls as well as all necessary instrumentation and associated electrical works;
- Supply and installation of TWELVE axial flow recycle pumps situated in the final anoxic basin;
- Supply and installation of SIXTEEN axial flow recycle pumps situated next to the effluent chamber of the aeration basin;

[redacted]

- Supply and installation of all electrical & electronic work, process control, fluid control and maintenance equipment that may be required to ensure save operating conditions and conformance to the operational and control philosophy specified in C3.6.1 for the '24 BNR Reactor System;
- Supply and install of lifting equipment required for the '24 Biological Nutrient Removal (BNR) Reactor System.

3.1.3.7 '24 Membrane Biological Reactor (MBR) and Disinfection System (Section C)

- Supply and installation of a scum removal system situated at the MBR Feed Pump Station;
- Supply and installation of equipment associated with TWO Scum Pump Stations which include TWO solids handling pumps with associated pipework for each pump station;
- Supply and installation of ferric chloride dosing system for phosphate removal in MBR;
- Supply and installation of EIGHT axial flow pumps situated at the MBR feed pump station;
- Supply and installation of new membrane separation system for sixteen tanks, comprising suitable membrane cassettes, air scour equipment, permeate pumps, a chemical cleaning system, all associate pipework or any other variation and equipment required by the membrane supplier to ensure the MBR conforms to the operational requirements specified in C3.6.1 for the MBR System;
- Supply and installation of equipment associated with TWO Waste Activated Sludge (WAS) Pump Stations which include TWO solids handling pumps with associated pipework for each pump station;
- Supply and installation of equipment associated with TWO Membrane Tank Drain Pump Stations which include TWO solids handling pumps with associated pipework for each pump station;
- Supply and installation of an Ultraviolet (UV) disinfection system for the MBR permeate;
- Supply and installation of FOUR booster type pumps with associated pipework at the '24 Sludge Management Washwater Supply Pump Station;
- Supply and installation of FIVE booster type pumps with associated pipework at the '24 Site Washwater Supply Pump Station;
- Supply and installation of all electrical & electronic work, process control, fluid control and maintenance equipment that may be required to ensure save operating conditions and conformance to the operational and control philosophy specified in C3.6.1 for the'24 On site Washwater System;
- Supply and installation of equipment associated with TWO Permeate Recycle Pump Stations which include TWO centrifugal pumps with associated pipework for each pump station;
- Supply and installation of all electrical & electronic work, process control, fluid control and maintenance equipment that may be required to ensure save operating conditions and conformance to the operational and control philosophy specified in C3.6.1 for the '24 MBR System;
- Supply and install of lifting equipment required for the '24 Membrane Biological Reactor (MBR) and Disinfection System.

3.1.3.8 '24 UF Treatment and Disinfection (Section A)

- Supply and installation of SIX micro screens;
- Supply and installation of FOUR feed pumps with associated pipework at the '24 Pressurised Ultra-Filtration Feed Pump Station;
- Supply and installation of TWO backwash pumps with associated pipework at the '24 Pressurised Ultra-Filtration Feed Pump Station;
- Supply and installation of new pressurized ultra-filtration separation system, comprising suitable membrane modules, air scour equipment, feed pumps, a chemical cleaning system, all associate pipework or any other variation and equipment required by the membrane supplier to ensure the UF filtration system conforms to the operational requirements specified in C3.6.1 for the Pressurised UF System;
- Supply and installation of THREE submersible pumps and associated pipe work to recycle reject/backwash to the '08 bioreactor;
- Supply and installation of an Ultraviolet (UV) disinfection system for the '24 Pressurised UF filtrate;
- Supply and installation of TWO CIP pumps with associated pipework at the '24 Pressurised Ultra-Filtration Facility;
- Supply and installation of FIVE booster type pumps with associated pipework at the '24 Site Washwater Supply Pump Station;
- Supply and installation of all electrical & electronic work, process control, fluid control and maintenance equipment that may be required to ensure save operating conditions and conformance to the operational and control philosophy specified in C3.6.1 for the '24 UF Treatment and Disinfection System;
- Supply and install of all lifting equipment required fro the '24 UF Treatment and Disinfection System.

3.1.3.9 '24 Reuse System (Section A)

- Supply and installation of SIX pumps with associated pipework for the offsite reuse of treated effluent at the UF Off-Site Reuse Pump Station (Section A);

[redacted]

- Supply and installation of SIX split casing centrifugal pumps with associated pipework for the offsite reuse of treated effluent at the'24 MBR Off-Site Re-use Pump Station (Section C);
- Supply and installation of all electrical & electronic work, process control, fluid control and maintenance equipment that may be required to ensure save operating conditions and conformance to the operational and control philosophy specified in C3.6.1 for the '24 Reuse System;
- Supply and install of all lifting equipment required for the '24 Reuse System.

3.1.3.10 '24 Sludge Management Facility (Section C Sub-section A)

- Supply and installation of TWO floatable surface aerators at the Emergency WAS Storage Tanks;
- Supply and installation of TWO new complete Coarse Bubble Diffused Air (CBDA) aeration system, comprising suitable diffuser arrays for two new WAS sludge storage tanks, air drop-legs and mains, blower equipment and controls as well as all necessary instrumentation and associated electrical works;
- Supply and installation of SIX submersible mixers in the WAS storage tanks;
- Supply and installation of THREE solids handling recycle pumps with associated pipework at the Emergency WAS Storage Tank Recycle Pump Station;
- Supply and installation of THREE solids handling pumps with associated pipework at the WAS Ring Main Pump Station;
- Supply and installation of EIGHT WAS dewatering feed progressive cavity pumps with associated pipework at the dewatering facility;
- Supply and installation of mechanical equipment, including EIGHT gravity belt thickeners, EIGHT dewatering presses, TWO poly batching, poly dosing equipment and pipework, washwater and filtrate pipework; process control system and human machine interfacing as well as all necessary process instrumentation for complete new WAS Dewatering Process Plant;
- Supply and installation of mechanical equipment for two Primary Sludge Storage Tank mixing systems including FOUR chopper type centrifugal pumps, jet nozzles and associated pipework.
- Supply and installation of THREE solids handling pumps with associated pipework at the Primary Sludge Ring Main Pump Station;
- Supply and installation of Eight Primary sludge dewatering feed PC pumps with associated pipework;
- Supply and installation of mechanical equipment, including Eight dewatering presses, fine screen(s); TWO poly batching, poly dosing equipment and pipework, washwater and filtrate pipework; process control system and human machine interfacing as well as all necessary process instrumentation for complete new Primary Sludge Dewatering Process Plant;
- Supply and installation of Eight sludge cake transfer pumps (PC pumps) including EIGHT screw conveyors, EIGHT hoppers with bridge breaker systems and all associate valves and pipework with poly lubrication systems for all discharge pipes;
- Supply and installation of FOUR complete live bottom sludge loading feeders complete with sluice gates;
- Supply and installation of all electrical & electronic work, process control, fluid control and maintenance equipment that may be required to ensure save operating conditions and conformance to the operational and control philosophy specified in C3.6.1 for the '24 Sludge Management Facility;
- Supply and installation of new odour control system with associated ducting and covers for the '24 Sludge Management Facility;
- Supply and install of all lifting equipment required for the '24 Sludge Management Facility.

3.1.3.11 Bulk Electrical Connection (Section A)

- Supply and installation of main electrical connection to existing Eskom supply including, but not limited to MV Switchgears, Transformers, miniature sub-stations and cables to be constructed by an regional (i.e. Western Cape) Eskom approved Electrical contractor.
- Provision of TWO new Standby Power Generator units;

3.1.3.12 SCADA, Control and Monitoring (Common to A, B and C)

- Supply, installation and integration of a complete SCADA and automated control system for the entire Plant;
- Installation of live stream visual process monitoring system (i.e. cameras) to assist Operators with operation and safety measures on site as a whole;

3.1.4 EXISTING SERVICES

The position and details of existing services and structures that are known to the Engineer are shown on the drawings. The drawings show the best information available to the Engineer at time of tender. The Employer and Engineer take no responsibility for the accuracy or completeness of this information and have provided this information merely as an aid to the tenderers in preparing their tenders for construction of the Works.

[redacted]

The Contractor shall acquaint themselves with the exact position of all existing services and clearly mark the positions of services before any exploration, excavation or other work likely to affect the existing services, is commenced. In order to achieve this, the Contractor shall conduct a thorough search to locate the positions of known and any possible unknown services. After this search all services shall be deemed as known.

All excavation for exposing underground services shall be done by hand under close supervision.
The cost of searching for existing services, accommodating all existing services and relocating all services shown on the tender drawings shall be priced into the appropriate work items forming part of the Contract.

Before entering upon existing service servitudes and before commencing any exploration work, the Contractor is required to liaise with service owners to ensure:

- that planning of work in the servitude is done in accordance with wayleave agreements and the express requirements of the service owner;
- that service owners are aware of the date and time when work will commence in the servitude;
- that service owners provide the necessary superintendence during critical aspects of the work affecting their service.
- that contact details of the service owner's staff in case of accidental damage or emergency are obtained, which numbers must be clearly displayed in the Contract Site Agent's office.

The Contractor shall be required to provide a method statement for any work to take place, on, over, under or adjacent to existing services, including safety precautions and contingency plans, should damage to services occur, before commencing with any such work. No working activities on or near existing services including searching work will be allowed to commence without the written approval of the Engineer.

The Contractor shall protect all known existing services as well as all work being carried out and structures being erected on the Site by other contractors or public authorities. The Contractor must familiarise himself with the various standard regulations of the relevant public authorities and act accordingly. Any damage caused to these services or structures, or any obstructions or hindrance caused to other contractors or public authorities by the Contractor (and all claims arising from such damage, obstruction or hindrance) shall be the sole responsibility of the Contractor. The Contractor shall immediately repair such damage caused at his own expense and to the entire satisfaction of the Engineer and the owner of the service.

The Contractor shall immediately inform the Engineer or Engineer's Representative of any damage caused to services so that the damage may be inspected, the circumstances under which the damage was caused can be determined, and the liability for the damage determined on site.

The Contractor shall only use temporary or permanent access roadways identified in the specifications and drawings or approved by the Engineer. The Contractor must stay off private roads unless written permission is provided by the Engineer.

Notwithstanding any repair or rehabilitation work to roads that may be provided for in the contract, the Contractor shall during the contract maintain and rehabilitate local, public and private roads, where damaged due to construction activities. The costs of such work shall be deemed to be included in the relevant tendered rates for construction activities and shall not be measured and paid for separately.

The Contractor shall photographically record conditions of public and private roads and existing services before commencement of works.

3.1.5 LOCATION OF THE WORKS

The entrance to Potsdam WWTP is off Koeberg Road, as indicated on the Locality. The approximate co-ordinates to Site is presented below:

Site	Co-ordinates	
Potsdam WWTP	33°50'19.02"S	18°31'27.01"E

3.1.6 CLIMATE INFORMATION

Maximum ambient temperature:	35°C (Monthly average)
Average ambient temperature:	21°C (Monthly average)
Minimum ambient temperature:	7°C (Monthly average)
Altitude (meters above mean sea level):	10 mamsl
Humidity:	High
Atmosphere:	Coastal

[redacted]

Lightning:	Infrequent
Wind:	Frequently reaching very high speeds
Rainfall:	October to March – 147mm April to September – 511mm

3.1.7 TEMPORARY WORKS

The Contractor shall determine and be responsible for the design of all temporary works, including compatibility with the permanent works, that will be required for the successful completion of the works specified in this Contract. Unless specific provision is made for the erecting and dismantling of temporary works in the schedule of quantities the cost associated with such work shall be for the Contractor's account.

The proposed location of the Contractor's site camp shall be indicated during the site clarification meeting.

3.1.8 SITE FACILITIES AND SERVICES AVAILABLE

3.1.8.1 Contractor's site camps and depots

The proposed position of the Contractor's camp and depot for the Works Site will be indicated to the Contractor during the Site Clarification Meeting.

The Contractor shall be responsible for providing a suitable site for his camp and provide accommodation for his personnel and labourers.

The Contractor shall be responsible for identifying suitable position (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, office, store, 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 material 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 Woks, or when the facilities provided by the Contractor are no longer required, the Contractor shall remove them and clear away all surface indications of the their presence.

3.1.8.2 Facilities for Engineer

The Contractor shall be responsible for providing a fully furnished office, dedicated latrine and carport for Engineer or his representative for the duration of the Contract. For details on the requirements of the Engineers facilities refer the DWG 3089.00.00.AAC.01.U001 & U002.

3.1.8.3 Access to Site

The Contractor may make use of the existing access road to and within the Site, but shall be responsible to restore these roads as part of the rehabilitation requirements to a similar or better condition that prevailed at the Commencement Date and at his expense. If the Contractor requires additional access to and within the Site, these shall be submitted to the Engineer for approval and constructed at his own expense. Proper access control shall be instituted by the Contractor to prevent any unauthorised entry to the Work as well as to the Employer's facilities.

3.1.8.4 Water supply

Potable water is available on Site and the Contractor shall be responsible under the Contract for the supply and distribution at his Cost of all water that he/she may require for purposes of human consumption, construction, testing and commissioning of the Works. Accordingly, the Contractor shall pay all consumption charges, and at his/her cost provide and install all connections, consumption meters, pipework, storage tanks, transport and other items associated with the supply of water for construction activities. All connections to pipelines of the Employer shall be in accordance to standards approved by the Employer.

Water for construction activities and domestic use at the Contractor's camp will be charged at R 7.00/kl and amounts for consumption shall be deducted from Interim Payment Certificates.

3.1.8.5 Power supply

Electricity is available near the Site but the assurance of supply cannot be guaranteed. The Contractor shall be responsible for the supply and distribution at his/her cost of all electricity that he/she may require for the purposes of constructing the Works. The Contractor may apply with the local authority for installation of an electrical connection. Accordingly, the Contractor shall pay all consumption charges, and at his/her own cost provide all connections, distribution, consumption meters and the like for construction of the Works. The distribution of electricity shall be in accordance with the applicable bylaws and regulations of the local authority.

3.1.8.6 Sanitation

The Contractor shall provide the necessary ablution facilities for his and the Engineers camps and depots. Pit latrines shall not be permitted and the Contractor shall either provide a connection to the existing outfall sewer or install a conservancy tank, which will be removed once construction has been completed.

