

TENDER DOCUMENT GOODS AND SERVICES		 CITY OF CAPE TOWN ISIXEKO SASEKAPA STAD KAAPSTAD	
SUPPLY CHAIN MANAGEMENT			
SCM - 542	Approved by Branch Manager: 03/04/2020		
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TENDER NO: 23S/2021/22

**TENDER DESCRIPTION: TERM TENDER FOR THE REPAIRS AND MAINTENANCE OF THE
CATCHMENT, STORMWATER & RIVER MANAGEMENT HYDROLOGICAL MONITORING SYSTEM
(SCADA, DATABASE, TELEMETRY & EQUIPMENT)**

CONTRACT PERIOD: 34 MONTHS FROM DATE OF COMMENCEMENT

VOLUME 3: DRAFT CONTRACT

TENDERER	
NAME of Company/Close Corporation or Partnership / Joint Venture/ Consortium or Sole Proprietor /Individual	
TRADING AS (if different from above)	

NATURE OF TENDER OFFER (please indicate below)	
Main Offer (see clause 2.2.11.1)	
Alternative Offer (see clause 2.2.11.1)	

VOLUME 3: DRAFT CONTRACT

(7) SPECIAL CONDITIONS OF CONTRACT

The following Special Conditions of Contract, referring to the National Treasury – Conditions of Contract (revised July 2010), are applicable to this Contract:

1. Definitions

Delete Clause 1.15 and substitute with the following

- 1.15 The word 'Goods' is to be replaced everywhere it occurs in the GCC with the phrase 'Goods and / or Services' which means all of the equipment, machinery, materials, services, products, consumables, etc. that the supplier is required to deliver to the purchaser under the contract. This definition shall also be applicable, as the context requires, anywhere where the words "supplies" and "services" occurs in the GCC.

Delete Clause 1.19 and substitute with the following

- 1.19 The word 'Order' is to be replaced everywhere it occurs in the GCC with the words 'Purchase Order' which means the official purchase order authorised and released on the purchaser's SAP System

Delete Clause 1.21 and substitute with the following:

- 1.21 'Purchaser' means the **City of Cape Town**. The address of the Purchaser is **12 Hertzog Boulevard, Cape Town, 8001**.

Add the following after Clause 1.25:

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

3. General Obligations

Delete Clause 3.2 in its entirety and replace with the following clauses.

- 3.2 The parties will be liable to each other arising out of or in connection with any breach of the obligations detailed or implied in this contract, subject to clause 28.
- 3.3 All parties in a joint venture or consortium shall be jointly and severally liable to the purchaser in terms of this contract and shall carry individually the minimum levels of insurance stated in the contract, if any.
- 3.4 The parties shall comply with all laws, regulations and bylaws of local or other authorities having jurisdiction regarding the delivery of the goods and give all notices and pay all charges required by such authorities.
- 3.4.1 The parties agree that this contract shall also be subject to the CCT's Supply Chain Management Policy ('SCM Policy') that was applicable on the date the bid was advertised, **save that if the Employer adopts a new SCM Policy which contemplates that any clause therein would apply to the contract emanating from this tender, such clause shall also be applicable to that contract**. Please refer to this document contained on the CCT's website.

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

3.5 The **supplier** shall:

3.5.1 Arrange for the documents listed below to be provided to the Purchaser prior to the issuing of the order:

- a) Proof of Insurance (Refer to Clause 11) or Insurance Broker's Warrantee
- b) Letter of good standing from the Compensation Commissioner, or a licensed compensation insurer (Refer to Clause 11)
- c) Initial delivery programme
- d) Other requirements as detailed in the tender documents

3.5.2 Only when notified of the acceptance of the bid by the issuing of the order, the supplier shall commence with and carry out the delivery of the goods in accordance with the contract, to the satisfaction, of the purchaser

3.5.3 Provide all of the necessary materials, labour, plant and equipment required for the delivery of the goods including any temporary services that may be required

3.5.4 Insure his workmen and employees against death or injury arising out of the delivery of the goods

3.5.5 Be continuously represented during the delivery of the goods by a competent representative duly authorised to execute instructions;

3.5.6 In the event of a loss resulting in a claim against the insurance policies stated in clause 11, pay the first amount (excess) as required by the insurance policy

3.5.7 Comply with all written instructions from the purchaser subject to clause 18

3.5.8 Complete and deliver the goods within the period stated in clause 10, or any extensions thereof in terms of clause 21

3.5.9 Make good at his own expense all incomplete and defective goods during the warranty period

3.5.10 Pay to the purchaser any penalty for delay as due on demand by the purchaser. The supplier hereby consents to such amounts being deducted from any payment to the supplier.

3.5.11 Comply with the provisions of the OHAS Act & all relevant regulations.

3.5.12 Comply with all laws relating to wages and conditions generally governing the employment of labour in the Cape Town area and any applicable Bargaining Council agreements.

3.5.13 Deliver the goods in accordance with the contract and with all reasonable care, diligence and skill in accordance with generally accepted professional techniques and standards.

3.6 The **purchaser** shall:

3.6.1 Issue orders for the goods required under this Contract. No liability for payment will ensue for any work done if an official purchase order has not been issued to the supplier.

3.6.2 Make payment to the **supplier** for the goods as set out herein.

3.6.3 Take possession of the goods upon delivery by the supplier.

3.6.4 Regularly inspect the goods to establish that it is being delivered in compliance with the contract.

3.6.5 Give any instructions and/or explanations and/or variations to the supplier including any relevant advice to assist the supplier to understand the contract documents.

3.6.6 Grant or refuse any extension of time requested by the supplier to the period stated in clause 10.

- 3.6.7 Inspect the goods to determine if, in the opinion of the purchaser, it has been delivered in compliance with the contract, alternatively in such a state that it can be properly used for the purpose for which it was intended.
- 3.6.8 Brief the supplier and issue all documents, information, etc. in accordance with the contract.

5. Use of contract documents and information; inspection, copyright, confidentiality, etc.

Add the following after clause 5.4:

- 5.5 Copyright of all documents prepared by the supplier in accordance with the relevant provisions of the copyright Act (Act 98 of 1978) relating to contract shall be vested in the purchaser. Where copyright is vested in the supplier, the purchaser shall be entitled to use the documents or copy them only for the purposes for which they are intended in regard to the contract and need not obtain the supplier's permission to copy for such use. Where copyright is vested in the purchaser, the supplier shall not be liable in any way for the use of any of the information other than as originally intended for the contract and the purchaser hereby indemnifies the supplier against any claim which may be made against him by any party arising from the use of such documentation for other purposes.

The ownership of data and factual information collected by the supplier and paid for by the purchaser shall, after payment, vest with the purchaser

- 5.6 **Publicity and publication**
The supplier shall not release public or media statements or publish material related to the services or contract within two (2) years of completion of the services without the written approval of the purchaser, which approval shall not be unreasonably withheld.
- 5.7 **Confidentiality**
Both parties shall keep all information obtained by them in the context of the contract confidential and shall not divulge it without the written approval of the other party.
- 5.8 **Intellectual Property**
 - 5.8.1 The supplier acknowledges that it shall not acquire any right, title or interest in or to the Intellectual Property of the Employer.
 - 5.8.2 The supplier hereby assigns to the Employer, all Intellectual Property created, developed or otherwise brought into existence by it for the purposes of the contract, unless the Parties expressly agree otherwise in writing.
 - 5.8.3 The supplier shall, and warrants that it shall:
 - 5.8.3.1 not be entitled to use the Employer's Intellectual Property for any purpose other than as contemplated in this contract;
 - 5.8.3.2 not modify, add to, change or alter the Employer's Intellectual Property, or any information or data related thereto, nor may the supplier produce any product as a result of, including and/or arising from any such information, data and Intellectual Property, and in the event that it does produce any such product, the product shall be, and be deemed in law to be, owned by the Employer;
 - 5.8.3.3 not apply for or obtain registration of any domain name, trademark or design which is similar to any Intellectual Property of the Employer;
 - 5.8.3.4 comply with all reasonable directions or instructions given to it by the Employer in relation to the form and manner of use of the Employer Intellectual Property, including without limitation, any brand guidelines which the Employer may provide to the supplier from time to time;
 - 5.8.3.5 procure that its employees, directors, members and contractors comply strictly with the provisions of clauses 5.8.3.1 to 5.8.3.3 above;

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

- 5.8.4 The supplier represents and warrants to the Employer that, in providing goods, services or both, as the case may be, for the duration of the contract, it will not infringe or make unauthorised use of the Intellectual Property rights of any third party and hereby indemnifies the Employer from any claims, liability, loss, damages, costs, and expenses arising from the infringement or unauthorised use by the supplier of any third party's Intellectual Property rights.
- 5.8.5 In the event that the contract is cancelled, terminated, ended or is declared void, any and all of the Employer's Intellectual Property, and any and all information and data related thereto, shall be immediately handed over to the Employer by the supplier and no copies thereof shall be retained by the supplier unless the Employer expressly and in writing, after obtaining due internal authority, agrees otherwise.

7. Performance Security

[Not Applicable. Tenderers must disregard **Form of Guarantee / Performance Security** and are not required to complete same.]

8. Inspections, tests and analyses

Delete Clause 8.2 and substitute with the following:

- 8.2 If it is a bid condition that supplies to be produced or services to be rendered should at any stage during production or execution or on completion be subject to inspection, the premises of the bidder or contractor shall be open, at all reasonable hours, for inspection by a representative of the purchaser or an organisation acting on behalf of the purchaser.

10. Delivery and documents

Delete clauses 10.1 and 10.2 and replace with the following:

- 10.1 Delivery of the goods shall be made by the supplier in accordance with the terms specified in the contract. The time for delivery of the goods shall be the date as stated on the order. Orders for the supply and delivery of goods may be raised up until the expiry of a framework agreement bid, provided that the goods can be delivered within 30 days of expiry of the framework contract. All orders, other than for the supply and delivery of goods, must be completed prior to the expiry of the contract period.
- 10.2 The purchaser shall determine, in its sole discretion, whether the goods have been delivered in compliance with the contract, alternatively in such a state that it can be properly used for the purpose for which it was intended. When the purchaser determines that the goods have been satisfactorily delivered, the purchaser must issue an appropriate certification, or written approval, to that effect. Invoicing may only occur, and must be dated, on or after the date of acceptance of the goods.

11. Insurance

Add the following after clause 11.1:

- 11.2 Without limiting the obligations of the supplier in terms of this contract, the supplier shall effect and maintain the following additional insurances:
- a) Public liability insurances, in the name of the supplier, covering the supplier and the purchaser against liability for the death of or injury to any person, or loss of or damage to any property, arising out of or in the course of this Contract, in an amount not less than **R20 million** for any single claim;
 - b) Motor Vehicle Liability Insurance, in respect of all vehicles owned and / or leased by the supplier, comprising (as a minimum) "Balance of Third Party" Risks including Passenger Liability Indemnity;
 - c) Registration / insurance in terms of the Compensation for Occupational Injuries and Disease Act, Act 130 of 1993. This can either take the form of a certified copy of a valid Letter of Good Standing issued by the Compensation Commissioner, or proof of insurance with a licenced compensation insurer, from either the bidder's broker or the insurance company itself (see **Proof of Insurance / Insurance Broker's Warranty** section in document for a pro forma version).