3.1.9 WORKS TO BE CARRIED OUT BY OTHERS

The upgrade and expansion of the Potsdam WWTP shall be carried out via two contracts, namely:

a) **Contract No. 146Q/2021/22 - DESIGN – BUILD OF MECHANICAL AND ELECTRICAL WORKS FOR THE UPGRADE AND EXPANSION OF POTSDAM WASTEWATER TREATMENT PLANT.**

b) **Contract – BUILD OF CIVIL WORK FOR THE UPGRADING AND EXPANSION OF POTSDAM WASTEWATER TREATMENT PLANT.**

The Contract Listed under b) above entails all the civil works associated with the upgrade and expansion of the Potsdam WWTP, which will run parallel to the this Contract. Interface between the two Contracts will be unavoidable and careful co-ordination will be required for the successful completion of these Contracts.

[redacted]

CITY OF CAPE TOWN

WATER AND SANITATION

CONTRACT NO. 146Q/2021/22

DESIGN – BUILD OF MECHANICAL AND ELECTRICAL WORKS FOR THE UPGRADE AND EXPANSION OF POTSDAM WASTEWATER TREATMENT PLANT

C3.2 Engineering

CONTENTS

3.2.1 DESIGN SERVICES AND ACTIVITY MATRIX
3.2.2 EMPLOYER'S DESIGN
3.2.3 DESIGN BRIEF
3.2.4 DRAWINGS
3.2.5 DESIGN PROCEDURES

3.2.1 DESIGN SERVICES AND ACTIVITY MATRIX

The following table provides an overview of the design and related documentation:

Design Service	Responsible Party
Concept, feasibility and overall process	Employer
Basic engineering and detail layouts to tender stage	Employer
Detailed design of works	Contractor
Control philosophy/functional design	Contractor
Temporary works	Contractor
As built drawings	Contractor

The Contractor shall design the works in accordance with the Employers Requirement as specified in Part C3: Scope of works and as shown on the drawings provided by the Employer in Volume 4 of this Contract Document. The Contractor shall ensure that his/her design conforms to the performance requirements included in Volumes 3A and 3B of this Contract Document. Failure to conform to these requirements shall result in failure to pass tests on completion as described in Clause 9.4 of the GCC (FIDIC Yellow, 1999).

The tenderer must indicate whether or not the proposed key personnel (refer to Schedule 12 of Returnable schedules included under Part T2.2) is employed by the tenderer on the date of submission of the offer. The tenderer will clearly indicated if the proposed member/expert is an employee or not of the tenderer. Any person who is engaged on another project, where the input from his/her position in that contract and commitment restricts his/her intended role under this contact must not be proposed for this contract.

3.2.2 EMPLOYER'S DESIGN

The Employer's Design Engineer has designed the Permanent Works on behalf of the Employer as shown on the Drawings and although the Employer's Design Engineer has selected Plant and Equipment that are deemed suitably sized for the intended purposes of the Employer *for tendering purposes*, in terms of Clause 5 [*Design*] of the General Conditions of Contract, the Contractor shall be responsible for the process sizing and general arrangement of civil structures and the detailed design of all mechanical and electrical equipment and associated systems in order to ensure these are appropriately selected and installed to meet the intended application and particular installation conditions on Site.

The Contractor shall confirm that structures and equipment (new and constructed by others) are represented correctly on the drawings. Where drawings for the structures have been prepared by the design engineer, the Contractor shall base his drawings on the Employer's drawings and shall check that the Contractor's equipment fits into and can operate satisfactorily within the structures shown on the Employer's drawings.

Drawings, dimension and details of structures and equipment are supplied to the Contractor in good faith. However, the Contractor shall base the design of his/her infrastructure and equipment on actual dimensions and details measured/recorded on Site by him/herself and approved by the Engineer. Any

inconsistencies, including any conflict between the Employer's drawings and the actual dimensions measured on site, shall immediately be drawn to the attention of the Engineer, in writing.

With regards to site and interconnecting pipework, the Employer has provided the proposed layout of the pipework on the Drawings *for tendering purposes*. However, the Contractor shall be responsible for all final measurements on site, final design, correct manufacturing and installation of all pipe items and specials to suit the installation. Any/all modifications on site shall be managed in terms of the relevant Specifications for repairs to damaged corrosion protection. The Contractor shall also maintain suitable records of all such items in order to complete the as-built drawings at the completion of the works.

3.2.3 DESIGN BRIEF

An overview of the intended design is provided for the main components/systems associated with the Potsdam WWTP (existing and new). This narrative should be read in conjunction with the operational and control philosophies specified in Section C3.6.1 and Drawings 3089.00.01.AAA.01.A002 to 3089.00.01.AAA.01.A054 to ensure the overall process requirements are provided as part of this Contract.

A complete set of wastewater characteristics with the relevant design fractions that shall be used in the design of the Mechanical and Electrical Works is listed in **Tables 3.2.3.-1** and **3.2.3.-2**.

Table 3.2.3.-1: *Accepted influent wastewater characteristics*

Description	Unit	Value
COD	mgCOD/ℓ	1106
TKN	mgN/ℓ	88
Total Phosphate (TP)	mgP/ℓ	11
pH	-	7
Alkalinity	mg/ℓ	389
Inert Suspended Solids (ISS)	mg/ℓ	65
NO_x	mgN/ℓ	0
Calcium (Ca)	mg/ℓ	38
Magnesium (Mg)	mg/ℓ	15
Dissolved Oxygen (DO)	mg/ℓ	0

Table 3.2.3.-2: *Accepted influent wastewater characteristics (fractions)*

Description	Unit	Value
Fraction of total influent COD which is readily biodegradable	Fbs	0.160
Fraction of readily biodegradable COD which is VFAs	Fac	0.150
Fraction of slowly biodegradable influent COD which is particulate	Fxsp	0.750
Fraction of total influent COD which is soluble unbiodegradable	Fus	0.036[1]
Fraction of total influent COD which is particulate unbiodegradable	Fup	0.130
Fraction of influent TKN which is ammonia	Fna	0.660
Fraction of influent biodegradable organic nitrogen which is particulate	Fnox	0.500
Fraction of influent TKN which is soluble unbiodegradable	Fnus	0.020
The N:COD ratio for the influent particulate unbiodegradable COD	FupN	0.035
Fraction of influent TP which is phosphate	Fpo4	0.65
The P:COD ratio for the influent particulate unbiodegradable COD	FupP	0.011

The information provided in **Tables 3.2.3-1** and **3.2.3-2** are based on historic data analysed and recorded by the Employer. This information will be made available to the Contractor, who shall accept responsibility for verifying the accuracy of these conceptual design parameters. It is the Contractor's responsibility to allow for any additional laboratory analyses it wishes to conduct as part of this verification process. No separate payment shall be made in this regard. The Contractor shall accept that, based on the influent characteristics specified in **Tables 3.2.3-1** and **3.2.3-2** or any amendment to

these accepted influent characteristics established by the Contractor, the Works shall conform to the final effluent quality specified in **Tables 3.2.3-4** and **3.2.3-5** as well as any special process related requirements associated with the unit process included in the Works.

A hydraulic loading characteristics applicable to the Potsdam WWTP (i.e. main influent) that shall be used in the design of the Mechanical and Electrical Works is listed in **Table 3.2.3.-3**.

Table 3.2.3.-3: *Design influent hydraulic parameters*

Description	Unit	Design flow
Ultimate influent design flows		
Average Dry Weather Flow (ADWF, Design base)	Mℓ/d	100
Average Wet Weather Flow (AWWF, 4 months per year)	Mℓ/d	120
Peak Wet Weather Flow (PWWF)	Mℓ/d	150
Hourly Peak Flow (HPF Calculated)	m^3/hr	11 667
HPF Extreme event	m^3/hr	14 583
Maximum sustained daily flow	Mℓ/d	152
Maximum sustained weekly flow	Mℓ/d	139
Maximum sustained monthly flow	Mℓ/d	129
Minimum sustained daily flow	Mℓ/d	62
Minimum sustained weekly flow	Mℓ/d	67
Minimum sustained monthly flow	Mℓ/d	74
Assumed start-up influent design flows		
ADWF	Mℓ/d	53
AWWF	Mℓ/d	60
PWWF	Mℓ/d	80
HPF	m^3/hr	7 729

A complete set of discharge limits that shall be used in the design of the Mechanical and Electrical Works for the discharge into the Diep River and for Off-site Reuse are listed in **Tables 3.2.3.-4** and **3.2.3.-5**, respectively.

Table 3.2.3.-4: *Agreed design effluent discharge limits for discharge into watercourse*

Substance/Parameter	Unit	Effluent Limit
Faecal Coliforms	Per 100 ml	0
Chemical Oxygen Demand[2]	mg/l	30[1]
pH	-	5.5 – 7.5
Ammonia (ionised and un-ionised) as Nitrogen	mg/l	2
Nitrate/Nitrite as Nitrogen[2]	mg/l	As low as biologically possible[3]
Chlorine as Free Chlorine	mg/l	0
Suspended Solids (SS)[2]	mg/l	10
Electrical Conductivity[2]	mg/l	50 mS/m above background receiving water, to a maximum of 100mS/m[4]
Ortho-Phosphate as phosphorous[2]	mg/l	1 (median) and 2.5 (maximum)

Note:
1 After removal of algae
2 Further reference to these limits are provided under their respective headings later in this section.
3 This limit is a deviation from the National Water Act special limits.
4 Limit not achievable without desalination, which will not be implemented as part of this Project.

Table 3.2.3.-5: *Agreed design effluent discharge limits for off-site reuse*

Substance/Parameter[1]	Unit	Effluent Limit	
		Average	Maximum
Biological Oxygen Demand (BOD)[2]	mg/l	5	10
Total Suspended Solids (TSS)	mg/l	5	10
Turbidity[3]	NTU	2	5
Thermo-tolerant Coliforms[4]	Per 100 ml	10	100
Intestinal nematodes[5,6]	Eggs/l	No detectable trace	No detectable trace

Note:
1 The recommended limits are elaborated on the basis of international regulations, e.g. WHO (2006)[2] and USEPA (2012)[3] and apply to the reclaimed water at the outlet of the treatment facility. After storage in open reservoirs and for spray or localized irrigation, additional filtration could be necessary. Sampling frequency and the calculation of the average values are given in ISO 16075-4.
2 BOD is determined with a five-day test.

Substance/Parameter[1]	Unit	Effluent Limit	
		Average	Maximum
3 Continuous measurement of the turbidity can be implemented. The average value should be based on a 24-time period. If suspended solids are used in lieu of turbidity, the average TSS should not exceed 5 mg/l. If membrane filtration is used for treatment, the turbidity should not exceed 0.2 NTU.			
4 Residual chlorine dosage between 0.2 mg/l and 1 mg/l that measured after 30 min contact time can be necessary for high and very high quality treated wastewater. If other method of disinfection achieving is used, it should also be monitored.			
5 Intestinal nematodes (helminth eggs) might not be routinely monitored if it was demonstrated that the number of helminth eggs in untreated wastewater is consistently below 10 eggs/l.			
6 If there is a risk of aerosolization, the Legionella spp should be less than 1 000 CFU/l for Greenhouses.			

Plant shall have been selected by the Contractor which has a demonstrated 5 year historical, current and future maintenance support presence in South Africa to ensure continuous post commissioning maintenance support to the Employer. Only Plant that complies with this requirement will be accepted for incorporation into the Works.

The Contractor shall specify for use in the Permanent Works only such items of Plant and Materials as have a proven track record of being maintained within South Africa. Whether or not such requirement is met in respect of any Plant or Materials shall be determined by the Employer on a case-by-case basis, acting reasonably, provided that the successful operation and maintenance of such Plant and Materials or plant and materials manufactured by the same manufacturer of a similar size and design to the Plant and Materials, for a minimum of five years each (including on-going operation and maintenance at the Base Date), in three or more infrastructure projects in South Africa shall be conclusive as to such items of Plant or Materials having a proven track record as required by this clause.

The design brief for the various Sections of Works are presented under subheadings for ease of reference:

3.2.3.1 Head of Works

Raw sewage will accumulate in a collection chamber situated upstream of the existing coarse screen installation. The coarse screen installation consists of three mechanical screens installed in parallel, equipped with channel gates up - and downstream of each unit. The existing coarse screen installation will be modified by converting the structure to a stonetrap to protect equipment located downstream of this system. Monitoring and automated stonetrap selection will form part of this system (refer to C3.6.1 for a detailed description of the operation and control philosophy). The stonetraps will require lifting equipment for quick and effective removal of debris retained by this system.

Flow will be split proportionally between the '24 inlet works and emergency overflow tank by method of a modulating overflow weir provided before the new coarse screen system. During normal operating procedure the flow shall pass through the '24 inlet.

Multiple trains in the'24 inlet works provide equipment redundancy and flow velocity control. Flow control is achieved by opening and closing channel gates as the influent increase or decreases, respectively (refer to C3.6.1 for a detailed description of the operation and control philosophy).

The **'08 inlet works** consist of three rotating drum screens, two vortex degritters and two Parshall flumes, with each set installed in parallel. These units, together with supporting equipment, will be decommissioned and removed as part of this Contract.

The **'24 inlet works** will have hydraulic design capacity of 12 500 m^3/hr with three of the four trains active (i.e. 3 duty, 1 standby). The screenings collected by the mechanical screens shall discharge into hydro conveyors and be conveyed to washer compactor systems. Vortex degritters equipped with a paddle and air lift pump, shall capture and convey grit to one of two grit classifiers. A flow measuring station will also form part of the inlet works, consisting of three Parshall flumes, located downstream of the inlet works.

Downstream of the flow measuring station flow will be diverted between the '08 and '24 raw sewage pump stations. The flow to the '24 raw sewage pump station shall receive preference, with excess flow diverted to the '08 raw sewage pump station. The '24 raw sewage pump station shall be equipped with four solids handling centrifugal pumps complete with associated pipework. The '24 raw sewage pump station will have a delivery capacity of 5 417 m^3/hr achieved via two pumps in operation (i.e. two duty, two standby). Each pump will be fitted with a variable frequency drive. The '24 raw sewage pump station delivery will be controlled by one (or all) of the following methods:

- Level control from the pump station sump.
- Proportional split between '08 and '24 inlet works up to a fixed influent flow set point.
- Fixed flow over a specified influent flow rate set point.

[redacted]

The Head of Works shall be equipped with odour control panels sealing all open areas creating an enclosed environment for effective odour control application.

The '08 raw sewage pump station consist of three solids handling centrifugal pumps (i.e. Cornell 18 NHFL). The '08 raw sewage pump station shall be equipped with a fourth pump. The '08 raw sewage pump design capacity is 6 250 m^3/hr. The control of the '08 raw sewage pump station shall be integrated into the new SCADA.