- d) Professional indemnity insurance providing cover in an amount of not less than R5 million in respect of each and every claim during the contract period.

In the event of under insurance or the insurer's repudiation of any claim for whatever reason, the CCT will retain its right of recourse against the supplier.

- 11.3 The supplier shall be obliged to furnish the CCT with proof of such insurance as the CCT may require from time to time for the duration of this Contract. Evidence that the insurances have been effected in terms of this clause, shall be either in the form of an insurance broker's warranty worded precisely as per the pro forma version contained in the **Proof of Insurance / Insurance Broker's Warranty** section of the document or copies of the insurance policies.

15. Warranty

Add to Clause 15.2:

- 15.2 This warranty for this contract shall remain valid for **six (6) months** after the goods have been delivered.

16. Payment

Delete Clause 16.1 in its entirety and replace with the following:

- 16.1 A monthly payment cycle will be the norm. All invoices which are dated on or before the 20th of a particular month will typically be paid between the 23rd and 26th of the following month. The supplier may submit a fully motivated application regarding more frequent payment to the Employer's Director: Expenditure for consideration. Requests for more frequent payments will be considered at the sole discretion of the Employer and is not a right in terms of this contract.

Delete Clause 16.2 in its entirety and replace with the following:

- 16.2 The supplier shall furnish the purchaser's Accounts Payable Department with an original tax invoice, clearly showing the amount due in respect of each and every claim for payment.

Add the following after clause 16.4

- 16.5 Notwithstanding any amount stated on the order, the supplier shall only be entitled to payment for goods actually delivered in terms of the Project Specification and Drawings, or any variations in accordance with clause 18. Any contingency sum included shall be for the sole use, and at the discretion, of the purchaser.

The CCT is not liable for payment of any invoice that pre-dates the date of delivery of the goods.

- 16.6 The purchaser will only make advanced payments to the supplier in strict compliance with the terms and details as contained on **Proforma Advanced Payment Guarantee** and only once the authenticity of such guarantee has been verified by the City's Treasury Department.

17. Prices

Add the following after clause 17.1

- 17.2 If as a result of an award of a contract beyond the original tender validity period, the contract execution will be completed beyond a period of twelve (12) months from the expiry of the original tender validity period, then the contract may be subject to contract price adjustment for that period beyond such twelve (12) months. An appropriate contract price adjustment formula will be determined by the Director: Supply Chain Management if such was not included in the bid documents.

- 17.3 If as a result of any extension of time granted the contract execution will be completed beyond a period of twelve (12) months from the expiry of the original tender validity period, then contract price adjustment may apply to that period beyond such twelve (12) months. An appropriate contract price adjustment formula will be determined by the Director: Supply Chain Management if such was not included in the bid documents.

17.4 The prices for the goods delivered and services performed shall be subject to contract price adjustment and the following conditions will be applicable (See Schedule 8):

18. Contract Amendments

Delete the heading of clause 18 and replace with the following:

18. Contract Amendments and Variations

Add the following to clause 18.1:

Variations means changes to the goods, extension of the duration or expansion of the value of the contract that the purchaser issues to the supplier as instructions in writing, subject to prior approval by the purchaser's delegated authority. Should the supplier deliver any goods not described in a written instruction from the purchaser, such work will not become due and payable until amended order has been issued by the purchaser.

20. Subcontracts

Add the following after clause 20.1:

- 20.2 The supplier shall be liable for the acts, defaults and negligence of any subcontractor, his agents or employees as fully as if they were the acts, defaults or negligence of the supplier.
- 20.3 Any appointment of a subcontractor shall not amount to a contract between the CCT and the subcontractor, or a responsibility or liability on the part of the CCT to the subcontractor and shall not relieve the supplier from any liability or obligation under the contract.

21. Delays in the supplier's performance

Delete Clause 21.2 in its entirety and replace with the following:

- 21.2 If at any time during the performance of the contract the supplier or its sub-contractors should encounter conditions beyond their reasonable control which impede the timely delivery of the goods, the supplier shall notify the purchaser in writing, within 7 Days of first having become aware of these conditions, of the facts of the delay, its cause(s) and its probable duration. As soon as practicable after receipt of the supplier's notice, the purchaser shall evaluate the situation, and may at his discretion extend the time for delivery.

Where additional time is granted, the purchaser shall also determine whether or not the supplier is entitled to payment for additional costs in respect thereof. The principle to be applied in this regard is that where the purchaser or any of its agents are responsible for the delay, reasonable costs shall be paid. In respect of delays that were beyond the reasonable control of both the supplier and the purchaser, additional time only (no costs) will be granted.

The purchaser shall notify the supplier in writing of his decision(s) in the above regard.

- 21.3 No provision in a contract shall be deemed to prohibit the obtaining of goods from a national department, provincial department, or a local authority.

22. Penalties

Delete clause 22.1 and replace with the following:

- 22.1 Subject to GCC Clause 25, if the supplier fails to deliver any or all of the goods within the period(s) specified in the contract, the purchaser shall, without prejudice to its other remedies under the contract, deduct from the contract price, as a penalty, a sum as stated herein for each day of the delay until actual delivery or performance.

The penalty for this contract shall be as detailed in the hereunder and shall be constituted on all infringements relating to the contract.

Item	Activity	Infringement	Penalty
1	Incomplete Work as defined in Section 3, Item 3.1.1.6 of the Specification	1.1 Failure to rectify the problems within the 24 hours from time of notice	R 1,500
		1.2 Repetitive Incidents (≥3 over a quarter period)	R 2,000
2	Technical Site Reports	2.1 Failure to Completion a Technical Site inspection. Reports as per the agreed work schedule.	R2000
		2.2 Late Submission of Technical Site inspection Reports(after 7 days after performing maintenance related activity)	R1000
3	Instrument Calibration Report	3.1 Failure to Completion an Instrument Calibration Report after calibration of new or existing instrument	R2000
		3.2 Late Submission of Instrument Calibration Report(after 7 days after performing maintenance related activity)	R1000
4	SCADA & Telemetry Systems Operations	4.1 Not responding to fault investigation during (autumn winter) May – September within a 24 hour period of written notification thereof	R2000
		4.2 Not responding to fault investigation during (spring -summer) October – April within a 48 hour period of written notification thereof.	R1000
5	Access to Private Properties	5.1 Not informing CoCT Project Manager of maintenance site inspection/work prior to going site located on private property.	R500

- 22.2 The purchaser shall, without prejudice to its other remedies under the contract, deduct from the contract price, financial penalties as contained on the **Preference Schedule** relating to breaches of the conditions upon which preference points were awarded.

23. Termination for default

Delete the heading of clause 23 and replace with the following:

23. Termination

Add the following to the end of clause 23.1:

if the supplier fails to remedy the breach in terms of such notice

Add the following after clause 23.7:

- 23.8 In addition to the grounds for termination due to default by the supplier, the contract may also be terminated:
- 23.8.1 Upon the death of the supplier who was a Sole Proprietor, or a sole member of a Close Corporation, in which case the contract will terminate forthwith.
- 23.8.2 The parties by mutual agreement terminate the contract.
- 23.8.3 If an Order has been issued incorrectly, or to the incorrect recipient, the resulting contract may be terminated by the purchaser by written notice
- 23.8.4 If a material irregularity vitiates the procurement process leading to the conclusion of the contract, rendering the procurement process and the conclusion of the resulting contract unfair, inequitable, non-transparent, uncompetitive or not cost-effective, provided the City Manager follows the processes as described in the purchasers SCM Policy.
- 23.8.5 After providing notice to the supplier, if the implementation of the contract may result in reputational risk or harm to the City as a result of (inter alia):
 - 23.8.5.1 reports of poor governance and/or unethical behaviour;
 - 23.8.5.2 association with known family of notorious individuals;
 - 23.8.5.3 poor performance issues, known to the Employer;
 - 23.8.5.4 negative social media reports; or
 - 23.8.5.5 adverse assurance (e.g. due diligence) report outcomes..
- 23.9 If the contract is terminated in terms of clause 23.8, all obligations that were due and enforceable prior to the date of the termination must be performed by the relevant party.

26. Termination for insolvency

Delete clause 26.1 and replace with the following:

- 26.1 The purchaser may make either of the following elections to ensure its rights are protected and any negative impact on service delivery is mitigated:
 - 26.1.1 accept a supplier proposal (via the liquidator) to render delivery utilising the appropriate contractual mechanisms; or
 - 26.1.2 terminate the contract, as the liquidator proposed supplier is deemed unacceptable to the purchaser, at any time by giving written notice to the supplier (via the liquidator).
- 26.2 Termination will be without compensation to the supplier, provided that such termination will not prejudice or affect any right of action or remedy which has accrued or will accrue thereafter to the purchaser.

27. Settlement of Disputes

Amend clause 27.1 as follows:

- 27.1 If any dispute or difference of any kind whatsoever, with the exception of termination in terms of clause 23.1(c), arises between the purchaser and the supplier in connection with or arising out of the contract, the parties shall make every effort to resolve such dispute or difference amicably, by mutual consultation.

Delete Clause 27.2 in its entirety and replace with the following:

- 27.2 Should the parties fail to resolve any dispute by way of mutual consultation, either party shall be entitled to refer the matter for mediation before an independent and impartial person appointed by the City Manager in accordance with Regulation 50(1) of the Local Government: Municipal Finance Management Act, 56 of 2003 – Municipal Supply Chain Management Regulations (Notice 868 of 2005). Such referral shall be done by either party giving written notice to the other of its intention to commence with mediation. No mediation may be commenced unless such notice is given to the other party.

Irrespective whether the mediation resolves the dispute, the parties shall bear their own costs concerning the mediation and share the costs of the mediator and related costs equally.

The mediator shall agree the procedures, representation and dates for the mediation process with the parties. The mediator may meet the parties together or individually to enable a settlement.

Where the parties reach settlement of the dispute or any part thereof, the mediator shall record such agreement and on signing thereof by the parties the agreement shall be final and binding.

Save for reference to any portion of any settlement or decision which has been agreed to be final and binding on the parties, no reference shall be made by or on behalf of either party in any subsequent court proceedings, to any outcome of an amicable settlement by mutual consultation, or the fact that any particular evidence was given, or to any submission, statement or admission made in the course of amicable settlement by mutual consultation or mediation.

28. Limitation of Liability

Delete clause 28.1 (b) and replace with the following:

- (b) the aggregate liability of the supplier to the purchaser, whether under the contract, in tort or otherwise, shall not exceed the sums insured in terms of clause 11 in respect of insurable events, or where no such amounts are stated, to an amount equal to twice the contract price, provided that this limitation shall not apply to the cost of repairing or replacing defective equipment.

Add the following after clause 28.1:

- 28.2 Without detracting from, and in addition to, any of the other indemnities in this contract, the supplier shall be solely liable for and hereby indemnifies and holds harmless the purchaser against all claims, charges, damages, costs, actions, liability, demands and/or proceedings and expense in connection with:

- a) personal injury or loss of life to any individual;
- b) loss of or damage to property;

arising from, out of, or in connection with the performance by the supplier in terms of this Contract, save to the extent caused by the gross negligence or wilful misconduct of the purchaser.

- 28.3 The supplier and/or its employees, agents, concessionaires, suppliers, sub-contractors or customers shall not have any claim of any nature against the purchaser for any loss, damage, injury or death which any of them may directly or indirectly suffer, whether or not such loss, damages, injury or death is caused through negligence of the purchaser or its agents or employees.

- 28.4 Notwithstanding anything to the contrary contained in this Contract, under no circumstances whatsoever, including as a result of its negligent (including grossly negligent) acts or omissions or those of its servants, agents or contractors or other persons for whom in law it may be liable, shall any party or its servants (in whose favour this constitutes a *stipulatio alteri*) be liable for any indirect, extrinsic, special, penal, punitive, exemplary or consequential loss or damage of any kind whatsoever, whether or not the loss was actually foreseen or reasonably foreseeable), sustained by the other party, its directors and/or servants, including but not limited to any loss of profits, loss of operation time, corruption or loss of information and/or loss of contracts.

- 28.5 Each party agrees to waive all claims against the other insofar as the aggregate of compensation which might otherwise be payable exceeds the aforesaid maximum amounts payable.

31. Notices

Delete clauses 31.1 and 31.2 and replace with the following:

- 31.1 Any notice, request, consent, approvals or other communications made between the Parties pursuant to the Contract shall be in writing and forwarded to the addresses specified in the contract and may be given as set out hereunder and shall be deemed to have been received when:
- a) hand delivered – on the working day of delivery
 - b) sent by registered mail – five (5) working days after mailing
 - c) sent by email or telefax – one (1) working day after transmission

32. Taxes and Duties

Delete the final sentence of 32.3 and replace with the following:

In this regard, it is the responsibility of the supplier to submit documentary evidence in the form of a valid Tax Clearance Certificate issued by SARS to the CCT at the Supplier Management Unit located within the Supplier Management / Registration Office, 2nd Floor (Concourse Level), Civic Centre, 12 Hertzog Boulevard, Cape Town (Tel 021 400 9242/3/4/5).

Add the following after clause 32.3:

32.4 The **VAT registration** number of the City of Cape Town is **4500193497**.

ADDITIONAL CONDITIONS OF CONTRACT

Add the following Clause after Clause 34:

35. Reporting Obligations.

35.1 The supplier shall complete, sign and submit with each delivery note, all the documents as required in the Specifications. Any failure in this regard may result in a delay in the processing of any payments.

(8) GENERAL CONDITIONS OF CONTRACT

(National Treasury - General Conditions of Contract (revised July 2010))

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1. Definitions

1. The following terms shall be interpreted as indicated:

- 1.1 'Closing time' means the date and hour specified in the bidding documents for the receipt of bids.
- 1.2 'Contract' means the written agreement entered into between the purchaser and the supplier, as recorded in the contract form signed by the parties, including all attachments and appendices thereto and all documents incorporated by reference therein.
- 1.3 'Contract price' means the price payable to the supplier under the contract for the full and proper performance of his or her contractual obligations.
- 1.4 'Corrupt practice' means the offering, giving, receiving, or soliciting of anything of value to influence the action of a public official in the procurement process or in contract execution.
- 1.5 'Countervailing duties' are imposed in cases in which an enterprise abroad is subsidised by its government and encouraged to market its products internationally.

- 1.6 'Country of origin' means the place where the goods were mined, grown or produced or from which the services are supplied. Goods are produced when, through manufacturing, processing or substantial and major assembly of components, a commercially recognised new product results that is substantially different in basic characteristics or in purpose or utility from its components.
- 1.7 'Day' means calendar day.
- 1.8 'Delivery' means delivery in compliance with the conditions of the contract or order.
- 1.9 'Delivery ex stock' means immediate delivery directly from stock actually on hand.
- 1.10 'Delivery into consignee's store or to his site' means delivered and unloaded in the specified store or depot or on the specified site in compliance with the conditions of the contract or order, the supplier bearing all risks and charges involved until the supplies are so delivered and a valid receipt is obtained.
- 1.11 'Dumping' occurs when a private enterprise abroad markets its goods on its own initiative in the RSA at lower prices than that of the country of origin, and which action has the potential to harm the local industries in the RSA.
- 1.12 'Force majeure' means an event beyond the control of the supplier, not involving the supplier's fault or negligence, and not foreseeable. Such events may include, but are not restricted to, acts of the purchaser in its sovereign capacity, wars or revolutions, fires, floods, epidemics, quarantine restrictions and freight embargoes.
- 1.13 'Fraudulent practice' means a misrepresentation of facts in order to influence a procurement process or the execution of a contract to the detriment of any bidder, and includes collusive practice among bidders (prior to or after bid submission) designed to establish bid prices at artificial, non-competitive levels and to deprive the bidder of the benefits of free and open competition.
- 1.14 'GCC' means the General Conditions of Contract.
- 1.15 'Goods' means all of the equipment, machinery, and/or other materials that the supplier is required to supply to the purchaser under the contract.
- 1.16 'Imported content' means that portion of the bidding price represented by the cost of components, parts or materials which have been or are still to be imported (whether by the supplier or his subcontractors) and which costs are inclusive of the costs abroad, plus freight and other direct importation costs such as landing costs, dock dues, import duty, sales duty or other similar tax or duty at the South African place of entry as well as transportation and handling charges to the factory in the Republic where the supplies covered by the bid will be manufactured.
- 1.17 'Local content' means that portion of the bidding price which is not included in the imported content, provided that local manufacture does take place.
- 1.18 'Manufacture' means the production of products in a factory using labour, materials, components and machinery, and includes other, related value-adding activities.
- 1.19 'Order' means an official written order issued for the supply of goods or works or the rendering of a service.
- 1.20 'Project site', where applicable, means the place indicated in bidding documents.
- 1.21 'Purchaser' means the organisation purchasing the goods.
- 1.22 'Republic' means the Republic of South Africa.
- 1.23 'SCC' means the Special Conditions of Contract.

1.24 'Services' means those functional services ancillary to the supply of the goods, such as transportation and any other incidental services, such as installation, commissioning, provision of technical assistance, training, catering, gardening, security, maintenance, and other such obligations of the supplier covered under the contract.

1.25 'Written' or 'in writing' means handwritten in ink or any form of electronic or mechanical writing.

2. Application

2.1 These general conditions are applicable to all bids, contracts and orders, including bids for functional and professional services, sales, hiring, letting and the granting or acquiring of rights, but excluding immovable property, unless otherwise indicated in the bidding documents.

2.2 Where applicable, special conditions of contract are also laid down to cover specific supplies, services or works.

2.3 Where such special conditions of contract are in conflict with these general conditions, the special conditions shall apply.

3. General

3.1 Unless otherwise indicated in the bidding documents, the purchaser shall not be liable for any expense incurred in the preparation and submission of a bid. Where applicable, a non-refundable fee for documents may be charged.

3.2 With certain exceptions, invitations to bid are only published in the Government Tender Bulletin. The Government Tender Bulletin may be obtained directly from the Government Printer, Private Bag X85, Pretoria 0001, or accessed electronically from www.treasury.gov.za.

4. Standards

4.1 The goods supplied shall conform to the standards mentioned in the bidding documents and specifications.

5. Use of contract documents and information; inspection.

5.1 The supplier shall not, without the purchaser's prior written consent, disclose the contract, or any provision thereof, or any specification, plan, drawing, pattern, sample, or information furnished by or on behalf of the purchaser in connection therewith, to any person other than a person employed by the supplier in the performance of the contract. Disclosure to any such employed person shall be made in confidence and shall extend only so far as may be necessary for the purposes of such performance.

5.2 The supplier shall not, without the purchaser's prior written consent, make use of any document or information mentioned in GCC clause 5.1, except for purposes of performing the contract.

5.3 Any document, other than the contract itself, mentioned in GCC clause 5.1 shall remain the property of the purchaser and shall be returned (all copies) to the purchaser on completion of the supplier's performance under the contract if so required by the purchaser.

5.4 The supplier shall permit the purchaser to inspect the supplier's records relating to the performance of the supplier and to have them audited by auditors appointed by the purchaser, if so required by the purchaser.

6. Patent rights

6.1 The supplier shall indemnify the purchaser against all third-party claims of infringement of patent, trademark, or industrial design rights arising from the use of the goods or any part thereof by the purchaser.

7. Performance Security

- 7.1 Within 30 (thirty) days of receipt of the notification of contract award, the successful bidder shall furnish to the purchaser the performance security of the amount specified in the SCC.
- 7.2 The proceeds of the performance security shall be payable to the purchaser as compensation for any loss resulting from the supplier's failure to complete his obligations under the contract.
- 7.2 The performance security shall be denominated in the currency of the contract or in a freely convertible currency acceptable to the purchaser, and shall be in one of the following forms:
 - a) a bank guarantee or an irrevocable letter of credit issued by a reputable bank located in the purchaser's country or abroad, acceptable to the purchaser, in the form provided in the bidding documents or another form acceptable to the purchaser; or
 - b) a cashier's or certified cheque.
- 7.4 The performance security will be discharged by the purchaser and returned to the supplier not later than 30 (thirty) days following the date of completion of the supplier's performance obligations under the contract, including any warranty obligations, unless otherwise specified in the SCC.