3.2.3.2 Emergency overflow

Screened sewage from either the '08 and '24 inlet works, not conveyed to one of the treatment trains (i.e.'08 or '24 trains), will overflow into an emergency storage tank. The tank will be equipped with a recycle pump station, consisting of two submersible pumps installed in a duty standby configuration. The pump station delivery will be 313 m^3/hr. The pump station will be controlled by one of (or all) of the following methods:

- Level control from the pump station sump.
- On/off at an influent flow rate set point.
- On/off via timer control.

The emergency overflow tank will be equipped with fixed washwater stations to ensure the entire surface area of the tank can be cleaned after an overflow event. These stations shall form part of the site washwater supply system to be installed under a separate contract.

3.2.3.3 '24 Primary sedimentation tanks

Flow from the '24 raw sewage pump station will be split equally between four primary sedimentation tanks. Flow to each primary sedimentation tank will be isolatable by method of actuated wall mounted sluice gates. The division structure shall also provide the option to bypass the primary sedimentation tanks and discharge directly to ultra-fine screen facility or feed to the '08 train. The bypass to the ultra fine screens and feed to '08 train shall be controlled via weir gates to modulate the flow rate. The division structure shall be monitored via a level sensor and all sluice gates shall be equipped with actuators which will be linked to the SCADA system. The division structure shall be fitted with odour control panels.

The four 29 m diameter primary sedimentation tanks are to be equipped with mechanical equipment under this Contract. The new primary sedimentation tanks shall be equipped with pipework, rotating full bridges & scrapers, scum removal system and serrated overflow weirs and odour control panels.

Hydrostatic desludging of the primary sedimentation tanks will be programed to take place at adjustable, pre-set intervals selected by the operator in order to optimise the thickening of the sludge. All the sludge from the primary sedimentation tanks, including the '08 train's, will combine and pass through a macerator. Grinded sludge will either be recycled across the primary sedimentation tanks (separate recycle systems to be provided for the both the '08 and '24 train) or feed directly to the primary sludge storage tanks via hydro cyclones.

3.2.3.4 '24 Ultra fine screens

Settled wastewater from the '24 primary settling tanks will gravitate to the '24 ultra-fine screening station prior to entering the biological reactor. The settled sewage will be screened of fine particulate material which will be washed, compacted and collected in skips for transport and disposal off site. Screened wastewater will be split proportionally between four bioreactor modules by method of automated overflow weirs. The ultra-fine screening station shall consist of six screens (three duty, three standby) installed in parallel. The ultra-fine screens shall have a maximum of 2 mm perforated (punched holes, dimensions in two directions) aperture as pre-treatment for hollo-fibre and tubular membranes. Mesh, bar or wedge wire screens shall not be acceptable.

Flow will be split proportionally between the ultra-fine screens by method of opening and closing wall mounted sluice gates. During normal operating procedure the flow to the ultra-fine screens will be controlled by one (or all) of the following methods:

- Predetermined set number.
- Automatic activation in the event that an emergency overflow sensor being triggered.

The screening station shall be equipped with monitoring equipment which will be linked to the SCADA system. Odour control shall be applied.

[redacted]

3.2.3.4 Biological reactor

The '24 biological reactor will incorporate anaerobic, anoxic and aerobic zones for the removal of chemical oxygen demand and nutrient removal from the wastewater. The anaerobic and anoxic zones shall be mixed with vertical shaft mixers. The aeration basins will be constructed and equipped with an energy efficient fine bubble diffused air aeration system.

It will be possible to operate the activated sludge system in the UCT/MBR, JHB/MBR or MLE/MBR modes. The activated sludge reactor will, in all likelihood, be operated in the UCT/MBR mode. Return activated sludge from the membrane reactor will enter the aerobic zone. Towards the end of the aerobic zone, mixed liquor will be extracted by axial pumps (i.e. A-recycle pumps) to the first of three anoxic zones with the aim of removing the bulk of the nitrate and dissolved oxygen from the mixed liquor stream by means of denitrification.

Towards the end of the anoxic zone, mixed liquor will be extracted by axial pumps (R-recycle pumps) and returned to the upstream anaerobic zone thereby providing biomass to this zone, which will also receive wastewater. The mixture of nitrate-free (at least that is the aim) mixed liquor and fresh influent in the absence of dissolved oxygen will facilitate the overall biological removal of phosphate. Phosphate not removed via the biological process will be chemically precipitated through dosing ferric as and when required. Precipitated phosphate will be enmeshed in the sludge mass and removed with the waste activated sludge stream.

Each aeration zone (three zones per module with four modules) will be equipped with a separate diffuser array fed from a dedicated dropleg equipped with a (modulating) actuated V-port knife gate control valve and air flow meter that adjusts in response to dissolved oxygen (DO) measurement taken in the specific zone against a user-defined set-point. In the event that the actual DO is lower than the set-point, the air flow to the zone must be increased by either increasing blower speed and/or opening of the control valve which is determined by the aeration control system to ensure that the DO set-point is maintained with the least amount of air i.e. lowest possible blower speed and thus electricity usage. Modern blowers are able to operate over a wide range of flow rates without jeopardising operating efficiency making it possible for the aeration system to effectively track the actual oxygen demand of the process in terms of the daily diurnal organic load thereby provided 'just enough' oxygen in terms of the process requirements.

The biological reactor has been custom-designed with four lanes(or modules), each of which can be isolated and emptied to facilitate access to the submerged diffuser arrays for maintenance purposes.

It is envisaged that five single stage integrally geared or high speed direct driven turbo-compressors (4 duty + 1 standby) will be installed under this Contract. These blowers must be equipped with adjustable discharge diffuser vanes and/or variable frequency drives for both flow and pressure regulation. The blowers must be adequately sized to meet the oxygen requirement under minimum flow conditions with one unit operational as well as maximum conditions with multiple units operational.

3.2.3.5 '24 Membrane reactor

Effluent from the '24 biological reactor will be lifted into the filtration tank distribution feed channel via an axial flow pump station and proportionally split into the '24 membrane filtration tanks which house the submerged ultra-filtration membrane cassettes. The '24 membrane feed pump station shall be sized for a maximum hydraulic capacity of 28 750 m^3/hr with six pumps in operation.

The mixed liquor feed to the membrane modules shall be controlled by way of a fixed sump level and axial pumps equipped with variable frequency drives. The flow distribution between membrane modules shall be controlled by method of flow measurement and opening/closing channel gates to each membrane tank. The Contractor shall be responsible to ensure overall control system of the membrane system conforms to the membrane suppliers requirements.

The membrane feed pump station shall be equipped with scum removal system to avoid excessive scum build up in the biological reactor.

Permeate shall be drawn through the membranes under vacuum conditions via rotary lobe pumps installed for each membrane train. Permeate is discharged into the a permeate tank which serves the double purpose of acting as a back pulse sump. This tank overflows to the UV disinfection and service water storage tanks that will serve as the primary source for service water requirements of the entire Plant.

The surface of the membranes are cleared from solids build-up by air scouring. This scouring system, consists of a blowers, air ducts, control valves, etc., discharges through coarse bubble diffuser system envisaged to be integrated in the membrane housing cassettes. A pulsing system shall be preferred for this type of scouring application. Membranes are also periodically taken offline and treated to prevent build-up of material on the membrane surface. During a back pulse sequence, the permeate pumps flow direction is reduced and permeate is pumped from the permeate tank through the membrane into the

[redacted]

filtration tank to dislodge solid build-up. Bulk pulse flow is occasionally dosed with antifouling chemicals such as sodium hypochlorite and citric acid

Return activated sludge (i.e. concentrated mixed liquor) from the filtration tanks drains by gravity to the aerobic zone of the biological reactor to maintain the biological culture in the reactor. A purge stream is diverted from the return activated sludge channel and pumped to the sludge handling facility.

Disinfected permeate from the MBR shall flow to the MBR off site reuse pump station for reuse purposes. Excess flow not pumped away via the reuse pump station shall overflow into a gravity pipe and discharge into the Diep River.

3.2.3.6 '24 Tertiary treatment

Settled effluent from the '08 activated sludge train shall undergo tertiary treatment in the form of micro filtration, pressurized ultra-filtration (UF) and UV disinfection.

The micro filtration facility will have a design capacity of 6 250 m^3/hr (i.e. 150 Ml/d) to ensure the HPF passing through the '08 train can be screened before entering the UF system or bypassing to the Diep River. Flow than bypasses the UF system will undergo disinfection via a hypochlorite dosing facility situated in the UF building. Flow towards the Diep River discharge point can follow on of two streams, namely, via die existing maturation ponds or via a dedicated gravity flow pipe.

The '24 Pressurised UF system will have a design capacity of 2 708 m^3/hr (i.e. 65 Ml/d). The settled effluent to the UF modules shall be controlled by way of a fixed sump level and centrifugal pumps equipped with variable frequency drives. The Contractor shall be responsible to ensure overall control system of the membrane system conforms to the membrane suppliers requirements.

Filtrate will pass through UV disinfection system prior to entering the '24 UF off site reuse pump station sump. Excess flow not pumped away via the '24 UF reuse pump station shall overflow into a gravity pipe and discharge into the Diep River.

The surface of the membranes are cleared from solids build-up by air scouring. This process uses low pressure aeration to scour and agitate the hollow fibre membranes and, when combined with a short reverse flow of filtrate, removes the retained solids from the membrane fibre surfaces. Liquid backwash waste is then drained or flushed from the Unit to the backwash waste disposal system. The feed and filtrate sides of the Unit are then refilled in a process similar to start-up, and the Unit then returns to service.

When the build-up of foulants on the membrane modules increases the resistance to flow to an unacceptable level, or if the trans membrane pressure in filtration has reached a high level, or after a pre-set number of hours of filtration, a Clean In Place or CIP cleaning cycle is usually required. As the cleaning cycle also helps to reduce and minimise organic growth and helps to disinfect the system, cleaning may also be initiated simply on an elapsed time basis, such as once per month or every six weeks, even if Resistance or TMP values have not reached a high level.

Membrane Units fitted with standard PVDF (polyvinylidene fluoride) membrane filtration modules, are cleaned using sodium hypochlorite solution as the primary cleaning regime and acid as the secondary regime. Depending on the type of acid used in the application, an additive such as EDTA (ethylenediaminetetraacetic acid, a chelating agent) or citric acid may also need to be added during an acid clean.

3.2.3.7 Disinfection systems

Disinfection shall be achieved via the use of UV disinfection technology for both the '24 MBR permeate and '24 UF filtrate. Closed vessel inline UV reactors or open channel LP system will be used for this purpose.

3.2.3.8 Primary sludge handling and storage

Primary sludge abstracted from all primary settling tanks i.e. three existing + four new, will be pumped to one of two new 18m diameter primary sludge holding tanks, which have been sized to operate at hydraulic retention time of approximately 24 hours.

At full design AWWF capacity (120 Ml/d), it is estimated that approximately 38 685 kgDS/d primary sludge will be produced. At an average solids concentration of 1.5%, this implies that 2 597 m^3/d will be produced, which equates to 2.2% of the AWWF.

The design of the mixing system shall be based on pump-based process mixing system with suitable solids-handling pumps and floor-mounted diffusers/nozzles for mixing purposes. Each tank shall be equipped with two (1 duty, 1 standby) heavy duty solids handling pumps.

[redacted]

Both sludge storage tanks will be enclosed to capture nuisance odour produced, which will be routed to an engineered odour control system discussed under the Odour Control System hereafter.

Emergency overflow from the primary sludge holding tanks will be captured in an overflow box situated inside the primary sludge holding tanks and routed to one of two overflow tanks.

3.2.3.9 Waste activated sludge handling and storage

Waste activated sludge abstracted from the '08 and '24 reactors will be pumped to a splitter box upstream of two square waste activated sludge holding tanks, which have been sized to operate at hydraulic retention time of approximately 24 hours.

At full design AWWF capacity (120 Ml/d), it is estimated that approximately 25 725 kgDS/d waste activated sludge will be produced at a hydraulic loading of 5 603 m^3/d. Two existing 27.4m diameter circular tanks (previously utilized as aerobic digesters) will be recommissioned to provide a storage capacity of 3 735 m^3. The remaining 1 868 m3 will be provided via two square tanks, each with an effective storage of 934 m^3.

The design of the mixing system for the emergency WAS storage tanks (i.e. aerobic digesters) shall be based on floatable surface aerators sized to ensure that when full, aerobic conditions are maintained and the full sludge content of the emergency WAS storage tanks remains mixed. Each aerator will be fitted with variable frequency drives as the units will be required to operate at multiple rotational speeds.

The smaller WAS holding tanks (i.e. the square tanks) will be equipped with coarse bubble diffused aeration to ensure aerobic conditions are maintained and the full sludge content of the WAS storage tanks remains mixed.

Emergency overflow from the WAS sludge holding tanks will be captured in an overflow box situated inside the holding tanks and routed to one of two overflow tanks.

3.2.3.10 Dewatering facility

Belt filter presses and a combination of gravity belt thickeners and belt filter presses will be utilized to mechanically dewater primary sludge and waste activated sludge, respectively.

'24 Primary sludge dewatering

Primary sludge will be withdrawn from the primary sludge storage tanks and routed to the dewatering facility via a pumped ring main. The filter press ring main pumps (2 duty, 1 standby) will be sized based on a 14-hour per day operation, which implies a target discharge per pump of approximately 70 to 184 m^3/hr (depending on the solids concentration of the sludge draw off). The sludge feed to the respective belt filter press units will be controlled via progressive cavity pumps feeding directly to the belt filter press units.

Under normal operating conditions the solids concentration of 2.25% will be dewatered and the belt filter system will be designed to achieve a minimum cake dryness of 25% with a maximum active poly dose of 4 kg/tonne DS dewatered. However, the dewatering system will be able to operate at varying solids concentrations ranging between 1.5% to 4% for the sludge feed concentration.

Washwater to the belt filter presses and poly make up system shall be sourced from a dedicated booster type pump station located at the dewatering permeate tank. The pump station will discharge into a common dewatering ring main system equipped with the necessary motorised valves and flow meters to control the amount of washwater supplied (i.e. it will supply both the primary sludge and WAS dewatering units). The specification of the washwater feed pumps (4 duty and 0 standby) shall be based on an assumed maximum washwater requirement for eight belts in operation with the poly make up system active. The duty requirement of these pumps must be confirmed once the final particulars of the belt filters have been established.

Provision shall be made for a continuous poly-electrolyte batching and dosing system for the conditioning of sludge prior to dewatering. The design makes provision for the continuous make-up of dry poly-electrolyte in one of two poly make-up units (1 duty, 1 standby) and mixing diluted poly into the sludge feed stream by method of direct injection into the sludge feed pipe.