8. Inspections, tests and analyses

- 8.1 All pre-bidding testing will be for the account of the bidder.
- 8.2 If it is a bid condition that supplies to be produced or services to be rendered should at any stage during production or execution or on completion be subject to inspection, the premises of the bidder or contractor shall be open, at all reasonable hours, for inspection by a representative of the Department or an organisation acting on behalf of the Department.
- 8.3 If there are no inspection requirements indicated in the bidding documents and no mention of such is made in the contract, but during the contract period it is decided that inspections shall be carried out, the purchaser shall itself make the necessary arrangements, including payment arrangements with the testing authority concerned.
- 8.4 If the inspections, tests and analyses referred to in clauses 8.2 and 8.3 show the supplies to be in accordance with the contract requirements, the cost of the inspections, tests and analyses shall be defrayed by the purchaser.
- 8.5 Where the supplies or services referred to in clauses 8.2 and 8.3 do not comply with the contract requirements, irrespective of whether such supplies or services are accepted or not, the cost in connection with these inspections, tests or analyses shall be defrayed by the supplier.
- 8.6 Supplies and services which are referred to in clauses 8.2 and 8.3 and which do not comply with the contract requirements may be rejected.
- 8.7 Any contract supplies may on or after delivery be inspected, tested or analysed and may be rejected if found not to comply with the requirements of the contract. Such rejected supplies shall be held at the cost and risk of the supplier, who shall, when called upon, remove them immediately at his own cost and forthwith substitute them with supplies which do comply with the requirements of the contract. Failing such removal, the rejected supplies shall be returned at the suppliers cost and risk. Should the supplier fail to provide the substitute supplies forthwith, the purchaser may, without giving the supplier further opportunity to substitute the rejected supplies, purchase such supplies as may be necessary at the expense of the supplier.
- 8.8 The provisions of clauses 8.4 to 8.7 shall not prejudice the right of the purchaser to cancel the contract on account of a breach of the conditions thereof, or to act in terms of Clause 23 of the GCC.

9. Packing

- 9.1 The supplier shall provide such packing of the goods as is required to prevent their damage or deterioration during transit to their final destination, as indicated in the contract. The packing shall be sufficient to withstand, without limitation, rough handling during transit and exposure to extreme temperatures, salt and precipitation during transit, and open storage. Packing, case size and weights shall take into consideration, where appropriate, the remoteness of the goods' final destination and the absence of heavy handling facilities at all points in transit.
- 9.2 The packing, marking, and documentation within and outside the packages shall comply strictly with such special requirements as shall be expressly provided for in the contract, including additional requirements, if any, specified in the SCC, and in any subsequent instructions ordered by the purchaser.

10. Delivery and documents

- 10.1 Delivery of the goods shall be made by the supplier in accordance with the terms specified in the contract. The details of shipping and/or other documents to be furnished by the supplier are specified in the SCC.
- 10.2 Documents to be submitted by the supplier are specified in the SCC.

11. Insurance

- 11.1 The goods supplied under the contract shall be fully insured, in a freely convertible currency, against loss or damage incidental to manufacture or acquisition, transportation, storage and delivery in the manner specified in the SCC.

12. Transportation

- 12.1 Should a price other than an all-inclusive delivered price be required, this shall be specified in the SCC.

13. Incidental Services

- 13.1 The supplier may be required to provide any or all of the following services, including additional services (if any) specified in the SCC:
- (a) performance or supervision of on-site assembly, and/or commissioning of the supplied goods;
 - (b) furnishing of tools required for the assembly and/or maintenance of the supplied goods;
 - (c) furnishing of a detailed operations and maintenance manual for each appropriate unit of the supplied goods;
 - (d) performance or supervision or maintenance and/or repair of the supplied goods, for a period of time agreed by the parties, provided that this service shall not relieve the supplier of any warranty obligations under this contract; and
 - (e) training of the purchaser's personnel, at the supplier's plant and/or on-site, in assembly, start-up, operation, maintenance, and/or repair of the supplied goods.
- 13.2 Prices charged by the supplier for incidental services, if not included in the contract price for the goods, shall be agreed upon in advance by the parties and shall not exceed the prevailing rates charged to other parties by the supplier for similar services.

14. Spare parts

- 14.1 As specified in the SCC, the supplier may be required to provide any or all of the following materials, notifications, and information pertaining to spare parts manufactured or distributed by the supplier:
- (a) such spare parts as the purchaser may elect to purchase from the supplier, provided that this election shall not relieve the supplier of any warranty obligations under the contract; and
 - (b) in the event of termination of production of the spare parts:
 - (i) Advance notification to the purchaser of the pending termination, in sufficient time to permit the purchaser to procure needed requirements; and
 - (ii) following such termination, furnishing at no cost to the purchaser, the blueprints, drawings, and specifications of the spare parts, if requested.

15. Warranty

- 15.1 The supplier warrants that the goods supplied under the contract are new, unused, of the most recent or current models, and that they incorporate all recent improvements in design and materials unless provided otherwise in the contract. The supplier further warrants that all goods supplied under this contract shall have no defect arising from design, materials, or workmanship (except when the design and/or material is required by the purchaser's specifications), or from any act or omission of the supplier, that may develop under normal use of the supplied goods in the conditions prevailing in the country of final destination.
- 15.2 This warranty shall remain valid for 12 (twelve) months after the goods, or any portion thereof, as the case may be, have been delivered to and accepted at the final destination indicated in the contract, or for 18 (eighteen) months after the date of shipment from the port or place of loading in the source country, whichever period concludes earlier, unless specified otherwise in the SCC.
- 15.3 The purchaser shall notify the supplier promptly, in writing, of any claims arising under this warranty.
- 15.4 Upon receipt of such notice, the supplier shall, within the period specified in the SCC and with all reasonable speed, repair or replace the defective goods or parts thereof, without costs to the purchaser.
- 15.5 If the supplier, having been notified, fails to remedy the defect(s) within the period specified in the SCC, the purchaser may proceed to take such remedial action as may be necessary, at the supplier's risk and expense and without prejudice to any other rights which the purchaser may have against the supplier under the contract.

16. Payment

- 16.1 The method and conditions of payment to be made to the supplier under this contract shall be specified in the SCC.
- 16.2 The supplier shall furnish the purchaser with an invoice accompanied by a copy of the delivery note and upon fulfilment of any other obligations stipulated in the contract.
- 16.3 Payments shall be made promptly by the purchaser, but in no case later than 30 (thirty) days after submission of an invoice or claim by the supplier.
- 16.4 Payment will be made in Rand unless otherwise stipulated in the SCC.

17. Prices

- 17.1 Prices charged by the supplier for goods delivered and services performed under the contract shall not vary from the prices tendered by the supplier in his bid, with the exception of any price adjustments authorized in the SCC or in the purchaser's request for bid validity extension, as the case may be.

18. Contract Amendments

- 18.1 No variation in or modification of the terms of the contract shall be made except by written amendment signed by the parties concerned.

19. Assignment

- 19.1 The supplier shall not assign, in whole or in part, its obligations to perform under the contract, except with the purchaser's prior written consent.

20. Subcontracts

- 20.1 The supplier shall notify the purchaser in writing of all subcontracts awarded under this contract if not already specified in the bid. Such notification, in the original bid or later, shall not relieve the supplier from any liability or obligation under the contract.

21. Delays in the supplier's performance

- 21.1 Delivery of the goods and performance of services shall be made by the supplier in accordance with the time schedule prescribed by the purchaser in the contract.
- 21.2 If at any time during the performance of the contract, the supplier or its subcontractor(s) should encounter conditions impeding timely delivery of the goods and performance of services, the supplier shall promptly notify the purchaser in writing of the fact of the delay, its likely duration and its cause(s). As soon as practicable after receipt of the supplier's notice, the purchaser shall evaluate the situation and may at his or her discretion extend the supplier's time for performance, with or without the imposition of penalties, in which case the extension shall be ratified by the parties by amendment of contract.
- 21.3 No provision in a contract shall be deemed to prohibit the obtaining of supplies or services from a national department, provincial department, or a local authority.
- 21.4 The right is reserved to procure, outside of the contract, small quantities of supplies; or to have minor essential services executed if an emergency arises, or the supplier's point of supply is not situated at or near the place where the supplies are required, or the supplier's services are not readily available.
- 21.5 Except as provided under GCC Clause 25, a delay by the supplier in the performance of its delivery obligations shall render the supplier liable to the imposition of penalties, pursuant to GCC Clause 22, unless an extension of time is agreed upon pursuant to GCC Clause 21.2 without the application of penalties.
- 21.6 Upon any delay beyond the delivery period in the case of a supplies contract, the purchaser shall, without cancelling the contract, be entitled to purchase supplies of a similar quality and up to the same quantity in substitution of the goods not supplied in conformity with the contract and to return any goods delivered later at the supplier's expense and risk, or to cancel the contract and buy such goods as may be required to complete the contract and, without prejudice to his other rights, be entitled to claim damages from the supplier.

22. Penalties

- 22.1 Subject to GCC Clause 25, if the supplier fails to deliver any or all of the goods or to perform the services within the period(s) specified in the contract, the purchaser shall, without prejudice to its other remedies under the contract, deduct from the contract price, as a penalty, a sum calculated on the delivered price of the delayed goods or unperformed services, using the current prime interest rate, calculated for each day of the delay until actual delivery or performance. The purchaser may also consider termination of the contract pursuant to GCC Clause 23.

23. Termination for default

- 23.1 The purchaser, without prejudice to any other remedy for breach of contract, by written notice of default sent to the supplier, may terminate this contract in whole or in part:
- (a) if the supplier fails to deliver any or all of the goods within the period(s) specified in the contract, or within any extension thereof granted by the purchaser pursuant to GCC Clause 21.2;
 - (b) if the supplier fails to perform any other obligation(s) under the contract; or
 - (c) if the supplier, in the judgment of the purchaser, has engaged in corrupt or fraudulent practices in competing for or in executing the contract.
- 23.2 In the event the purchaser terminates the contract in whole or in part, the purchaser may procure, upon such terms and in such manner as it deems appropriate, goods, works or services similar to those undelivered, and the supplier shall be liable to the purchaser for any excess costs for such similar goods, works or services. However, the supplier shall continue performance of the contract to the extent not terminated.

- 23.3 Where the purchaser terminates the contract in whole or in part, the purchaser may decide to impose a restriction penalty on the supplier by prohibiting such supplier from doing business with the public sector for a period not exceeding 10 years.
- 23.4 If a purchaser intends imposing a restriction on a supplier or any person associated with the supplier, the supplier will be allowed a time period of not more than 14 (fourteen) days to provide reasons why the envisaged restriction should not be imposed. Should the supplier fail to respond within the stipulated 14 (fourteen) days the purchaser may regard the intended penalty as not objected against and may impose it on the supplier.
- 23.5 Any restriction imposed on any person by the Accounting Officer/Authority will, at the discretion of the Accounting Officer/Authority, also be applicable to any other enterprise or any partner, manager, director or other person who wholly or partly exercises or exercised or may exercise control over the enterprise of the first-mentioned person, and with which enterprise or person the first-mentioned person is or was, in the opinion of the Accounting Officer/Authority, actively associated.
- 23.6 If a restriction is imposed, the purchaser must, within 5 (five) working days of such imposition, furnish the National Treasury with the following information:
- (i) the name and address of the supplier and/or person restricted by the purchaser;
 - (ii) the date of commencement of the restriction;
 - (iii) the period of restriction; and
 - (iv) the reasons for the restriction.

These details will be loaded in the National Treasury's central database of suppliers or persons prohibited from doing business with the public sector.