Washwater and filtrate (collectively referred to liquor) will be collected and routed to an adjacent filtrate sump under gravity, from where the liquor will be pumped to the head of works. This pump station shall be sized to convey the filtrate of eight belt filter press units running simultaneously at full capacity.

Sludge cake from the belt filter press units shall be accumulated into one of four centreless screw conveyor systems installed in a mirror image (i.e. 2 belts per screw conveyor). Two conveyors shall

[redacted]

discharge sludge cake into a one duty, one standby progressive cavity sludge cake pump station (i.e. four (4) PC pumps per sludge train). Each progressive cavity pump shall have dedicated discharge pipeline equipped with poly lubrication systems and valves. Each sludge cake pump station shall discharge into a dedicated sludge cake silo. Each progressive cavity pump shall a rated duty equivalent to the maximum rated capacity of four belt filter press units.

Two sludge cake silos, each with a storage volume of 320 m^3, shall be used to load the dewater sludge cake to trailers for offsite disposal. Each silo shall be equipped with a live bottoms consisting of parallel screw conveyors mounted horizontally. The screw conveyors shall be sized to ensure that the content of the silo can be discharged within four hours.

'24 Waste activated sludge dewatering

Waste activated sludge will be withdrawn from the waste activated sludge storage tanks and routed to the dewatering facility via a pumped ring main. The filter press ring main pumps (2 duty, 1 standby) will be sized based on a 14-hour per day operation, which implies a target discharge per pump of approximately 74 to 368 m^3/hr (depending on the solids concentration of the sludge draw off). The sludge feed to the respective gravity belt thickener/belt filter press units will be controlled via progressive cavity pumps feeding directly to the gravity belt thickener/belt filter press units.

Under normal operating conditions the solids concentration of 0.7% will be dewatered and the gravity belt thickener/belt filter press units will be designed to achieve a minimum cake dryness of 16% with a maximum active poly dose of 6 kg/tonne DS dewatered. However, the dewatering system will be able to operate at varying solids concentrations ranging between 0.5% to 2.5% for the sludge feed concentration.

Washwater to the belt filter presses and poly make up system shall be sourced from a dedicated booster type pump station described under the previous heading.

Provision shall be made for a continuous poly-electrolyte batching and dosing system for the conditioning of sludge prior to dewatering. The design makes provision for the continuous make-up of dry poly-electrolyte in one of two poly make-up units (1 duty, 1 standby) and mixing diluted poly into the sludge feed stream by method of direct injection into the sludge feed pipe.

Washwater and filtrate (collectively referred to liquor) will be collected and routed to an adjacent outfall sewer line under gravity flow. The system shall be sized to convey the filtrate of eight gravity belt thickener/belt filter press units running simultaneously at full capacity.

Sludge cake from the belt filter press units shall be accumulated into one of four centreless screw conveyor systems installed in a mirror image (i.e. 2 belts per screw conveyor). Two conveyors shall discharge sludge cake into a one duty, one standby progressive cavity sludge cake pump station (i.e. four (4) PC pumps per sludge train). Each progressive cavity pump shall have dedicated discharge pipeline equipped with poly lubrication systems and valves. Each sludge cake pump station shall discharge into a dedicated sludge cake silo. Each progressive cavity pump shall a rated duty equivalent to the maximum rated capacity of four belt filter press units.

Two sludge cake silos, each with a storage volume of 320 m^3, shall be used to load the dewater sludge cake to trailers for offsite disposal. Each silo shall be equipped with a live bottoms consisting of parallel screw conveyors mounted horizontally. The screw conveyors shall be sized to ensure that the content of the silo can be discharged within four hours.

3.2.4 DRAWINGS

The tender drawings prepared by the Engineer and issued with the tender show the general layout and position of the mechanical and electrical works to be supplied and installed under this Contract, as well as the civil work to be constructed by others. These details may in some instances constitute schematic arrangements. These drawings, together with the Specification, are deemed to provide sufficient detail to enable the Contractor to determine the requirements of the Works and to price and schedule the supply, installation and commissioning of all associated Electrical and Mechanical Plant.

A complete list of tender drawings is included in Volume 4 of this Contract Document.

3.2.5 DESIGN PROCEDURES

3.2.5.1 Design workshops

Notwithstanding the requirements stipulated in Part C3.5: Management, the Contractor shall allow for a minimum of twelve one-day design workshop, which shall be held at a suitable conference venue made available by the Employer The Contractor's Representative and design team members for all

[redacted]

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 Contact. In addition, the Health and Safety Officer from the Contractor's personnel shall attend at least three (3) of these meetings. The Contractor shall also ensure that design specialist from the equipment suppliers are available when specific equipment is discussed in the design workshop. The Contractor shall allow for a team of eight representatives combined from the Employer and the Engineer

Minutes highlighting any decision reached shall be drafted by the Contractor and submitted to the Engineer for approval within 7 days of each design workshop.

3.2.5.2 Hazard and operability study (HAZOP) Workshop

The Contractor shall 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 HAZOP Consultant shall be commissioned to provide a report detailing the findings of the study. The study shall be undertaken at a suitable location to be arranged by the Employer once the Contractor's process and piping and instrumentation diagram (P&ID) are approved by the Engineer for this purpose. This diagram(s) shall be updated by the Contractor after completion of the study, to reflect the decisions reached.

The Contractor's Representatives and design team member for all components of the Works (as a minimum including the design team of the Contractor i.e. mechanical , electrical and instrumentation design leader) shall be present for the full duration of the study and for which a minimum of five days shall be allowed.

The HAZOP study report and HAZOP Workshop(s) shall be complete before the Contractor's design is finalised.

3.2.5.3 Contractors documentation

The Contractors 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 this section. However, the Contractor shall accept that the Contractors Documents to be submitted shall include, but not be limited to in any way, the documents listed here. These documents also does not limit the Contractor's obligation in terms of the Contract in any way.

3.2.5.3.1General

All drawings and documentation submitted by the Contractor shall be in English and shall comply with the requirements prescribed below.

A register of the Contractors documents shall be provided with each submission made by the Contractor. The register shall indicate the title, date and revision of the documents submitted.

All the symbols used in the electrical drawings shall be in accordance with IEC Publication 60617 unless otherwise specified in the Project Specifications and the SI system of units shall be used throughout.

All designs shall be complete, accurate and geographically correct. The designs and drawings shall be sufficiently detailed to enable construction and installation to proceed without further need for additional drawings or documentation.

All drawings and documentation submitted shall be suitably identified and labelled by means of title blocks, page numbers and revision status.

All designs (including calculations), documents and drawings shall be submitted for the Engineer's approval prior to the commencement of equipment ordering, manufacturing or construction on site. Approval by the Engineer of any design or drawing does not relieve the Contractor of his responsibility of any part of the works manufactured or constructed in accordance with the design or drawing. Designs approved by the Engineer shall not be altered without his written agreement.

With regards to site and interconnecting pipework, the Engineer has provided the proposed layout of the pipework on the Drawings for tendering purposes. However, the Contractor shall be responsible for all measurements on Site, final design, correct manufacturing and installation of all pipe items and specials to suit the installation. Any/all modifications on Site shall be handled in terms of the relevant Specifications for repairs to damaged corrosion protection. The Contractor shall also maintain suitable records of all such items in order for the Engineer to complete the as-built drawings at the completion of the works.

3.2.5.3.2List of Contractors documents to the provided as part of Contractors design obligations

[redacted]

The list of Contractors documents shall be submitted in terms of the Sections of the Works defined in terms of Clause 1.1.5.6 of the General Conditions of Contract. The Contract shall submit the documents within the time frames stipulated **in terms of Clause 5.2 of the General Conditions of Contract**.

The stipulated time frames listed above are relevant to the information required for the finalisation of the civil design. Failing to produce the relevant Contractor's Documents listed here shall result in a delay penalty in terms of Clause 8.7 & 14.15(b) of the General Conditions of Contract.

The list of Contractor's Documents that shall form part of each submission for all mechanical and electrical equipment/components for the Sections of the Works listed above shall include, but not be limited to:

a) Design calculations clearly showing design parameters, calculations, assumptions, etc.
b) Dimensioned layout drawings (preferably A1 size) of the installation showing the proposed layout and design of all plant and equipment as well as any required building modifications. Sufficient sections and elevations must be shown so that the relative arrangement of all equipment is clear.
b) Control system specifications and detailed control philosophy.
c) Piping and instrumentation diagram showing the extraction ducting and treatment system and tagged in accordance with the City of Cape Tow1n's numbering system.
d) Certified dimension drawings for all equipment other than small items such as metering pump s, instrument, etc.
d) Motor, equipment (including valves) and instrumentation list.
e) Process schedules: equipment, instruments, on/off valves, control valves and pressure safety valves, as applicable, giving key attributes for each item.
f) 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.
g) Mechanical equipment data sheets giving performance, sizing, physical and general technical data for all components of the installation.
h) Electrical Single Line Diagrams.
i) Electrical equipment datasheets: motor control centre, switchgear, PLC.
j) Electrical panel layouts.
k) Power and control cable routings.
l) Earthing drawings.
m) Loop diagrams.
n) Instrument datasheets.
o) Small power and lighting layout.
p) Amendment proposal to O&M manual content.
q) Contractor's document registers.

The date by which possession of the Site can be handed over to the Contractor and consequently the completion date of the Works, is dependent on the date of submission and acceptance of the documents referred to above. Cost resulting from delays in submission of the Contractor's Documents or in correcting errors or making changes on documents not approved by the Engineer shall be for the Contractor's account.

The item allowed for in the Schedules of Quantities to cover expenses incurred by the Contractor in the event of delays in handing over the Site shall not apply where such delay is attributable to the late submission and acceptance of the drawings referred to above.

3.2.5.3.3 Training documents (Clause 5.5 of General Conditions of Contract)

A training schedule shall be furnished prior to each Section of Works reaching the "Ready for Commissioning (RFC)" milestone. Pre-commissioning testing documentation and commissioning plan shall be included in this submission.

3.2.5.3.3 As-built Drawings (Clause 5.6 of General Conditions of Contract)

"As-Built' drawings shall be furnished on completion and the relevant completion certificate shall not be issued until such drawings have been received and approved by the Engineer.

Final and approved as-built drawings shall be submitted to the Engineer in five-fold hard copy in A3 size accurately scaled. In addition, the Contractor shall also prepare one complete set of all drawings in digital format as specified above for submission to the Engineer.

[redacted]

3.2.5.3.4 Operation and Maintenance Manuals

The submission of draft Operation and Maintenance (O&M) manuals is a prerequisite to commencing with the Tests on Completion. Two (2) copies of the draft manuals shall be submitted in terms of the format described below for the Engineer's approval at least two weeks prior to the commencing of the Tests on Completion.

Once the Operating and Maintenance manuals have been approved by the Engineer, four (4) complete sets of the manuals shall be provided by the Contractor to the Engineer. The submission of these final manuals shall be before the Completion and before the works have been taken over by the Employer.

The manuals shall be printed on durable paper and be neatly and securely bound in A4 size hard-backed plastic/waterproof ring binders with clear pockets on the spine and front cover for insertion of title slips giving the contract number, scheme description and equipment supplied.

As-Built drawings in A3 size, index and other title pages shall be contained in separate pockets.

One (1) complete set of manuals shall also be submitted in an electronic format acceptable to the Employer.

Layout and content

The manual shall contain the following:

(1) Title page

(2) Contents list

(3) List of drawings and appendices

(4) Maintenance and Lubrication Schedule (summary)

The maintenance schedule shall be in table format and shall include a summary of all the maintenance actions required of all the different systems and functional units covered by the manual to give an overall summary of maintenance actions required for the complete works.

The schedule shall indicate daily, weekly, fortnightly, monthly and annual maintenance actions. A lubrication schedule shall also be included under this section.

A schedule indicating daily, weekly, fortnightly, monthly and yearly maintenance actions shall also be provided.

(5) Detailed Plant description

- The main body of the manual shall be divided into sensible sections, each covering a system or functional units. Each section shall contain the following sub-sections:

  - Plant Description (brief but detailed);
  - Maintenance and Lubrication Schedule (in table format);
  - Process and Instrumentation Diagrams (P&ID's);
  - Operating instructions (including start-up and stopping procedures and/or automatic operation)
  - Fault Finding
  - Equipment Data Sheets containing as a minimum:

    (a) Equipment Tag Number (for asset register purposes)
    (b) Equipment Description
    (c) Supplier Details
    (d) Model and Make
    (e) Cost of supply (at date of tendering)
    (f) Equipment Technical Manuals

  For each piece of equipment and/or machine supplied, the following shall be provided under this sub-section:

  (i) Supplier's Operation and Maintenance instructions
  (ii) Parts list and data sheets
  (iii) Calibration charts
  (iv) Test certificates for hydraulic pressure tests, flame proof grading, materials, non-destructive tests, coating and lining details

[redacted]

(v) Applicable drawings and details

(6) As built drawings

Folded A3-size as built drawings correctly scaled.

(7) Computer programmes and software

Digital copies of programmes and software as required by computerised systems installed on the project as required for maintaining, updating or altering the system by the Employer or Operator.

(8) Wiring diagrams of electrical installations (separate volume)

3.2.5.3.5 Test on Completion (Clause 9.1 of General Conditions of Contract)

The Contractor shall be furnished a comprehensive report containing detailed schedule and documentation to record all pre-commissioning test under taken and the results of these, demonstrating that the Works have passed the pre-commissioning test.

Comprehensive report containing detailed schedule and documentation to record all commissioning test under taken and the results of these, demonstrating that the works have passed the commissioning procedure and schedule of alarm messages, which shall additionally be inserted in the operation and maintenance manual.

During the trail operation (i) fortnightly reports detailing the equipment failures, plant performance and problems, training logs, and providing and evaluation of the performance of the Employer's operators and (ii) a report on the completion of the trail operation.

[redacted]

CITY OF CAPE TOWN

WATER AND SANITATION

CONTRACT NO. 146Q/2021/22

DESIGN – BUILD OF MECHANICAL AND ELECTRICAL WORKS FOR THE UPGRADE AND EXPANSION OF POTSDAM WASTEWATER TREATMENT PLANT

C3.3 Procurement

CONTENTS

3.3.1 PREFERENTIAL PROCUREMENT
3.3.2 SUB-CONTRACTING PROCEDURES

3.3.1. PREFERENTIAL PROCUREMENT

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

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

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

3.3.2. SUB-CONTRACTING PROCEDURES

3.3.2.1 Monitoring the use of sub-contractors

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

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

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

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

3.3.2.2 Procedure for the selection of sub-contractors/suppliers

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

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

Where the monetary allowance is in excess of R300 000, an open competitive tender process shall be followed in respect of the selection of a sub-contractor/supplier for the required work or items. In such circumstances, tender documentation will be prepared by the Employer's Agent in consultation with and to the approval of the Contractor, invitations to tender will be advertised in the media by the Employer's Agent on behalf of the Contractor, and a sub-contractor/supplier will be selected from the responses

[redacted]

received, by the Contractor and Employer's Agent in consultation. The evaluation of the offers received must include a preference points system as described in C.3.11 of the Tender Data. The Contractor must satisfy itself that the selected sub-contractor/supplier can meet the requirements of the sub-contract /supply agreement and may, on reasonable grounds, elect not to employ a particular sub-contractor/supplier.