- 23.7 If a court of law convicts a person of an offence as contemplated in sections 12 or 13 of the Prevention and Combating of Corrupt Activities Act, Act 12 of 2004, the court may also rule that such person's name be endorsed on the Register for Tender Defaulters. When a person's name has been endorsed on the Register, the person will be prohibited from doing business with the public sector for a period of not less than five years and not more than 10 years. The National Treasury is empowered to determine the period of restriction, and each case will be dealt with on its own merits. According to section 32 of the Act the Register must be open to the public. The Register can be perused on the National Treasury website.

24. Anti-dumping and countervailing duties and rights

- 24.1 When, after the date of bid, provisional payments are required, or anti-dumping or countervailing duties are imposed, or the amount of a provisional payment or anti-dumping or countervailing right is increased in respect of any dumped or subsidised import, the State is not liable for any amount so required or imposed, or for the amount of any such increase. When, after the said date, such a provisional payment is no longer required or any such anti-dumping or countervailing right is abolished, or where the amount of such provisional payment or any such right is reduced, any such favourable difference shall, on demand, be paid forthwith by the contractor to the State, or the State may deduct such amounts from moneys (if any) which may otherwise be due to the contractor in regard to supplies or services which he or she delivered or rendered, or is to deliver or render in terms of the contract or any other contract or any other amount which may be due to him or her.

25. Force majeure

- 25.1 Notwithstanding the provisions of GCC Clauses 22 and 23, the supplier shall not be liable for forfeiture of its performance security, damages, or termination for default if, and to the extent that, his delay in performance or other failure to perform his obligations under the contract is the result of an event of force majeure.
- 25.2 If a force majeure situation arises, the supplier shall notify the purchaser promptly, in writing, of such condition and the cause thereof. Unless otherwise directed by the purchaser in writing, the supplier shall continue to perform its obligations under the contract as far as is reasonably practical, and shall seek all reasonable alternative means for performance not prevented by the force majeure event.

26. Termination for insolvency

- 26.1 The purchaser may at any time terminate the contract by giving written notice to the supplier if the supplier becomes bankrupt or otherwise insolvent. In this event, termination will be without compensation to the supplier, provided that such termination will not prejudice or affect any right of action or remedy which has accrued or will accrue thereafter to the purchaser.

27. Settlement of Disputes

- 27.1 If any dispute or difference of any kind whatsoever arises between the purchaser and the supplier in connection with or arising out of the contract, the parties shall make every effort to resolve such dispute or difference amicably, by mutual consultation.
- 27.2 If, after 30 (thirty) days, the parties have failed to resolve their dispute or difference by such mutual consultation, then either the purchaser or the supplier may give notice to the other party of his intention to commence with mediation. No mediation in respect of this matter may be commenced unless such notice is given to the other party.
- 27.3 Should it not be possible to settle a dispute by means of mediation, it may be settled in a South African court of law.
- 27.4 Mediation proceedings shall be conducted in accordance with the rules of procedure specified in the SCC.
- 27.5 Notwithstanding any reference to mediation and/or court proceedings herein,
- (a) the parties shall continue to perform their respective obligations under the contract unless they otherwise agree; and
 - (b) the purchaser shall pay the supplier any monies due to the supplier.

28. Limitation of Liability

- 28.1 Except in cases of criminal negligence or wilful misconduct, and in the case of infringement pursuant to Clause 6:
- (a) the supplier shall not be liable to the purchaser, whether in contract, tort, or otherwise, for any indirect or consequential loss or damage, loss of use, loss of production, or loss of profits or interest costs, provided that this exclusion shall not apply to any obligation of the supplier to pay penalties and/or damages to the purchaser; and
 - (b) the aggregate liability of the supplier to the purchaser, whether under the contract, in tort or otherwise, shall not exceed the total contract price, provided that this limitation shall not apply to the cost of repairing or replacing defective equipment.

29. Governing language

- 29.1 The contract shall be written in English. All correspondence and other documents pertaining to the contract that is exchanged by the parties shall also be written in English.

30. Applicable Law

- 30.1 The contract shall be interpreted in accordance with South African laws, unless otherwise specified in the SCC.

31. Notices

- 31.1 Every written acceptance of a bid shall be posted to the supplier concerned by registered or certified mail, and any other notice to him shall be posted by ordinary mail, to the address furnished in his bid or to the address notified later by him in writing; and such posting shall be deemed to be proper service of such notice.
- 31.2 The time mentioned in the contract documents for performing any act after such aforesaid notice has been given, shall be reckoned from the date of posting of such notice.

32. Taxes and Duties

- 32.1 A foreign supplier shall be entirely responsible for all taxes, stamp duties, licence fees, and other such levies imposed outside the purchaser's country.
- 32.2 A local supplier shall be entirely responsible for all taxes, duties, licence fees, etc., incurred until delivery of the contracted goods to the purchaser.
- 32.3 No contract shall be concluded with any bidder whose tax matters are not in order. Prior to the award of a bid the Department must be in possession of a tax clearance certificate submitted by the bidder. This certificate must be an original issued by the South African Revenue Services.

33. National Industrial Participation (NIP) Programme

- 33.1 The NIP Programme administered by the Department of Trade and Industry shall be applicable to all contracts that are subject to the NIP obligation.

34 Prohibition of Restrictive practices

- 34.1 In terms of section 4 (1) (b) (iii) of the Competition Act, Act 89 of 1998, as amended, an agreement between or concerted practice by firms, or a decision by an association of firms, is prohibited if it is between parties in a horizontal relationship and if a bidder(s) is/are or a contractor(s) was/were involved in collusive bidding (or bid rigging).
- 34.2 If a bidder(s) or contractor(s), based on reasonable grounds or evidence obtained by the purchaser, has/have engaged in the restrictive practice referred to above, the purchaser may refer the matter to the Competition Commission for investigation and possible imposition of administrative penalties as contemplated in the Competition Act, Act 89 of 1998.
- 34.3 If a bidder(s) or contractor(s) has/have been found guilty by the Competition Commission of the restrictive practice referred to above, the purchaser may, in addition and without prejudice to any other remedy provided for, invalidate the bid(s) for such item(s) offered, and/or terminate the contract in whole or part, and/or restrict the bidder(s) or contractor(s) from conducting business with the public sector for a period not exceeding 10 (ten) years and/or claim damages from the bidder(s) or contractor(s) concerned.

(9) FORM OF GUARANTEE / PERFORMANCE SECURITY**FORM OF GUARANTEE / PERFORMANCE SECURITY****GUARANTOR DETAILS AND DEFINITIONS**

"Guarantor" means:

Physical address of Guarantor:

"Supplier" means:

"Contract Sum" means: The accepted tender amount (INCLUSIVE OF VAT) of R

Amount in words:

"Guaranteed Sum" means: The maximum amount of R

Amount in words:

"Contract" means: The agreement made in terms of the Form of Offer and Acceptance for tender no _____: _____ and such amendments or additions to the contract as may be agreed in writing between the parties.

PERFORMANCE GUARANTEE

1. The Guarantor's liability shall be limited to the amount of the Guaranteed Sum.
2. The Guarantor's period of liability shall be from and including the date of issue of this Guarantee/Performance Security up to and including the termination of the Contract or the date of payment in full of the Guaranteed Sum, whichever occurs first.
3. The Guarantor hereby acknowledges that:
 - 3.1 any reference in this Guarantee/Performance to "Contract" is made for the purpose of convenience and shall not be construed as any intention whatsoever to create an accessory obligation or any intention whatsoever to create a suretyship;
 - 3.2 its obligation under this Guarantee/Performance Security is restricted to the payment of money.
4. Subject to the Guarantor's maximum liability referred to in 1, the Guarantor hereby undertakes to pay the City of Cape Town the sum due and payable upon receipt of the documents identified in 4.1 to 4.2:
 - 4.1 A copy of a first written demand issued by the City of Cape Town to the Supplier stating that payment of a sum which is due and payable has not been made by the Supplier in terms of the Contract and failing such payment within seven (7) calendar days, the City of Cape Town intends to call upon the Guarantor to make payment in terms of 4.2;
 - 4.2 A first written demand issued by the City of Cape Town to the Guarantor at the Guarantor's physical address with a copy to the Supplier stating that a period of seven (7) days has elapsed since the first written demand in terms of 4.1 and the sum has still not been paid.
5. Subject to the Guarantor's maximum liability referred to in 1, the Guarantor undertakes to pay to the City of Cape Town the Guaranteed Sum or the full outstanding balance upon receipt of a first written demand from the City of Cape Town to the Guarantor at the Guarantor's physical address calling up this Guarantee / Performance Security, such demand stating that:
 - 5.1 the Contract has been terminated due to the Supplier's default and that this Guarantee/Performance Security is called up in terms of 5; or

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

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

6. It is recorded that the aggregate amount of payments required to be made by the Guarantor in terms of 4 and 5 shall not exceed the Guarantor's maximum liability in terms of 1.
7. Where the Guarantor has made payment in terms of 5, the City of Cape Town shall upon the termination date of the Contract, submit an expense account to the Guarantor showing how all monies received in terms of this Guarantee/Performance Security have been expended and shall refund to the Guarantor any resulting surplus. All monies refunded to the Guarantor in terms of this Guarantee/Performance Security shall bear interest at the prime overdraft rate of the City of Cape Town's bank compounded monthly and calculated from the date payment was made by the Guarantor to the City of Cape Town until the date of refund.
8. Payment by the Guarantor in terms of 4 or 5 shall be made within seven (7) calendar days upon receipt of the first written demand to the Guarantor.
9. The City of Cape Town shall have the absolute right to arrange its affairs with the Supplier in any manner which the City of Cape Town may deem fit and the Guarantor shall not have the right to claim his release from this Guarantee /Performance Security on account of any conduct alleged to be prejudicial to the Guarantor.
10. The Guarantor chooses the physical address as stated above for the service of all notices for all purposes in connection herewith.
11. This Guarantee/Performance Security is neither negotiable nor transferable and shall expire in terms of 2, where after no claims will be considered by the Guarantor. The original of this Guarantee / Performance Security shall be returned to the Guarantor after it has expired.
12. This Guarantee/Performance Security, with the required demand notices in terms of 4 or 5, shall be regarded as a liquid document for the purposes of obtaining a court order.
13. Where this Guarantee/Performance Security is issued in the Republic of South Africa the Guarantor hereby consents in terms of Section 45 of the Magistrate's Courts Act No 32 of 1944, as amended, to the jurisdiction of the Magistrate's Court of any district having jurisdiction in terms of Section 28 of the said Act, notwithstanding that the amount of the claim may exceed the jurisdiction of the Magistrate's Court.

Signed at

Date

Guarantor's signatory (1)

Capacity

Guarantor's signatory (2)

Capacity

Witness signatory (1)

Witness signatory (2)

ANNEXURE

LIST OF APPROVED FINANCIAL INSTITUTIONS

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

National Banks:

ABSA Bank Ltd.
FirstRand Bank Ltd.
Investec Bank Ltd.
Nedbank Ltd.
Standard Bank of SA Ltd.

International Banks (with branches in SA):

Barclays Bank plc.
Citibank n.a.
Credit Agricole Corporate and Investment Bank
HSBC Bank plc.
JP Morgan Chase Bank
Societe Generale
Standard Chartered Bank

Insurance companies:

ABSA Insurance
Coface s.a.
Compass Insurance Co.
Constantia Insurance Co.
Credit Guarantee Insurance Co.
Guardrisk Insurance Co.
Hollard Insurance Company Ltd.
Infiniti Insurance Limited
Lombard Insurance
New National Assurance Co.
Regent Insurance Co.
Renasas Insurance Company Ltd.
Santam Limited
Zurich Insurance Co.

(10) FORM OF ADVANCE PAYMENT GUARANTEE**ADVANCE PAYMENT GUARANTEE****GUARANTOR DETAILS AND DEFINITIONS**

"Guarantor" means:

Physical address of guarantor:

"Supplier" means:

"Contract Sum" means: The accepted tender amount (INCLUSIVE of VAT) of R

Amount in words:

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

"Plant and materials" means: The Plant and materials in respect of which an advance payment prior to manufacture is required, which the City of Cape Town has agreed may be subject to advance payment, such Plant and materials being listed in the Schedule of Plant and materials.

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

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

Amount in words:

1. The Guarantor's liability shall be limited to the amount of the Guaranteed Advance Payment Sum.
2. The Guarantor's period of liability shall be from and including the date of issue of this Advance Payment Guarantee and up to and including the termination of the Contract or the date of payment in full of the Guaranteed Advance Payment Sum, whichever occurs first.
3. The Guarantor hereby acknowledges that:
 - 3.1 any reference in this Advance Payment Guarantee to the Contract is made for the purpose of convenience and shall not be construed as any intention whatsoever to create an accessory obligation or any intention whatsoever to create a suretyship;
 - 3.2 its obligation under this Advance Payment Guarantee is restricted to the payment of money.
4. Subject to the Guarantor's maximum liability referred to in 1, the Guarantor hereby undertakes to pay the City of Cape Town the sum advanced to the Supplier upon receipt of the documents identified in 4.1 to 4.2:
 - 4.1 A copy of a first written demand issued by the City of Cape Town to the Supplier stating that payment of a sum advanced by the City of Cape Town has not been repaid by the Supplier in terms of the Contract ("default") and failing such payment within seven (7) calendar days, the City of Cape Town intends to call upon the Guarantor to make payment in terms of 4.2;
 - 4.2 A first written demand issued by the City of Cape Town to the Guarantor at the Guarantor's physical address with a copy to the Supplier stating that a period of seven (7) calendar days has elapsed since the first written demand in terms of 4.1 and the sum advanced has still not been repaid by the Supplier.
5. Subject to the Guarantor's maximum liability referred to in 1, the Guarantor undertakes to pay to the City of Cape Town the Guaranteed Advance Payment Sum or the full outstanding balance not repaid upon receipt of a first written demand from the City of Cape Town to the Guarantor at the Guarantor's physical address calling up this Advance Payment Guarantee, such demand stating that:
 - 5.1 the Contract has been terminated due to the Supplier's default and that this Advance Payment Guarantee is called up in terms of 5; or

- 5.2 a provisional or final sequestration or liquidation court order has been granted against the Supplier and that the Advance Payment Guarantee is called up in terms of 5; and
- 5.3 the aforesaid written demand is accompanied by a copy of the notice of termination and/or the provisional/final sequestration and/or the provisional liquidation court order.
6. It is recorded that the aggregate amount of payments required to be made by the Guarantor in terms of 4 and 5 shall not exceed the Guarantor's maximum liability in terms of 1.
7. Payment by the Guarantor in terms of 4 or 5 shall be made within seven (7) calendar days upon receipt of the first written demand to the Guarantor.
9. The City of Cape Town shall have the absolute right to arrange its affairs with the Supplier in any manner which the City of Cape Town may deem fit and the Guarantor shall not have the right to claim his release from this Advance Payment Guarantee on account of any conduct alleged to be prejudicial to the Guarantor.
10. The Guarantor chooses the physical address as stated above for the service of all notices for all purposes in connection herewith.
11. This Advance Payment Guarantee is neither negotiable nor transferable and shall expire in terms of 2, whereafter no claims will be considered by the Guarantor. The original of this Guarantee shall be returned to the Guarantor after it has expired.
12. This Advance Payment Guarantee, with the required demand notices in terms of 4 or 5, shall be regarded as a liquid document for the purposes of obtaining a court order.
13. Where this Guarantee/Performance Security is issued in the Republic of South Africa the Guarantor hereby consents in terms of Section 45 of the Magistrate's Courts Act No 32 of 1944, as amended, to the jurisdiction of the Magistrate's Court of any district having jurisdiction in terms of Section 28 of the said Act, notwithstanding that the amount of the claim may exceed the jurisdiction of the Magistrate's Court.

Signed at

Date

Guarantor's signatory (1)

Capacity

Guarantor's signatory (2)

Capacity

Witness signatory (1)

Witness signatory (2)

(10.1) ADVANCE PAYMENT SCHEDULE

This Advance Payment Schedule is to be read in conjunction with clause 16.6 in the SCC. The purpose of this schedule is to itemise specific plant and materials for which the CCT is prepared to make advance payment to the supplier, subject to the conditions below.

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

Plant and materials which have been manufactured and are stored by the supplier	Plant and materials yet to be manufactured and for which a deposit with order is required from the supplier by a third party manufacturer/supplier, and which may be stored by the supplier:
DRAFTER TO LIST: Steel gantries for overhead signage	Imported ductile iron pipes
Closed circuit television equipment for road traffic surveillance	Pipes and valves for large diameter pipelines
Precast concrete beams	

Conditions:

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

(11) OCCUPATIONAL HEALTH AND SAFETY AGREEMENT**AGREEMENT MADE AND ENTERED INTO BETWEEN THE CITY OF CAPE TOWN (HEREINAFTER CALLED THE "CCT") AND**

..... ,
 (Supplier/Mandatar/Company/CC Name)

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

I, , representing

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

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

COLD ACT Registration Number:

OR Compensation Insurer: Policy No.:

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

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

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

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

Signed at on the day of 20....

Witness

Mandatar

Signed at on the day of 20

 Witness

 for and on behalf of
 City of Cape Town

(12) INSURANCE BROKER'S WARRANTY (PRO FORMA)

Logo

Letterhead of supplier's Insurance Broker

Date _____

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

Dear Sir

TENDER NO.: 23S/2021/22

**TENDER DESCRIPTION: TERM TENDER FOR THE REPAIRS & MAINTENANCE OF THE CATCHMENT,
STORMWATER & RIVER MANAGEMENT HYDROLOGICAL MONITORING SYSTEM
(SCADA, DATABASE, TELEMETRY & EQUIPMENT)**

NAME OF SUPPLIER: _____

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

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

Yours faithfully

Signed: _____

For: _____ (Supplier's Insurance Broker)

(13) SPECIFICATION(S)**SECTION 1: BACKGROUND AND INFRASTRUCTURE****1.1 BACKGROUND**

The Catchment, Stormwater and River Management Branch (CSRM) within the Water and Sanitation Department (WS) is responsible for the recording and analysis of rainfall and river level data, recorded across the Cape Town Metropolitan area and the neighbouring Stellenbosch Municipality. This data is used by Departmental Branches across Directorates for operational infrastructure planning and also calculation of the capacity and performance of existing infrastructure

1.2 HYDROLOGICAL MONITORING SYSTEM INFRASTRUCTURE

The network consists automated Remote Monitoring Stations that records Rainfall and River Levels. These rainfall and river level recording stations transmit the data via a LTE enabled Accelerated Private Network (APN) to a Primary and Back-Up SCADA System with a Secondary SCADA located at the Disaster Risk Management Centre.

The recorded data is locally stored on SQL Database Server, backup on a secondary standby server which is peered with a Virtual (Hyper-V) Server hosted and administered by the City of Cape Town, corporate IT Department. The Hydrological Monitoring System is an “outside” management environment system, but fully compliant with policies and procedures set out by the City of Cape Town Corporate IT department.

See the following ANNEXURES

- **ANNEXURE 1A: STORMWATER SYSTEM DIAGRAM**
- **ANNEXURE 1B: REMOTE MONITORING STATION WIRING DIAGRAM (TYPE 1 - 220V)**
- **ANNEXURE 1C: REMOTE MONITORING STATION WIRING DIAGRAM (TYPE 2 - 220V)**
- **ANNEXURE 1D: REMOTE MONITORING STATION WIRING DIAGRAM (TYPE 3 - SOLAR)**

SECTION 2: MAINTENANCE ADMINISTRATION

The Tenderer will be required to perform function as part of the Reliable Centered Maintenance and must ensure he / she familiarise themselves with extent of these functions.

2.1 HYDROLOGICAL MONITORING SYSTEM DATA

A total of 63 Remote Monitoring Stations (RMS) that transmit data from each Station via the APN to the Primary and Secondary SCADAs for the save storage of the Rainfall and River Level data.

The Primary and Secondary SCADA have each an Uninterrupted Power Supply (UPS) that is maintained via CCT corporate IT Department

See **ANNEXURE 2A: List of all Remote Stations**

See **ANNEXURE 2B: List of Critical Stations**

2.2 MAINTENANCE

The aim of this tender will be to implementing Reliability Centered Maintenance (RCM) that will in turn deliver timeous and accurate hydrological data and information that are key to the management of water resources within the City of Cape Town (CCT).

Reliable Centered Maintenance will ensure the following:

- a) preventative maintenance on its assets at the right time, this will increase efficiency, instrument performance & equipment lifecycle; and
- b) it will allow the CCT to identify problems earlier as well as reduce the repairs and breakdown times.

The tenderer shall be required to compile and submit for approval by the CCT Representative an Infrastructure and Instrumentation Maintenance Plan (IIMP) within THIRTY (30) DAYS from appointment.

ANNEXURE 3 provides the outline of a typical IIMP acceptable to the CCT, The Tender shall expand in detail from typical design and provide a quarterly gantt chart for the whole financial year.

The final draft Infrastructure and Instrumentation Maintenance Plan (IIMP) must make provision for the following:

- 2.2.1 The System Maintenance which comprises of the both Base Stations and Remote Stations is shall be done monthly in line with the **ANNEXURE 3** IIMP attached to this tender. The list of CRITICAL Remote and Base Stations, **ANNEXURE 2B** are maintained on a monthly basis. The balance of the Remote Stations are maintained every 6-month cycle.
- 2.2.2 It will also incorporate the programs for the QUARTERLY BATTERIES RECHARGING, CALIBRATION and PREPARATION WORK FOR THE CLEANING OF THE SUMPS; and
- 2.2.3 Show the 50 % of ON SITE and the balance REMOTE maintenance supervision time allocation for Item 2.2.1 and 2.2.2 above. As further explained in **Section 5: General Specification**, Item Number 5.4.