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

[redacted]

CITY OF CAPE TOWN

WATER AND SANITATION

CONTRACT NO. 146Q/2021/22

DESIGN – BUILD OF MECHANICAL AND ELECTRICAL WORKS FOR THE UPGRADE AND EXPANSION OF POTSDAM WASTEWATER TREATMENT PLANT

C3.4 Construction

CONTENTS

3.4.1 TRADE NAMES OR PROPRIETARY PRODUCTS
3.4.2 APPLICABLE STANDARDISED SPECIFICATIONS
3.4.3 PARTICULAR / PROJECT SPECIFIC SPECIFICATIONS
3.4.4 WAYLEAVES, PERMISSIONS AND PERMITS
3.4.5 LOCAL PRODUCTION AND CONTENT
3.4.6 EMPLOYMENT OF SECURITY PERSONNEL
3.4.7 UNIVERSAL ACCESS

3.4.1. TRADE NAMES OR PROPRIETARY PRODUCTS

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

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

3.4.2. APPLICABLE STANDARDISED SPECIFICATIONS

All material and equipment shall conform in respect of quality, manufacture, tests and performance, with the relevant requirements of the SANS or where no such standards exist, with the latest amendment of the British Standards Institution and/or relevant IEC and/or ISO publications. Where applicable, the material shall bear the stamp of the relevant standards body. Should an amendment or revision of any relevant standards be published after tender closing date, as defined in Clause 2.5 of Part T1.2-Tender Data, the Contractor shall ensure that such amendments are incorporated into the final design of the Works.

Where proprietary materials and equipment are specified or required, approval of such materials or equipment shall be at the sole discretion of the Engineer once the appropriate samples or technical literature have been submitted.

3.4.3 PARTICULAR / PROJECT SPECIFIC SPECIFICATIONS

Particular/project specific specifications are included in Volume 3A & 3B of this Contract Document (refer to Document C). The relevant sub headings of the specifications are listed below for reference purposes:

Specifications (Volume 3A):

Mechanical Specifications:

Section C3.6.1: Detailed specifications for Mechanical Works
Section C3.6.2: City of Cape Town Standard Specification for Mechanical Works

General Specifications

The following general specifications are also included in Volume 3A but applies to the Contract in its entirety.

Section C3.6.3: Environmental Management Specification and its Annexures
Section C3.6.4: Health and Safety Specification and its Annexures
Section C3.6.5: City of Cape Town Plant numbering system

[redacted]

Specifications (Volume 3B):

Electrical Specifications:

Section C3.6.6: Variations and additions to the standard and particular specifications for electrical works
Section C3.6.7: Particular Specification for Electrical Works
Section C3.6.8: City of Cape Town Standard Specification for Electrical Works

3.4. WAYLEAVES, PERMISSIONS AND PERMITS

The Contractor shall be responsible for obtaining all of the necessary wayleaves, permissions or permits applicable to working near any existing services or other infrastructure on Site, and shall ensure that any wayleaves, permissions or permits obtained by the Employer's Agent prior to the award of the contract are transferred into the Contractor's name.

The Contractor shall abide by any conditions imposed by such wayleaves, permissions or permits.

The Contractor shall ensure that all wayleaves, permissions and permits are kept on site and are available for inspection by the relevant service authorities on demand.

The Contractor shall also ensure that any wayleaves in respect of electricity services are renewed timeously every three months.

3.4.5. LOCAL PRODUCTION AND CONTENT

The Contractor will be required to comply with all requirements as stated in this document.

3.4.6 EMPLOYMENT OF SECURITY PERSONNEL

All security staff employed by the Contractor on behalf of the CCT or at any CCT property must be registered with Private Security Industry Regulatory Authority (PSiRA). Proof of such registration must be made available to the Employer's agent upon request.

3.4.7 UNIVERSAL ACCESS

In pursuit of becoming a fully accessible city, the City of Cape Town expects all Consultants and Service Providers to design and construct to SANS Standards for accessible Design, and any relevant City of Cape Town documents as may be relevant, and to exhibit a commitment to employing Universal Design Principles in their design, construction, service and product delivery of construction projects. This applies to all projects whether new, temporary, upgrades or rehabilitation works.

The Contractor will engage with project representatives and the CCT's Universal Accessibility Department on how Universal Design Principles will enhance accessibility, within this project, that meets a variety of needs and creates a city that is accessible to everyone.

[redacted]

CITY OF CAPE TOWN

WATER AND SANITATION

CONTRACT NO. 146Q/2021/22

DESIGN – BUILD OF MECHANICAL AND ELECTRICAL WORKS FOR THE UPGRADE AND EXPANSION OF POTSDAM WASTEWATER TREATMENT PLANT

C3.5 Management

CONTENTS

3.5.1. FORMS FOR CONTRACT ADMINISTRATION
3.5.2 PARTICIPATION OF TARGETED LABOUR
3.5.3. COMMUNITY LIAISON OFFICER
3.5.4. PARTICIPATION OF TARGETED ENTERPRISES
3.5.5 PROGRAMMING, SEQUENCING AND INTERFACE REQUIREMENTS
3.5.6 KEY PERSONNEL
3.5.7. ENVIRONMENTAL MANAGEMENT PROGRAMME
3.5.8. HEALTH AND SAFETY
3.5.9 MANAGEMENT REPORT ANNEXES

3.5.1. FORMS FOR CONTRACT ADMINISTRATION

Reports and records which are to be submitted to the Engineer or his representative shall be in a format agreed by the Engineer or his Representative. The Contractor shall compile Monthly Progress Report in accordance with Clause 4.21 of the General Conditions of Contract. On the Engineers or his Representative's request, colour photographs, including underwater photographs if appropriate, showing the progress of the Works and the quality of the materials and workshop shall be taken by the Contractor at the times and at locations instructed by the Engineer or his Representative. Each photograph shall be captioned with the time, date and location. Selected prints shall be authenticated by the Contractor and the Engineer or his Representative by signing the back of the prints and shall be submitted to the Engineer or his Representative.

The Contractor shall supplement his progress report with photos as appropriate, in which there are site activities and arrival of materials to site, to show the actual site conditions, mechanical and electrical equipment, installation progress or any related conditions as requested by the Engineer or his Representative. Each photo shall be suitably labelled, date and documented.

The Contractor shall complete, sign and submit with each monthly statement for payment, the following updated returns (the format of which are attached in C3.5.9 Management Report Annexes as amended from time to time):

a) Monthly Project Labour Report (Annex 1)
b) B-BBEE Sub-Contract Expenditure Report (Annex 2)
c) Joint Venture Expenditure Report (Annex 3)
d) Targeted Labour Contract Participation Expenditure Report (Annex 4)
e) Targeted Enterprises Contract Participation Expenditure Report (Annex 5)

The Monthly Project Labour Report must include details of all labour (including that of sub-contractors) that are South African citizens earning less than R350.00 per day, as adjusted from time to time (excluding any benefits), who are employed on a temporary or contract basis on this contract in the month in question.

In addition to the Monthly Project Labour Report the Contractor shall simultaneously furnish the Employer's Agent with copies of the signed employment contracts entered into with such labour, together with certified copies of identification documents, proof of attendance in the form of attendance register or timesheets as well as evidence of payments to such labour in the form of copies of payslips or payroll runs. If the worker is paid in cash or by cheque, this information must be recorded on the envelope and the worker must acknowledge receipt of payment by signing for it and proof of such acknowledgement shall be furnished to the Employer's Agent.

The Monthly Project Labour Reports shall be completed and submitted in accordance with the instructions therein and copies of all submitted documents must be kept on site be made available to the Employer's agent upon request.

The **B-BBEE Sub-Contract Expenditure Report** is required for monitoring the prime contactor's compliance with the sub-contracting conditions of the **Preference Schedule**.

[redacted]

The Joint Venture Expenditure Report is required for monitoring the joint venture's compliance with the percentage contributions of the JV partners as tendered, where the joint venture has been awarded preference points in respect of its consolidated B-BBEE scorecard.

The Targeted Labour Contract Participation Expenditure Report (if applicable) is required for monitoring the Contractor's compliance for achieving the specified minimum targeted labour contract participation goal (CPG_L) and, if applicable, for calculating any penalty in terms thereof.

The Targeted Enterprises Contract Participation Expenditure Report (if applicable) is required for monitoring the Contractor's compliance for achieving the specified minimum targeted enterprises contract participation goal (CPG_E) and, if applicable, for calculating any penalty in terms thereof.

The Expenditure Reports shall be verified by the Employer's Agent/Employer's Agent's Representative.

In respect of Annexes 2 and 3, the Employer shall, in addition to any other sanctions available to it , apply the financial penalties applicable to breach of preferencing conditions in the **Preference Schedule** Preference Schedule in Part T2.2 Returnable Schedules. In the case of joint ventures (Annex 3), the Contractor shall prove his compliance with item 6) in Section 2 of the Preference Schedule by providing a consolidated scorecard at his own cost on instruction from the Employer's Agent.

Where the General Conditions of Contract calls for photographic records the following shall be accepted as relevant to this

3.5.2 PARTICIPATION OF TARGETED LABOUR

3.5.2.1 Minimum targeted labour contract participation goal

In support of the National Department of Public Works' Expanded Public Works Programme which is aimed at alleviating poverty through the creation of temporary employment opportunities using labour intensive methodologies and practices where possible, the Employer is seeking to increase the intensity of labour, as appropriate, in all of its infrastructure sector projects.

It is a requirement of this contract, therefore, that the work be executed in such a manner so as to maximise the use of labour intensive construction methods in order to provide low and semi-skilled temporary employment opportunities.

To this end, a minimum targeted labour contract participation goal is specified below, which shall be achieved by the Contractor in the performance of the contract, failing which, penalties as described will be applied. The Contractor is required to provide all skills training where necessary, so as to ensure that a minimum level of competence is achieved and maintained, such that the various activities are carried out safely and to the required standard. The cost of training shall be included in the rates for the various work activities.

The specified minimum targeted labour contract participation goal (CPG_L) is [0 %]

The minimum CPG_L is such that the Contractor will have to carry out some of the work that would normally have been undertaken using mechanised construction methods, by using labour intensive construction methods instead. It is left to the discretion of the Contractor to identify suitable work activities for the intensification of labour. The Contractor shall, within 5 working days of being requested in writing by the Employer's Agent to do so, submit details of his/her plan to achieve the minimum CPG_L.

3.5.2.2 Definitions

For the purposes of the requirements in respect of the participation of targeted labour, the following definitions shall apply:

"Target area" means the geographical area included in the City of Cape Town's Ward No. 4, 5, 104, 107 & 113.

"Targeted labour contract participation goal (CPG_L)" means the sum of the wages (excluding any benefits), for which the Contractor, or any of his/her sub-contractors contracts targeted labour in the performance of the contract, expressed as a percentage of the value of the contract.

"Targeted labour" means low and semi-skilled individuals, whose wages (excluding any benefits) do not exceed the threshold value, who reside in the target area, that are employed by the Contractor, or any of his/her sub-contractors, in the performance of the contract.

[redacted]

"Threshold value" is R350.00 per day as adjusted from time to time (excluding any benefits). The threshold value is not to be confused with any industry sector minimum wage determined in accordance with the Basic Conditions of Employment Act, 75 of 1977.

"Value of the contract" means the contract sum (accepted contract amount) less provisional sums, contingencies and VAT.

3.5.2.3 The selection and recruitment of targeted labour

Where targeted labour is to be drawn from specific local communities (defined in terms of the target area), such labour shall be identified using the relevant Sub-Council Job-Seekers Database. The Contractor shall request, via a Community Liaison Officer (if required in terms of the contract), a list of suitable candidates from the database, from which the Contractor shall make his/her final selection. The contractor shall enter into written contracts of temporary employment with all targeted labour.

Any difficulty experienced by the Contractor in identifying candidates though the Job-Seekers Database, or as regards any matter relating to the employment of targeted labour, shall be immediately referred to the Employer's Agent.

3.5.2.4 Contract participation goal credits

Credits towards the achieving the minimum CPG_L shall be granted by converting the total monetary value of wages paid to targeted labour (including that of sub-contractors) to a percentage of the value of the contract. No credits shall be accorded should the contractor/sub-contractor fail to enter into written contracts with the targeted labour. Furthermore, no credits shall be accorded in respect of targeted labour employed on work in respect of provisional sums or prime cost items. Such labour shall nevertheless be recorded on the Project Labour Report which is required to be furnished by the Contractor.

3.5.2.5 Training of targeted labour

The Contractor is required to provide all informal (on-the-job) skills training so as to ensure that a minimum level of competence is achieved and maintained, such that the various activities are carried out safely and to the required standard. The cost of informal training shall be included in the rates for the various work activities.

3.5.2.6 Penalties

The financial penalty to be applied for failing to meet the specified minimum targeted labour contract participation goal in the performance of the contract (unless proven to be beyond the control of the Contractor), is as follows:

$$\text{Penalty} = (CPG_L^S - CPG_L^A) \times P^*$$

Where CPG_L^S = the specified minimum targeted labour contract participation goal (expressed as a percentage).

CPG_L^A = the targeted labour contract participation goal achieved (expressed as a percentage).

P^* = the value of the contract.

3.5.3. COMMUNITY LIAISON OFFICER

Note applicable to contract.

3.5.4. PARTICIPATION OF TARGETED ENTERPRISES

3.5.4.1 Minimum targeted enterprises contract participation goal

It is a requirement of this contract that enterprises located within the target area, as defined, be engaged by the Contractor for the provision of supplies, services or works necessary for the performance of this contract.

To this end, a minimum targeted enterprises contract participation goal is specified below, which shall be achieved by the Contractor in the performance of the contract, failing which, penalties as described will be applied.

[redacted]

The specified minimum targeted enterprises contract participation goal (CPG_E) is | 0 % |

The Contractor shall engage targeted enterprises directly or indirectly in the performance of the contract to the extent that the total monetary value of such engagements (exclusive of VAT), expressed as a percentage of the value of the contract, is sufficient to achieve the specified minimum CPG_E.