The Tenderer shall submit a program of the work at the first contract kick-off meeting. The up to date program shall be available at every site meeting.

2.3 REPAIRS

Information from the Reports (Maintenance, Comms, etc.) will identify the faults, failures and damages at the Remote Sites.

Subject to the approval from the CCT these repairs will, as and when needed be commissioned. Once the CCT intends to proceed with the work, the CCT will request a QUOTATION from The Tenderer. Only on receipt of an official purchase order is REPAIR WORK approved and The Tenderer shall commence with the work. All repair work shall further be scheduled into the IIMP.

The Tenderer shall give or provide all necessary site supervision due to the execution of the Works and must be on site at all times during the duration of the works. As further explained in **Section 5: General Specification**, Item Number 5.4

2.4 VANDALISM / THEFT INCIDENTS

In the case of an act of vandalism or the breaking into of the station, the Tenderer will be required to:

- 2.4.1 Take photographic evidence of the damage;
- 2.4.2 salvage equipment and return it to their workshop for safekeeping; and
- 2.4.3 report the incident to the nearest police station within 24 hours of incident

The CCT will assess the damaged equipment and follow CCT procedure to replace or repair the equipment.

All incidents will be considered a **Maintenance Call Out (Section 3: Maintenance Services Item 3.5)** irrespective of the initial request leading to the arrival of the Maintenance Team on site.

2.5 ADMINISTRATION / REPORTING

The tenderer will perform this administration and reporting functions as part of the their maintenance. The Tenderer will compile the agenda / minutes of meetings, standard maintenance reports, run and check the daily comms, battery voltage and electrical supply status report and compile a weekly (7 days) report with the following outcomes:

2.5.1 MEETINGS

The Tenderer or his fully authorized Representative shall attend all meetings arranged by the Project Manager. The meetings will be held in two formats, OPERATIONAL and CONTRACTUAL Meetings. These Meetings will take place such interval as determined by the Project Manager.

All meeting will be chaired by the CCT Project sponsor, Project Manager or his representative

Operations Meetings

The Tenderer shall for the duration of the contract facilitate, schedule and record the monthly operations meetings (12 / pa). The purpose of this Meeting would be discuss items such as Program Plans, Administration, Technical and Operational functions. The final meeting agenda and format will be confirmed with the successful Tenderer

Contractual Meetings

The CCT shall further schedule and record quarterly contractual meetings (4 / pa) that the Tenderer's Project Sponsor and Project Manager shall attend. The purpose of this Meeting would be to discuss the The Tenderer's performance. The final meeting agenda and format will be confirmend with the successful Tenderer.

2.5.2 STANDARD MAINTENANCE REPORT

Provide a basic electronic maintenance reporting tool to extract maintenance information, reports and stats. Outcome need to compare the individual reports and monthly reports. Trends of Breakdowns / Failures / Faults. An application for our field devices recording images and saving to SQL DB transmit via the APN.

All activities / work commissioned and done by The Tenderer must produce a Standard Maintenance Report together with any / all checklist for the relevant activity / work that must be completed on site.

2.5.3 COMMUNICATION (COMMS) FAILURES STATS

The Tenderer shall perform and record daily check the daily communication of all the REMOTE MONITORING STATIONS. The Tenderer shall download, compile and produce a monthly PECENTAGE (%) of comms failures per site as well as the comms across the the overall system.

Three (3) consecutive days of communication failure will require a MAINTENANCE CALL OUT. The Tenderer shall advise the CCT Representative of the COMMS failure and email a QUOTATION for the call out. Upon receipt of the CCT PURCHASE ORDER The Tender will have 24 Hours to do the work.

2.5.4 BATTERY VOLTAGE STATS

The Tenderer shall perform and record daily checks of the daily battery voltage of all the Remote Monitoring Stations. The amount of hrs the station was on battery power. Voltages when under charge and the start and end voltage reading of each electrical failure.

Battery Voltages of ELEVEN (11) Volts and less will require a BATTERY RECHARGE. The Tenderer shall advise the CCT Representative of the COMMS failure and email a QUOTATION for the call out.

Only on receipt of an official purchase order is the BATTERY RECHARGE approved and The Tenderer shall commence with the work within TWENTY-FOUR (24) Hours. All repair work shall further be scheduled into the IIMP.

2.5.5 ELECTRICAL UNITS USED

The Tenderer shall perform daily and monthly checks of the amount / quantity of Kwh used for the week with an accumulative total for the month. The amount of electrical supply failures for the week with an accumulative total for the month.

2.5.6 OUTCOMES

The Tenderer shall consolidate the Standard Maintenance Report for each month and provide a Synopsis of ALL the maintenance reports of work performed during that month. The Tenderer shall highlight all the problems together with a possible solution and other actions required by the CCT

2.5.7 CHECKLISTS

The Tenderer shall complete the relevant checklist, for the relevant items listed below when an instrumentation is found to be FAULTY, NON OPERATIONAL or BROKEN / DAMAGED.

- 2.5.7.1 Battery Replacement
- 2.5.7.2 Power Supply
- 2.5.7.3 Sensor
- 2.5.7.4 Rain Gauge
- 2.5.7.5 Visual Inspections
- 2.5.7.6 PLC
- 2.5.7.7 Data Logger
- 2.5.7.8 HMI
- 2.5.7.9 Modem

2.5.8 SUPERVISION: TECHNICIAN

Conformance to quality of work as set out in clause 5.4 of General Specification, Tenderers Superintendence which is key to the successful implementation and monitoring of all maintenance work.

It is for this, that continuous supervision of all work is performed by a qualified person/s in line with the staff set out in the Staff Section of this document. The supervisor shall be in possession of a minimum National Diploma (NQF 6) and five (5) years working experience in the applicable field relevant to this tender.

The aforementioned supervisor will be an active supervision for maintenance and repair works. The supervisor will be required to be on site for any and all repairs and fifty percent (50%) for pro-active & re-active maintenance works till completion of the respective repairs and maintenance work.

2.6 MAINTENANCE TEAM

The team that will be performing the maintenance at the various Remonte Monitoring Stations will consist of the follow trades:

2.6.1 ARTISAN

Qualified with an appropriate national trade test diploma in terms of this tender, and he is physically involved in the work required by this tender

2.6.2 ARTISAN ASSISTANT

Generalist, cleaning of the work area and tools etc., and performs minor technical work under supervision

2.7 SERVICE VEHICLE

The Tenderer shall ensure that their Services Vehicle should be adequately equipped with the tools and diagnostic equipment as well as four 4 wheel capability.

The Tenderer shall ensure that the Maintenance Team using this Services Vehicle will have the Basic Tools and Equipment listed below to perform their Maintenance Service

Basic Tools and Equipment List

These items listed below is only a minimum guide and it will be The Tenderer responsibility to ensure that the Maintenance Team has correct tools in order to perform their Maintenance Service

- 2.7.1 PPE
- 2.7.2 Basic First Aid Kit
- 2.7.3 Set of insulated screwdrivers (Phillips and flat)
- 2.7.4 Basic spanner set
- 2.7.5 Basic socket set
- 2.7.6 Voltage Meter
- 2.7.7 Ladder
- 2.7.8 Spade
- 2.7.9 Brooms (1 x small & 1 x large)
- 2.7.10 Ladder (including safety harness)
- 2.7.11 20 Lt Water Can
- 2.7.12 Hand Rags and Plastic Bags
- 2.7.13 Calibrate Transparent test tube with clearly marked measurements

The Tenderer will ensure the Maintenance Team is fully trained in the use of all the tools required by him / her in terms of their Occupational Health and Safety.

The Tenderer shall ensure that all the tools are serviced and calibrated that is used on the maintenance.

Such proof / certification / service record must accompany the Maintenance Team at all times and must be available for inspection by CCT representative.

2.8 SAFE WORKING PROCEDURES

Compliance with the Occupational Health & Safety Act (Act 85 of 1993). When working on site, The Tenderer provider shall ensure risks are identified and precautionary measures are in place in line with their Health & Safety Plan for this contract.

Sites identified which carry high risk require the supervisor appointed by The Tenderer to be present on site for the duration of the works to ensure all working conditions are safe for work. The CCT will accompany The Tenderer to Three (3) Typical Sites to assess the OHS requirements. The Tenderer shall then do the balance and assess their Risks for each site in order for them to incorporate into their OHS plan.

The supervisor shall at all times ensure the following:

- Workers are following safe working practices
- Enforce health & safety regulations
- Unsafe acts and conditions are corrected
- Continues risk are assessed
- Only authorized, adequately trained workers operate equipment
- Reporting and investigating of all accidents and incidents relating to this contract
- Toolbox talks
- Promote safety awareness with their employees.

Working at Heights means working in a place or undertaking an activity where a person could fall from a height of two metres or more. Some examples include:

- Any plant or structure being constructed, demolished, inspected, repaired;
- Off the ground (e.g. up ladders, on work platforms, in trees, up masts or towers);
- Near an unprotected open edge or near a hole, shaft or pit into which a person could fall;
- Fragile or potentially unstable surface;
- Using equipment to gain access to an elevated level;
- A sloping or slippery surface.

Aerial Platform means (a telescoping device), hinged device or articulated device, or any combination of these devices which is used to support a platform on which personnel, equipment and materials can be elevated to perform work

2.9 The Tenderer Performance Monitoring KPA

The Tenderer will be measured through the means of Key Performance Areas (KPA). Overall results will be categorised in the following areas.

Overall Result (Weighted result based on the Impact on Service Delivery)		
GREEN		EXPECTATION MET
AMBER		SOME INTERVENTION REQUIRED
RED		POOR PERFORMANCE

Quarterly Meetings will be held with the respective tenderer to discuss previous quarter concerns, performance & results from the KPA tracking.

The KPAs and KPIs may be amended as and when it is deemed necessary, with the involvement of the tenderer.

Continued poor performance where The Tenderer stay within the Amber zone of the KPA document for 3 consecutive months, the City of Cape Town may initiate the default procedure.

The default process will be initiated where continued poor performance is experienced by The Tenderer and it stays within the Red Zone of the KPA document.

During the period that The Tenderer are being afforded the opportunity to demonstrate the ability to remedy the sub-standard work performance situation, the City of Cape Town reserves the right during such period to utilise other Tenderers to mitigate any adverse operational impact.

SECTION 3: MAINTENANCE SERVICE

Refer to the Price Schedule, Schedule A

Preventative Maintenance and Repairs will ensure a longer equipment lifecycle as well as increase the efficiency and performance of instrumentation. The Tenderer will take note of **SECTION 2: MAINTENANCE AND ADMINISTRATION** and familiarise themselves with requirements and deliverables required in performing the maintenance. The Maintenance and Servicable Items are listed and defined in **SECTION 4: REPAIR ACTIVITIES** below

3.1 REMOTE STATION MAINTENANCE

3.1.1 INTRODUCTION

The Tenderer shall perform a comprehensive maintenance at the Remote Station in accordance with the maintenance items listed in Items below.