3.5.4.2 Definitions

For the purposes of the requirements in respect of the participation of targeted enterprises, the following definitions shall apply:

"Target area" means the geographical area included in the City of Cape Town's Ward No. 4, 5, 104, 107 & 113.

"Targeted enterprises contract participation goal (CPG_E)" means the value of supplies, services or works (exclusive of VAT), for which the Contractor contracts targeted enterprises, either directly or indirectly, in the performance of the contract, expressed as a percentage of the value of the contract.

"Targeted enterprises" means any sole trader, partnership or legal entity that acts as a supplier, manufacturer, service provider or sub-contractor, and which has its base of operations in the target area.

"Value of the contract" means the contract sum (accepted contract amount) less provisional sums, contingencies and VAT.

3.5.4.3 Achieving the contract participation goal

The contractor may achieve the specified minimum CPG_E as follows:

a) by engaging one or more targeted enterprises to perform commercially useful functions in the performance of the contract;

b) by engaging non-targeted enterprises, who in turn engage one or more targeted enterprises to perform commercially useful functions in the performance of the contract;

c) by a combination of the above.

The Contractor shall, within 5 working days of being requested by the Employer's Agent to do so, submit details of his/her plan to achieve the minimum CPG_E.

3.5.4.4 Contract participation goal credits

Credits towards achieving the minimum CPG_E shall be granted by converting the total monetary value (exclusive of VAT) of the agreements between the Contractor, or Contractor's sub-contractors, and targeted enterprises, to a percentage of the value of the contract.

No credits shall be accorded should the Contractor (or sub-contractors):

a) make direct payment to third parties in connection with the contract on behalf of targeted enterprises, when such payment is recovered by making deductions from payments due to the targeted enterprise;

b) fail to enter into written contractual agreements with the relevant targeted enterprises.

Credits claimed towards the contract participation goal shall be denied where such written contractual agreements contain any of the following:

c) conditions which are more onerous than those that exist in the prime contract (this contract);

d) payment procedures based on a pay when paid system;

e) authoritarian rights given to the employing contractor, with no recourse to independent adjudication in the event of a dispute arising.

No credits may be claimed in respect of targeted enterprises that that do not adhere to statutory labour practices.

No credits shall be accorded in respect of targeted enterprises engaged on work in respect of provisional sums or prime cost items.

In the event that a targeted enterprise sub-contracts to another targeted enterprise, only the value of the higher level sub-contract shall be granted as credit towards achieving the specified minimum CPG_E.

In addition to the form required for contract administration (the Targeted Enterprises Contract Participation Expenditure Report), the Contractor shall furnish the Employer's Agent, upon written request, with documentary evidence that the targeted enterprises have their base of operations in the target area, copies of the contractual agreements with the various targeted enterprises, as well as documentary proof of payments made to the various targeted enterprises.

3.5.4.5 Penalties

The financial penalty to be applied for failing to meet the specified minimum targeted enterprises contract participation goal in the performance of the contract (unless proven to be beyond the control of the Contractor), is as follows:

$$\text{Penalty} = (CPG_E^S - CPG_E^A) \times P^*$$

Where CPG_E^S = the specified minimum targeted enterprises contract participation goal (expressed as a percentage).

CPG_E^A = the targeted enterprises contract participation goal achieved (expressed as a percentage).

P^* = the value of the contract.

3.5.5 PROGRAMMING, SEQUENCING, INTERFACE REQUIREMENTS AND TESTING

3.5.5.1 Programming

Each Tenderer shall submit with his tender a suitable and realistic preliminary programme as specified for Returnable Schedule 15 of Part T2.2. This programme shall clearly indicate the:

- The assumed Commencement Date;
- be prepared in accordance with the maximum Time for Completion offered for the completion of the Works and;
- provide interim completion dates for each milestone or element of the works, including the commissioning period.

After award of the Contract, the Contractor shall submit a detailed construction programme to the Employers Agent in accordance with the requirements of Sub-Clause 8.3 [Programme] of the Conditions of Contract. Except as provided above, the approval by the Engineer of the Contractor's construction programme, or of any amendment or adjustment thereto, shall not in any way alter the Contract, act as an estoppel or limit the right of the Employer to demand due performance under the Contract. The approval of a construction programme by the Employers Agent indicates only that the Employers Agent will be satisfied if the work is carried out according to such programme and that the Contractor undertakes to carry out the work in accordance with the programme.

The final construction program will have to be compiled in consultation with the Engineer and the Civil contractor.

The approval of a construction programme by the Engineer shall not limit his right to give notice to the Contractor to submit a revised programme if it is considered that the submitted programme fails to comply with the Contract.

MS Project shall be the format for communicating programme matters between the Contractor and Engineer. The Contractor's Initial and Contract Programmes shall be developed and presented with a detailed work breakdown sufficient to allow effective monitoring of progress by the Engineer on a weekly basis.

A baseline programme shall be created and all changes to this baseline shall be shown. Planning of critical activities and generation of progress and planning reports related to the execution of the Works.

The Initial Contract Programme shall be accompanied by a narrative Workplan describing the Contractor's planning and manner of execution, including how he proposes to divide the Works into Portions of the Works.

The Contract Programme submission shall further include as a minimum:

- Work breakdown (Portions of the Works and sub-sections);
- Activity listing;
- Logic linked bar chart (Gantt chart); and
- A clearly defined critical path.

The following minimum information shall be presented for each activity:

- Activity Identification number;
- Description;
- Duration in working days;
- Calendar;
- Bar indicating early start date, early finish date and duration;
- Linkages and constraints with other activities;
- Bar indicating Contractor's assessment of risk and allowance made for wet seasons, weather delays and the consequences of weather delays;
- Total and free float;
- Periods of inactivity or low production due to identified constraints.

Activities shall include:

- As separate activities: - mobilisation, design, procurement, fabrication, delivery, installation, testing and Tests on Completion of Plant, and ancillary works;
- Submittal and approval of key Contractor's designs for relevant Temporary and Permanent Works;
- Construction of all structures and related facilities;
- Work carried out by sub-contractors divided into separate activities.

The programme shall include the following key dates:

- Letter of Acceptance;
- Commencement Date;
- Submission of securities and Contractor's insurances;
- Completion of each Section of the Works prior to the Tests on Completion;
- Start and end dates for the various categories of Tests on Completion (Ready for Commissioning RFC, and Ready for Trial Operation RFTO);
- Issue of Taking-Over Certificates;
- End of Defects Notification Period

The programme shall include the following significant dates:

- Submission of initial Method Statements/Plans pertaining to Occupational Health and Safety, Quality Assurance, Environmental, Recruitment, Employment and Training, Industrial Relations and Procurement;
- Interfaces with preceding, concurrent and follow-on sub-contractors, if any;
- Availability of facilities and free issue materials provided by the Employer;
- Order and delivery of key Plant and long-lead items for the Permanent Works;
- Relevant Drawings to be issued by the Engineer over the first 12 months of the Contract;
- Mechanical and electrical installations;
- Rehabilitation and grassing;
- Tie-ins to existing services;
- Critical stream, service, road and rail crossings;
- In support of the programme the following shall be submitted:
- Computer printout presenting calendar information. The calendars defined shall include information on shutdown periods, vacation days and other non-working time periods;
- Computer printout presenting cash flow projection.

The information obtained from this Contract shall be used to finalise the Civil contractor's programme. It is therefore essential that the Contractor's programme highlight the dates when access to the various structures shall be required for him to commence with his installation including durations to RFC per structure.

[redacted]

Due to the nature of the work the Contractor will have to coordinate with other contractors on site to ensure that the program is not delayed as a results of known factors such as progress of Civil Works. To this end the Contractor shall agree and price for the co-operative management of the Project program and the relevant requirements associated with the co-ordination between the various contractors that will be onsite, and which Works (specifically their progress) will affect the completion of the milestone stipulated in this Contract. Allowance has been made in the schedule of quantities for these coordination meetings. These meetings shall be conducted on site at a minimum cycle of once every 2 weeks. The Integration Manager (Design and program co-ordinator in terms of Clause 4.6 of the Particular Conditions of Contract) shall attend each and every coordination meeting and shall report on the actions required to avoid delays in the overall project program.

The Mechanical Contractor will have to ensure that the program allows for the sequencing and interface requirements specified below.

3.5.5.2 Sequencing and Access to Site

The Contractor will have the specified period per Table 3.5.5.2-1 below to review and design the Works associated with the upgrade and expansion of the Potsdam Wastewater Treatment Plant. This will likely results in alterations to some civil structures. The Civil contractor will have to wait for the finalisation of this review period before commencement with any structures subject to variation.

Table 3.5.5.2-1: *Design periods and contractual dates from Commencement Date*

Description	Section A[7] (days)	Section B[7] (days)	Section C[7] (days)	Section C Sub-section A[7,8] (days)	Section D[7,9] (days)
Design of Temporary Works[1]	-	-	-	90	-
Finalise design of Works[2]	120	**195**	120/180	120	-
Access to site to erect and install[3]	480	**1100**	920	450	-
RFC[4]	-	-	-	**690**	-
RFTO[4]	660	**1160**	1280	1280	1615
Taking over Certificate[5]	1025	**1190**	1645	1645	1645
End of Defects and Notification[6]	1390	**1555**	2010	2010	2010

Note:
1. Temporary works as defined in Table 3.5.5.3 – 1: *Interface on sludge management facility* (refer to Section 3.5.5.3.
2. Finalised design shall be in accordance with submission (and approval) of Contractor's Documents listed in Section 3.2.5.3.2 of C3.2.
3. Access to site to erect and install shall be accepted as the latest period after which the Civil contractor has progress far enough in order to **begin** with sections of the installation of the relevant mechanical and electrical Works. To avoid any confusion it is noted that this period does not refer to the completion date of the civil component of the Sections of Works. Exact dates shall be confirmed once the Construction Program is finalised.
4. RFC and RFTO as defined in Clauses 1.1.3.10 and 1.1.3.11 of the General Conditions of Contract.
5. As defined in terms of Clause 10.1 of the General Conditions of Contract.
6. As defined in terms of Clause 11 of the General Conditions of Contract.
7. Sections are as defined in Clause 1.1.5.6 of the General Conditions of Contract.
8. The temporary works associated with Section C Sub-A shall be commissioned after 120 days from Commencement Date.
9. The '97 Works has to be decommissioned after 1400 days from Commencement Date. However, decommissioning may only take place after successful trail operation of at least 90 days for the whole of the Works excluding Section D.

It will be a specific requirement that design review commences with Sections A and **C** of the Works to ensure civil work required in terms of these Sections of the plant can commence as soon as practically possible.

The areas of work where the Civil contractor can expect to commence with work without any delays from the design review process are presented in the list below:

a) The new fence specified for the Potsdam wastewater treatment plant.
b) The new management building
c) Refurbishment of existing buildings

3.5.5.3 Pre-Commissioning priority Section C sub-section A (Sludge management facility)

Potsdam wastewater treatment plant is an active plant and special consideration shall be required to ensure none of the live systems are disrupted during this construction activity. Although this is a general requirement, the commissioning of the sludge management facility will require specific sequencing and interfacing as the '08 sludge handling facility will have to be decommissioned and demolished to make way for the '24 sludge management facility. This will have to be achieved without compromising the sludge handling capacity of the Potsdam wastewater treatment plant during the transfer process.

The proposed interface and sequencing required to construct and commission the '24 dewatering facility is presented in the table below. The table highlights the main activities that have to be allowed for in the

[redacted]

construction program. This table does not limit the Contractor's responsibility regarding compiling and adhering to a realist construction program, to be submitted in terms of Clause 8.3 of General Conditions of Contract. The table only proposes what activities (with appropriate sequence) have to be followed to avoid compromising the sludge management functionality at the Potsdam Wastewater Treatment Plant during the construction activity.

Table 3.5.5.3 – 1: Interface on sludge management facility

Sequence of activities	Description of activities	Responsible Contractor
Activity 1	Finalise design of Temporary works and receive approval from Engineer to commence with Works.	M&E
Activity 2	Modify existing aerobic digesters (two (2) no.'s of) to function as temporary sludge storage tanks.	C
Activity 3	Reposition existing dewatering sludge feed pumps to area outside of construction/demolition area.	M&E
	Supply, install and commissioning two temporary sludge feed pumps (sludge handling submersible type pumps) to convey WAS and Primary Sludge to the existing dewatering facility with temporary connection to the dewatering system feed pumps.	M&E
	Install temporary supply pipes line from temporary sludge storage tanks to the existing dewatering system (HDPE ring mains).	C
	Commissioning temporary sludge feed system to allow unhindered access to existing dewatering sludge storage area.	M&E
	Expose and divert existing '97 & '08 primary sludge pump station discharge mains to the temporary primary sludge storage tanks.	C
	Expose and divert existing '97 & '08 WAS pump station discharge mains to the temporary WAS sludge storage tanks.	C
Activity 4	Maintain and uphold equipment associated with Temporary Works	C & M&E
Activity 5	Finalise design of Permanent Works and receive approval from Engineer to commence with Works.	M&E
Activity 6	Demolition of existing sludge storage facilities to avail space for new structures.	C
Activity 7	Receive final and updated construction drawings from Engineer	C
Activity 8	Construction of the civil works associated with the '24 Dewatering facility.	C
Activity 9	Supply, install and pre-commission mechanical and electrical equipment associated with the '24 Dewatering facility.	M&E
Activity 10	Construction of the civil work associated with the '24 sludge transfer pump station.	C
Activity 11	Supply, install and pre-commission mechanical and electrical equipment associated with the sludge storage facility.	M&E
Activity 12	Decommissioning and remove temporary sludge feed ring main pump and sludge feed pump station.	M&E
Activity 13	Remove temporary sludge feed ring main pumps.	M&E
Activity 14	Commission Sludge Management Facility	M&E
Activity 15	Temporary operation of Sludge Management Facility from RFC up to RFTO.	M&E
Activity 16	Commence with Trail Operation of Sludge Management Facility for 12 month period.	M&E
Activity 17	Maintain and uphold plant during Defects and Notifications period (i.e. 12 months)	M&E
Activity 18	Remedy defects and receive Performance Certificate in terms of Clause 11.9 of the General Conditions of Contract.	M&E

Note:
The "C" in the Responsible Contractor refers to the Civil contractor appointed under Contract CIVIL, BUILDING AND DEMOLITION WORKS FOR THE UPGRADE AND EXPANSION OF POTSDAM WASTEWATER TREATMENT PLANT.
The "M&E" in the Responsible Contractor refers to the Mechanical and Electrical Contractor appointed under Contract 146Q/2021/22.

[redacted]

3.5.5.4 Commissioning requirements for off-site reuse system

Key requirements for the construction of the new treated effluent off-site reuse system are highlighted here. The existing off-site reuse facility is an active system and any extended downtime (i.e. longer than a day) related to the supply to the off-site demand will not be accepted. The methodology for commissioning the new off-site reuse pump stations and manifold pipeline (i.e. changeover from old to new) will have to be done in such a way as to mitigate the risk associated with downtime. Practically, this can only be achieved in a phased approach whereby the treated effluent manifold gets commissioned from one end to the other, systematically switching over from the old to the new system (i.e. connection of off-site pipelines to the new manifold. This will allow the temporary use of the UF treated effluent pump station to supply part of the off-site demand until such time that the entire off site reuse supply system is connected to the new supply manifold.

The relevant connection points (i.e. off-site reuse manifold chambers) are listed in the proposed order of construction for ease of reference:

1. Reuse Manifold UF pump station connection chamber (3089.00.00.SQM.14.U001)
2. Reuse Manifold MBR pump station connection chamber (3089.00.00.SQL.14.U001)
3. Reuse Manifold Degrendel connection chamber (3089.00.00.SQK.14.U001)
4. Reuse Manifold Table View East connection chamber (3089.00.00.SQJ.14.U001)

The Contractor shall ensure that his program allows for any activity which might be required for the temporary pump system to supply the initial demand of the off-site water users and the management of the existing and new pump systems to align with the commission approach. The onsite wastewater supply pump system located in the UF reuse pump station can be considered for this purpose should the Contractor deem this system fit for (temporary) use.

The Contractor will be required to show in his program how this commissioning activity will take place, taking special care to show how the interface between the Contractor, Civil contractor and Employer's personnel for the successful commissioning of the off-site reuse system.

3.5.5.5 Preliminary tender program

Each tenderer shall submit with the tender a suitable and realistic preliminary construction programme (referred to as the Tender Programme) for consideration by the Engineer. This programme shall commence on the Commencement Date, shall be prepared in accordance with the maximum Time for Completion offered for the completion of the Sections comprising the Works and shall provide interim completion dates for each milestone or element of the works, including the period for executing the Test for Completion.

After award of a Contract, the Contractor shall submit a detailed construction programme to the Engineer in accordance with the requirements of Sub-Clause 8.3 [Programme] of the General Conditions of Contract. Except as provided above, the approval by the Engineer of the Contractor's construction programme, or of any amendment or adjustment thereto, shall not in any way alter the Contract, act as an estoppel or limit the right of the Employer to demand due performance under the Contract. The approval of a construction programme by the Engineer indicates only that the Engineer will be satisfied if the work is carried out according to such programme and that the Contractor undertakes to carry out the work in accordance with the programme. However, the approval of a construction programme by the Engineer shall not limit his right to give notice to the Contractor to submit a revised programme if the existing programme fails to comply with the Contract.

3.5.5.6 Testing, Commissioning and Completion

The requirements stated below are complimentary and additional to the requirements set out in the Detailed Specification for Testing and Commissioning included in the contract documents. Should any discrepancy or conflict between these requirements and the requirements of the Testing and Commissioning specification be found, the Contractor shall refer these to the Engineer for clarification.

a) General

Proof that the entire Works have been completed and conform in all respects to the Specifications and Guarantees under the Contract shall be shown by the results of progressive testing during the course of manufacture, installation and construction, as well as the Tests on Completion.

All the results obtained by the Contractor in the course of his process control of the Works shall be submitted to the Engineer or his Representative prior to requesting inspection of the relevant portions of the Works. Any request for inspection shall be submitted on the forms prescribed by the Engineer.

Prior to the Contractor appointing any suppliers for mechanical equipment, pipes, valves and specials, the Contractor shall deliver to the Engineer, the supplier's quality assurance programmes. The

[redacted]

Contractor shall ensure that all the required testing is done during manufacturing and shall submit all test results to the Engineer. Tests and related planning tasks to be performed by the Contractor include the following:

b) Quality Control Plan

Manufacturing of plant shall only commence after manufacturing and corrosion protection Quality Control Plans (QCP's) have been developed and signed off as acceptable by relevant parties responsible for quality assurance.

A Quality Control Plan (QCP) shall be developed for each manufacturing process to manage the signing off on all hold points. A Turn Over Package (TOP) containing all relevant signed QCP's and data packs shall accompany the relevant Plant component as part of the transfer of the quality records. It initially involves factory acceptance testing where required, pre-delivery and post-delivery inspections, storage inspections and pre installation inspections.

c) Testing

(i) Process Control Tests

The Contractor shall arrange for all tests required for process control to be done by a laboratory acceptable to and approved by the Engineer. The Contractor shall establish, operate and maintain the joint laboratory on Site (if not at an established laboratory facility) and must submit the results of tests carried out on the wastewater treatment process, equipment, plant and construction materials and workmanship, when submitting work for acceptance by the Engineer. The costs for these tests shall be deemed to be included in the relevant rates and no additional payment will be made for testing as required.

(ii) Acceptance Control

The process control test results for the wastewater treatment process, equipment, plant and of construction materials and workmanship, submitted by the Contractor for approval, may be used by the Engineer for acceptance control. However, before accepting any work, the Engineer may have further control tests carried out by a laboratory of his choice. The cost of such additional tests will be covered by a Provisional Sum provided in the Bill of Quantities, but tests that failed to confirm compliance with the specifications, will be for the account of the Contractor.

d) Testing Plan

The Contractor shall develop and submit a comprehensive testing plan for approval by the Engineer.

The testing plan shall include all the testing aspects listed above and indicate at least the following:

- Planned progressive tests during construction
- Tests on Completion
  - Pre- Commissioning (Dry testing)
  - Commissioning (Wet testing)
  - Trial Operation tests
  - Final performance tests
- Failure investigation tests (where necessary) during the Defects Notification Period
- Environmental risk assessment and mitigation measures for commissioning and testing related impacts/risks

The Contractor shall make timely arrangements for quality control testing and ensure that suitably trained and competent personnel take charge of the test work, and that the necessary equipment is at their disposal prior to commencement of testing. Failure to comply with these requirements shall be cause for the Employer to instruct suspension of the Works without additional remuneration, or to terminate the Contract in terms of the Conditions of Contract.

Prior to commencement of the fabrication, installation and construction of any work, the Contractor shall submit quality assurance programmes, testing plans and final method statements for review by the Engineer. The testing plan shall be compiled in support of the quality assurance plan.

e) Progressive Testing during Construction

Progressive testing should commence soon after the Contractor is given a notice to proceed with the Contract.

[redacted]

All imported material and equipment shall be inspected, checked and tested before delivery to site. A variety of factory acceptance tests (FAT), at different stages of the manufacturing process, shall be required to ensure that equipment and material delivered to site conform to all specifications before installation commences. The Contractor shall submit a list of all FAT tests to be performed for all equipment supplied under the Contract. Welds, valve bodies, pumps, mechanical and electrical equipment shall be included in the list of equipment.

f) Tests on Completion

Tests on Completion shall be undertaken in accordance with the Detailed Specification for Testing and Commissioning included in the contract documents and as complimented by the requirements included below.

(i) Pre-Commissioning (Dry Commissioning)

Once the construction of the Works, Section or component has reached the stage of completion where it can be tested, the Contractor shall give the Engineer notice of the date after which the Contractor will be ready to carry out the Pre- Commissioning thereof.

Pre-Commissioning shall commence as soon as the Works or a work package is ready to be tested for functionality. It shall undergo pre-commissioning tests and inspections to check the following general aspects:

- That all elements of the Works, Section or component are complete and comply with drawings, specifications and data; and
- that the assembly has been carried out in compliance with the above documents and professional practice.

In addition Pre-Commissioning shall include the following specific aspects:

- Visual checking of general installation and appearance.
- Thorough check of all ergonomic and safety related aspects.
- Thorough check of flow lines of products, materials, fluid, and compressed air (where applicable).
- Thorough check of electrical, hydraulic, pneumatic and electromechanical circuits.
- Thorough check of all functional and control loop tests.
- Dry-run of every machine and checking of its operation and, if necessary, running in.
- Calibration checks and supporting documentation on all metering and monitoring equipment.
- Dry-run or no-load run of every section.
- Fixing of equipment, pipes, brackets, anchors, etc.
- Statutory testing requirements.
- Checking and testing of all actuators, valve and control valve settings.
- Water tightness and pressure tests on all water retaining structures, pressure vessels, pipelines and pipe fittings.
- Completion and issuing of all test reports and test certificates.
- Cathodic and lightning protection.
- Compilation of an asset register suitable for integration with the Financial and Computerised Maintenance Management system of the Employer.
- Completion and issuing of all equipment and Operation and Maintenance (Q&M) manuals including functional specifications and control philosophy.
- Supply of all critical spares and special tools on site.

Following the successful completion of Pre- Commissioning the Engineer and Contractor will designate each completed work package so completed as Ready for Commissioning (RFC). A request to proceed with Commissioning shall be issued by the Contractor after completion of the Pre- Commissioning phase.

(ii) Commissioning (Wet Testing)

After being designated as Ready for Commissioning (RFC), each sub-process will commence with wet test runs which shall include the same operations as for Dry Commissioning tests but with the equipment loaded.

- Local Wet Commissioning shall include:
  - Performance testing of all equipment at specified duties and efficiencies for at least 24 hours continuously.
  - Checking of levels, flows, pressures, temperatures, vibration and sound levels at minimum and maximum operating conditions for all operational scenarios

[redacted]

- Water tightness tests of installations at full load.
- Local functional and local control loop testing.

After completion of the Local Wet Commissioning of the Works as a whole the Remote Wet Commissioning of the entire system will commence. This can only commence once all the work packages and the entire system have been wet commissioned successfully at a local level. Following the successful completion of Local Wet Commissioning a request shall be issued by the Contractor to the Engineer to proceed with Remote Wet Commissioning.

- Remote Wet Commissioning

Remote Wet Commissioning test runs of the process shall include the same operations as for Local Wet Commissioning tests but with all the equipment operated as an integrated system. In addition to the tests indicated for Local Wet Commissioning the following additional tests need to be performed:

- a performance, control and communication tests on the entire system;
- a system transfer rates;
- a system losses;
- energy consumption at each pump station.

After successful completion of the Remote Wet Commissioning of all work packages, the Trial Operation Period of the entire system will commence. The Contractor shall ensure that commissioning complies with the O&M Manual and general safety regulations.

g) Trial Operation Period

The Contractor can accept that electricity and process water shall be free supply items. Consumables such as poly, chemicals and lubrication (i.e. consumables required for operation other than process water and electricity) shall be allowed for in the Contractors offer for the temporary operation and trail operation period. The Contractors offer shall make allowance for a treatment capacity equivalent to 60% of the design capacity specified in Clause 3.2.3 of Part C3.2-Engineering, for each process system.

A detailed procedure for conducting the Trial Operation shall be developed by the Contractor and agreed between the Contractor and the Employer.

Once the Trial Operation has commenced, the Works have to be operated successfully for a period of twelve (12) months continuously, with interruptions only to alter plant settings, effect final settings and optimization, test auto-functionality and train the Employer in the detail functioning of the plant.

During the Trial Operation Period, the Contractor shall record all operational data and at its completion submit to the Engineer a report confirming final settings, calibration, auto control functions, approved tests and successful training of the Employer to the satisfaction of the Employer.

All failures occurring during the Trial Operation Period will be subject to a root cause analysis and repaired accordingly by the Contractor. A failure investigation analysis and close-out report shall be submitted for each failure of the Works.

If declared unsuccessful, the Engineer may request a repeat of the Trial Operation or extend the Trial operation period as deemed necessary. Under such circumstances the Contractor shall repeat the Performance Tests. The costs in performing the extended Trial Operation and further Performance Tests, will be for the Contractor's account.

h) Performance Tests

Towards the end of the Trial Operation Period the Employer and the Contractor shall set the date of the final Performance Tests.

The Performance Test shall establish the transfer capacity, functionality and efficiency of the Works specified and any other specific requirements for the Works.

If the outcome of the Performance Test is not satisfactory it shall be repeated again immediately after any required modifications are completed.

During the execution of Performance Test, the Contractor shall provide all appropriate technical information derived from the results.

On successful completion of the Performance Test, a takeover report shall be drawn up by the Contractor and submitted for the Employer's approval and signature.

A Taking Over Certificate shall only be issued after successful completion of the Trial Operation and Performance Test.

[redacted]

i) Defects Notification Period

The Contractor shall maintain and uphold the Works during the Defects Notification Period and check all equipment for correct operation and functioning at 3 months, 6 months, 9 months and 12 months after Take-over. The Contractor shall submit reports to the Engineer after each inspection. Reports and records which are to be submitted to the Engineer or his representative shall be in a format agreed by the Engineer or his Representative.

All failures during the Defects Notification Period shall be investigated and remedied as specified by the Contract.

During the Defects Notification Period the Contractor shall maintain appropriate facilities and resources in close proximity to the Works in order that it can react to and correct a defect in the Works within the time periods specified by the Engineer. The Contractor shall determine the appropriate spares and resource levels required to comply with the specified reaction and correction periods. Failure to comply with the specific periods shall entitle the Employer to the remedies set out in **Clause 11.4** in the Conditions of Contract.

j) Training Requirements

(i) Training programme

The Contractor shall develop and implement a Training Programme for the Employer's designated personnel that shall be predominantly site based. This Contractor training shall be complete and be integrated with Employer's training programme. Before training commences the Contractor shall supply a training organogram showing which components of the Works shall be covered during the relevant training sessions and which of the Employer's personnel will be present at the training. The Employer shall approve this organogram prior to the commencement of any training.

The timing of Contractor's training activities shall be co-ordinated with the Employer's training activities. The aim is for the Employer's personnel to be trained early enough to allow full participation in the testing and commissioning processes under the direction of the Contractor's commissioning engineers.

The training programme shall be agreed with the Employer at the appropriate stage of the Contract but no later than thirty (30) days before the training is to commence. The Contractor shall develop and submit a comprehensive training programme for approval by the Employer. The training programme shall include all aspects necessary to enable the Employer to effectively operate and maintain the system.

The personnel to be trained on-site will comprise of managers, engineers / team leaders, operations and maintenance technicians.

Each element of the on-site training programme shall concentrate on specific systems / plant areas and shall include but not be limited to the following components:

- standard performance of equipment;
- control and protection functions;
- tools and equipment;
- safety requirements; and
- manufacturer's manuals, drawings and plant documentation.

(ii) Facilities and training materials / aids

The Contractor shall provide suitable on-site facilities to support the Employer and Contractor's jointly agreed training programme.

The Contractor shall provide for training materials, textbooks, manuals and other materials required for the Contractor's Training Programme. Classroom equipment such as overhead projectors, white / blackboards, DVD players and monitors, shall be provided by Contractor.

Training aids, such as films, slides, interactive videos, software packages materials and supplies considered necessary by the Contractor to support, maintain and successfully supplement the Contractor's Training Programme shall be furnished for the Training Period by the Contractor. Instructions manuals, provided by equipment suppliers, for operations and maintenance shall form part of the basic reference material, in addition to any other references as required.

A video demonstrating typical operation and maintenance requirements of each system/plant shall be provided as part of the O&M manuals. These videos may be standardised material for the specific system/plant or site specific produced at Potsdam WWTP.

[redacted]

(iii) Trainer's qualifications

Trainers shall be suitably qualified, through experience and education, to teach their respective subjects. Trainers and instructors shall be fluent in English.

(iv) Training period

The training period shall be as defined in the jointly agreed Training Programme and such training shall be completed prior to Taking Over of the Works.

Contractor on-site training sessions shall be conducted over time scales within the training period as detailed in the Contractor's proposal. The Contractor's Training Programme shall be defined as the combination of all the training activities carried out within the training period.

(iv) Training evaluation plan

The training programme shall include a section dealing with a skills audit and the training evaluation plan. The success of the training plan will be measured against the training evaluation plan.

The Employer reserves the right to review and discuss with the Contractor all training materials/aids, course outlines, training schedules, steps, procedures, guidelines and other training matters.

k) Spare Parts Requirements

The Contractor shall identify additional critical spare parts required for the continued operation of all mechanical, electrical and electronic equipment based not only on a reliability analysis of the equipment, but also on the reliability and availability of suppliers of spare parts in the region. The lists shall also include a list of long lead maintenance items and special maintenance tools that will be required during the maintenance of the equipment.

The list of critical spare parts must be submitted to the Engineer at least six months before the issue of the Taking Over Certificate.

Spare parts for the Defect Notification Period (DNP) shall be supplied by the Contractor in accordance with its DNP obligations.

3.5.6 KEY PERSONNEL

The Contractor shall commit the named key personnel to each of the key personnel roles identified in the tender offer, which personnel shall remain permanently assigned to the Contract and dedicated full-time at least until the Engineer agrees that such personnel have completed their assignments. The exception to this will be the situation where any of the key personnel ceases to be employed by the Contractor for any reason, or decides to withdraw from the Contractor's team, for reasons beyond the Contractor's control. In such instances the Contractor will be required to submit to the Engineer proposals to replace the key person, which will only be considered by the Engineer if the Contractor can show that the proposed replacement has qualifications and experience equivalent to, or better than, the original key person and scores the same or higher than the offered key person in terms of the Functionality Criteria in the tender offer.

3.5.7. ENVIRONMENTAL MANAGEMENT PROGRAMME

The Environmental Management Specification and its Annexures are included in Volume 3A.

3.5.8. HEALTH AND SAFETY

The Health and Safety Specification is included in Volume 3A.

C3.5.9 Management Report Annexes

The following management report templates are attached under Clause 3.5.9:

Annex 1: Monthly Project Labour Report
Annex 2: B-BBEE Sub-Contract Expenditure Report
Annex 3: Joint Venture Expenditure Report
Annex 4: Targeted Labour Contract Participation Expenditure Report
Annex 5: Targeted Enterprises Contract Participation Expenditure Report

[redacted]

ANNEX 1

CITY OF CAPE TOWN
MONTHLY PROJECT LABOUR REPORT

CITY OF CAPE TOWN
ISIXEKO SASEKAPA
STAD KAAPSTAD

Instructions for completing and submitting forms

General

1 The Monthly Project Labour Reports must be completed in full, using typed, proper case characters; alternatively, should a computer not be available, handwritten in black ink.
2 Incomplete / incorrect / illegible forms will not be accepted.
3 Any conditions relating to targeted labour stipulated in the Contract (in the case of contracted out services or works) shall apply to the completion and submission of these forms.
4 This document is available in Microsoft Excel format upon request from the City's EPWP office, tel 021 400 9406, email EPWPLR@capetown.gov.za.

Project Details

5 If a field is not applicable insert the letters: NA
6 Only the Project Number supplied by the Corporate EPWP Office must be inserted. The Project Number can be obtained from the Coordinator or Project Manager or from the e-mail address in point 4 above.
7 On completion of the contract or works project the anticipated end date must be updated to reflect the actual end date.

Beneficiary Details and Work Information

8 Care must be taken to ensure that beneficiary details correspond accurately with the beneficiary's ID document.
9 A new beneficiary is one in respect of which a new employment contract is signed in the current month. A certied ID copy must accompany this labour report on submission.
10 Was the beneficiary sourced from the City's job seeker database?
11 The contract end date as stated in the beneficiary's employment contract.
12 Where a beneficiary has not worked in a particular month, the beneficiary's name shall not be reflected on this form at all for the month in question.
13 Training will be recorded separately from normal working days and together shall not exceed the maximum of 23 days per month
14 Workers earning more than the maximum daily rate (currently R450 excluding any benefits) shall not be reflected on this form at all.

Submission of Forms

15 Signed hardcopy forms must be scanned and submittec to the City's project manager in electronic (.pdf) format, together with the completed form in Microsoft Excel format.
16 Scanned copies of all applicable supporting documentation must be submitted along with each monthly project labour report. Copies of employment contracts and ID documents are only required in respect of new beneficiaries.
17 If a computer is not available hardcopy forms and supporting documentation will be accepted.

PROJECT DETAILS

Numbers in cells below e.g (6) refer to the relevant instruction above for completing and submitting forms

CONTRACT OR WORKS PROJECT NAME: (6)		EPWP SUPPLIED PROJECT NUMBER: (6)	
DIRECTORATE:		DEPARTMENT:	
CONTRACTOR OR VENDOR NAME:		CONTRACTOR OR VENDOR E-MAIL ADDRESS:	
CONTRACTOR OR VENDOR CONTACT PERSON:		CONTRACTOR OR VENDOR TEL. NUMBER:	CELL WORK

PROJECT LABOUR REPORT CURRENT MONTH (mark with "X")

JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	YEAR

ACTUAL START DATE (yyyy/mm/dd)	ANTICIPATED / ACTUAL END DATE (yyyy/mm/dd) (7)

TOTAL PROJECT EXPENDITURE / VALUE OF WORK DONE TO-DATE (INCLUDING ALL COSTS, BUT EXCLUDING VAT)

R

ANNEX 1 (continued)

MONTHLY PROJECT LABOUR REPORT

BENEFICIARY DETAILS AND WORK INFORMATION

CITY OF CAPE TOWN
ISIXEKO SASEKAPA
STAD KAAPSTAD

CONTRACT OR WORKS PROJECT NUMBER:		Year	Month	Sheet		
				1	of	

	(8)	(8)	(8)	(9)			(10)		(11)	(12)	(13)	(14)
No.	First name	Surname	ID number	New Beneficiary (Y/N)	Gender (M/F)	Disabled (Y/N)	Job seeker database (Y/N)	Contract start date (DDMMYY)	Contract end date (DDMMYY)	No. days worked this month (excl. training)	Training days	Rate of pay per day (R – c)
1												
2												
3												
4												
5												
6												
7												
8												
9												
10												
11												
12												
13												
14												
15												
16												
17												
18												
19												
20												
										0	0	R -

Declared by Contractor or Vendor to be true and correct:	Name		Signature	
	Date			

Received by Employer's Agent / Representative:	Name		Signature	
	Date			

ANNEX 2

CITY OF CAPE TOWN

CONTRACT NO. AND NAME: .....

CONTRACTOR: .....

B-BBEE SUB-CONTRACT EXPENDITURE REPORT BASED ON PAYMENT CERTIFICATE NO. .....

Value of the contract (as defined in the **Preference Schedule**) (**P***)	R	B-BBEE Status Level of Prime Contractor	

Name of Sub-contractor (list all)	**B-BBEE Status Level of Sub-contractor[1]**	**Total value of Sub-contract (excl. VAT)[1]**	**Value of Sub-contract work to date (excl. VAT)[1]**	**Value of Sub-contract work to Sub-contractors with a lower B-BBEE Status Level than Prime Contractor**
Sub-contractor A		R	R	R
Sub-contractor B		R	R	R
Sub-contractor C		R	R	R

[1]Documentary evidence to be provided

Total:	R
Expressed as a percentage of **P***	%

Signatures

Declared by Contractor to be true and correct: _____ **Date:** _____

Verified by Engineer/ Engineer's Agent's Representative: _____ **Date:** _____

ANNEX 3

CITY OF CAPE TOWN

CONTRACT NO. AND NAME: .....

CONTRACTOR: .....

JOINT VENTURE EXPENDITURE REPORT BASED ON PAYMENT CERTIFICATE NO. .....

Value of the contract (as defined in the **Preference Schedule**) (P*)	R	B-BBEE Status Level of Joint Venture	

Name of Joint Venture partner (list all)	B-BBEE Status Level of each JV partner as at contract award	Percentage contribution of JV partner per JV Agreement[1] A	Total value of JV partner's contribution (excl. VAT)[1] B = A% x P*	Value of JV partner's contribution to date (excl. VAT)[1] C	Value of JV partner's contribution as a percentage of the work executed to date D = C/P*x100
JV Partner A		%	R	R	%
JV Partner B		%	R	R	%
JV Partner C		%	R	R	%

[1]Documentary evidence to be provided

Signatures

Declared by Contractor to be true and correct: _____ **Date:** _____

Verified by Engineer/ Engineer's Representative: _____ **Date:** _____

ANNEX 4

CITY OF CAPE TOWN

CONTRACT NO. AND NAME: .....

CONTRACTOR: .....

TARGETED LABOUR CONTRACT PARTICIPATION EXPENDITURE REPORT BASED ON CERTIFICATE NO. .....

Value of the contract (as defined in the **Preference Schedule**) (**P***)	R	Specified Targeted Labour Contract Participation Goal	%

Name of Contractor/Sub-contractor (list all)	Total previous expenditure on wages in respect of targeted labour	Net Amount for this month[1]	Total expenditure on wages in respect of targeted labour
Contractor	R	R	R
Sub-contractor A	R	R	R
Sub-contractor B	R	R	R

[1]Documentary evidence to be provided

Total:	R
Expressed as a percentage of **P***	%

Signatures

Declared by Contractor to be true and correct: _____ **Date** _____

Verified by Engineer/ Engineers's Representative: _____ **Date** _____

ANNEX 5

CITY OF CAPE TOWN

CONTRACT NO. AND NAME: .....

CONTRACTOR: .....

TARGETED ENTERPRISES CONTRACT PARTICIPATION EXPENDITURE REPORT BASED ON CERTIFICATE NO. .....

Value of the contract (as defined in the **Preference Schedule**) (**P***)	R	Specified Targeted Enterprises Contract Participation Goal	%

Name of targeted enterprise (list all)	Total previous expenditure (excl. VAT) to targeted enterprises	Net Amount for this month[1]	Total expenditure (excl. VAT) to targeted enterprises
Targeted Enterprise A	R	R	R
Targeted Enterprise B	R	R	R
Targeted Enterprise C	R	R	R

[1]Documentary evidence to be provided

Total:	R
Expressed as a percentage of **P***	%

Signatures

Declared by Contractor to be true and correct: ..... **Date** _____

[redacted]

CITY OF CAPE TOWN

WATER AND SANITATION

CONTRACT NO. 146Q/2021/22

DESIGN – BUILD OF MECHANICAL AND ELECTRICAL WORKS FOR THE UPGRADE AND EXPANSION OF POTSDAM WASTEWATER TREATMENT PLANT

C3.6 Annexes

CONTENTS

Refer to VOLUME 3A

C3.6.1 Detailed specifications – Mechanical works

C3.6.2 City of Cape Town Standard Specifications for Mechanical Works

C3.6.3 Environmental management plan

C3.6.4 Health and Safety Specification

C3.6.5 City of Cape Town Plant Numbering System

Refer to VOLUME 3B

C3.6.6 Detailed Specifications for Electrical Works

C3.6.7 Electrical particular specifications – Electrical Works

C3.6.8 City of Cape Town Standard Specifications for Electrical Works

The Contents of C3.6 is included under Document C.

[redacted]

PART 7: SITE INFORMATION

[redacted]

CITY OF CAPE TOWN

WATER AND SANITATION

CONTRACT NO. 146Q/2021/22

DESIGN – BUILD OF MECHANICAL AND ELECTRICAL WORKS FOR THE UPGRADE AND EXPANSION OF POTSDAM WASTEWATER TREATMENT PLANT

C4 Site Information

CONTENTS

C4.1.	GEOTECHNICAL REPORT:	(Available on request from the Engineer)
C4.2.	WATER USE LICENCE:	(27/1/G621/104/1)
C4.3.	RECORD OF DECISION:	(The Proposed extension and upgrading of water treatment facilities and associated infrastructure for the Blaauberg Area)

[redacted]

CITY OF CAPE TOWN

WATER AND SANITATION

CONTRACT NO. 146Q/2021/22

DESIGN – BUILD OF MECHANICAL AND ELECTRICAL WORKS FOR THE UPGRADE AND EXPANSION OF POTSDAM WASTEWATER TREATMENT PLANT

C4.1 GEOTECHNICAL REPORT

The Geotechnical Report is available upon request from the Engineer.

[redacted]

CITY OF CAPE TOWN

WATER AND SANITATION

CONTRACT NO. 146Q/2021/22

DESIGN – BUILD OF MECHANICAL AND ELECTRICAL WORKS FOR THE UPGRADE AND EXPANSION OF POTSDAM WASTEWATER TREATMENT PLANT

C4.2 WATER USE LICENCE (Refer to Document C)

This existing Water Use Licence as received by DWS is issued in electronic format only. For details pertaining to the contents of these Sections refer to Document C (distributed in electronic format with the Tender Document).

CITY OF CAPE TOWN

WATER AND SANITATION

CONTRACT NO. 146Q/2021/22

DESIGN – BUILD OF MECHANICAL AND ELECTRICAL WORKS FOR THE UPGRADE AND EXPANSION OF POTSDAM WASTEWATER TREATMENT PLANT

C4.3 RECORD OF DECISION (Refer to Document C)

The Record of Decision as received by the EADP is issued in electronic format only. For details pertaining to the contents of these Sections refer to Document C (distributed in electronic format with Tender Document).

[redacted]