The Tenderer shall ensure that:

- 3.1.1.1 The Maintenance Team, perform the work functions as defined in SECTION 4: REPAIR ACTIVITIES;
- 3.1.1.2 Produce a Standard Maintenance Report together with relevant Checklist of the instrumentation inspection with the results, recommendation and outcome findings;
- 3.1.1.3 Perform the maintenance of the equipment as defined in SECTION 4: REPAIR ACTIVITIES with necessary tools as indicated in the SECTION 2;
- 3.1.1.4 All OHS protocols are observed and practice safe working procedures while performing your duties;
- 3.1.1.5 That The Team in Item 3.1.1.1 above is equip with a Service Vehicle to perform the maintenance
- 3.1.1.6 Incomplete Work (Reports, Checklists, etc) will result in Penalties and needs to be rectified within Twenty-Four (24) Hours from the notice. The Tenderer shall ensure that notwithstanding the time constraints, the IIMP work will not be affected

3.1.2 VISUAL AND CONDITION ASSESSMENT

The Tenderer shall on arrival, before maintenance commence do a personal safety and Condition Assessment of the infrastructure as well as Recommendation on the damage, faults.

The Tenderer shall produce a check list, together with photographs of the following information, if applicable on site:

3.1.2.1 Facilities

- Perimeter Fencing / High Security Cage
- Gate
- Mast
- Inside the perimeter (vegetation / cleanliness)
- Type of Facility / Cubicle / Building
- Condition of facility / Cubicle / Building
- Type of Sump
- Condition of the Sump
- Electrical Supply / Source of Power / Voltage / EDU available units

3.1.2.2 Equipment List

- Remote Terminal Unit (RTU)
- Instrumentation
- Communication

3.1.3 MAINTANANCE ITEMS

The Tenderer shall perform the Comprehensive Maintenance on the equipment listed below:

- 3.1.3.1 Programmable Logic Controller (PLC), (defined in Item 4.1.12.1)
- 3.1.3.2 Human Machine Interface, (defined in Item 4.1.13.1)
- 3.1.3.3 Data Logger, (defined in Item 4.1.14.1)
- 3.1.3.4 Level Sensor (Ultrasonic or Pressure), (defined in Items 4.1.15.1 and / or 4.1.15.4)
- 3.1.3.5 Rain Gauge, (defined in Item 4.1.16.1)
- 3.1.3.6 GSM Communication Router, (defined in Item 4.1.17.1)
- 3.1.3.7 Power Supply and Battery Charger Unit, (defined in Item 4.1.18.1)
- 3.1.3.8 Solar Panel Maintenance, (defined in item 4.1.26)
- 3.1.3.9 Electrical Dispensing Unit (EDU)
The Tenderer will periodically recharge the EDU with the recharge vouchers provided by the CCT

The detailed function description is defined for each respective Items of the aforementioned maintenance Items 3.1.3.1 to 3.1.3.8 in SECTION 4: REPAIR ACTIVITIES.

3.2 PRIMARY AND BACKUP SCADA MAINTENANCE

The Tenderer will be required to perform Comprehensive Maintenance of the existing database server ensuring reliability of the centralised data storage and reporting of the information being transmitted from the outstations.

The Tenderer will ensure that all the maintenance items listed below forms part of the Maintenance but not limited it, The objective is that the server unit is fully maintained, functional and operational.

- 3.2.1 Maintain database Server, (defined in Item 4.1.1.1)
- 3.2.2 Maintain Existing Server Hard Drive, (defined in Item 4.1.2.1)
- 3.2.3 Inspect & Test PC Switch, (defined in Item 4.1.4.1)
- 3.2.4 Maintain Operator PC (User Node and Field Devices) , (defined in Item 4.1.6.1)
- 3.2.5 Maintain Adroit Software Package, (defined in Item 4.1.9.1)
- 3.2.6 Maintain Microsoft SQL Server, (defined in Item 4.1.10.1)

The detailed function description is defined in the respective Items for each of the aforementioned maintenance Items 3.2.1 to 3.2.6.

3.3 SECONDARY AND EWS SCADA MAINTENANCE

The Tenderer will be required to perform Comprehensive Maintenance of the existing database server ensuring reliability of the centralised data storage and reporting of the information being transmitted from the outstations.

The Tenderer will ensure that all the maintenance items listed below forms part of the Maintenance but not limited it, The objective is that the server unit is fully maintained, functional and operational.

- 3.3.1 Maintain database Server, (defined in Item 4.1.1.1)
- 3.3.2 Maintain Existing Server Hard Drive, (defined in Item 4.1.2.1)
- 3.3.3 Maintain Adroit Software Package, (defined in Item 4.1.9.1)

The detailed function description is defined in the respective Items for each of the aforementioned maintenance Items 3.3.1 to 3.3.3.

3.4 VIRTUAL SERVER MAINTENANCE

The tenderer shall create new user profile for the existing staff. The user will have and local administrator role in line with the existing virtual server framework. The new use profile will have access to Stormwater virtual server when completed. The tenderer shall acquire the necessary licenses for the creation of the use profiles on an if and when require basis.

All configurations shall be in line with city of cape town IS&T Policies and procedures.

3.5 MAINTENANCE CALL OUT

The Tenderer's Maintenance Team (**Section 2 Item 2.6**) shall when required, visit the Station and inspect the instrumentation in order to establish the possible cause of the problem. Complete the standard maintenance report with faults and problems identified. A call out would constitute to include a minimum of Two (2) hour of labour to do the assessment.

3.6 BATTERY RECHARGE PROGRAM

The Tenderer shall in terms **Item No 4.1.26.2** of this specification recharge the batteries in terms of the CCT approved IIMP

Refer to **ANNEXURE 3** for the list of station where the battery recharge work is required

3.7 CALIBRATION OF INSTRUMENTATION

The service provider shall provide full comprehensive calibration of all field recording instrumentation which consist of a Rain Gauge, Ultrasonic Sensor, Pressure Sensor. The service provider shall ensure only certified, trained and qualified staff perform the instrument newly calibration.

Calibration shall consist of a **2 Phase** calibration process as detailed below:

- **PHASE 1:**
The 1st part of the process will be the certified calibration of the physical instrument [Rain Gauge, Ultrasonic Sensor, Pressure Sensor] be it onsite or in a SANAS certified environment Lab.
- **PHASE 2:**
The 2nd part of the process will be on site process where the service provider will have newly calibrated the instrument reinstalled within the process and set to a predetermined range set out by the department and against an onsite reference identified by Project Manager or his/her representative.

SANAS Accreditation

The service provider shall prior to calibration provide the Project Manager or his/her Representative with the SANAS calibration certificate of the equipment that will be used to calibrate each respective instrument. All calibration of instruments shall only be done by a SANAS accredited service provider.

Calibration Methodology

The service provider shall prior to the calibration provide the Project Manager or his/her Representative with the calibration methodology in the form of an electronic copy.

The calibration of the instrument shall be done in line with the Catchment, Stormwater & River Management Branch **ISO9001 process: Calibration of Hydrological Monitoring Electronic Measurement Instrumentation** (Amended). The calibration process shall include pre-calibration checking and recording, calibration setting and recording and recording of all variants.

- **Onsite Calibration:**
When instruments are calibrated at the sampling points/onsite the service provider shall ensure as little disruption to existing operations. The onsite calibration must be done in an SANAS accredited environment with the necessary and required equipment capable of performing onsite calibration.

On completion of the calibration of the instrument, the service provider shall then test and install the instrument into the existing process. The tenderer shall ensure that the instrument functions in its operating environment, and that all reading is reflected on the located Remote Terminal Unit stored on the local data logger and transmitted to the SCADA base stations.

- **Factory / Lab Calibration:**
When instruments are calibrated in a SANAS accredited Lab the service provider shall ensure the environment is equipped with the necessary and required equipment capable of performing the calibration.

On completion of the calibration of the instrument, the service provider shall then reinstall the instrument on site, test the instrument in the existing process. On successful testing, the tenderer shall then ensure that the instrument functions in its operating environment, and that all reading is reflected on the located Remote Terminal Unit stored on the local data logger and transmitted to the SCADA base stations.

SANAS Certification

The service provider shall on completion of the instrument calibration issue the Project Manager or his/her representative with the relevant instrument specific SANAS calibration certificate.

Refer to **ANNEXURE 3** for the list of station where calibration is required

3.8 PREPARATION FOR SUMP CLEANING

The Tenderer shall be required to accompany the 3rd Party Cleaning Contractor and in conjunction on the same day perform the preparation work as listed below.

The Tenderer shall perform the following preparation work in order to allow the Cleaning Contractor to clean the sump:

- 3.8.1 Open the Sump and Check the Sensor is Operational
- 3.8.2 Remove the Sensor from the Sump and Clean it while the 3rd Party Contractor will commence cleaning the sump
- 3.8.3 Refit the sensor and check the sensor is operational
- 3.8.4 Close the sump
- 3.8.5 Ensure that the station is closed, locked and secured

Refer to **ANNEXURE 3** for the list of station where sump cleaning preparation work is required

SECTION 4: REPAIR ACTIVITIES

Refer to the Price Schedule, Schedule A

4.1 REPAIRS ACTIVITIES

The tenderer shall perform repairs & maintenance activities detailed in Schedule A in accordance to the be-low works & general specification. The tenderer shall ensure full compliance with this works & general speci-fication when performing these activities.

4.1.1 DATABASE SERVER

4.1.1.1 Maintain Database Server Unit

The Tenderer will be required to perform Full Maintenance in terms of the Manufacturer Guidelines, of the existing database server ensuring reliability of the centralised data storage and reporting of the information being transmitted from the outstations.

The scope of the maintenance will include the following tasks:

- Perform configuration Backup on Central Database Management System and provide storage media. (Note: make use of virus free storage media).
- Install latest updates of anti-virus software compatible to our ops system.
- Update all patches on Microsoft Server Operating system.
- Check & Verify server health analysis and disk clean-up, and restore all errors on server status LEDs.
- Compile and provide a summarised maintenance report for all findings and actions taken.

4.1.1.2 Supply, Install, Configure & Commission Database Server

The Tenderer will be required to Supply a complete new Server (**as specified in ANNEXURE 4**). Install, Configure and Commission the new database Server unit, that is fully compatible and Integratable with the existing server unit and system setup. The tenderer shall demonstrate compatibility of new unit prior to sourcing of the unit. Only on approval from the Project Manager will the new and compatible unit be sourced by The Tenderer

4.1.1.3 Supply, Install and Configure 128GB DDR4 RAM

The Tenderer will be required to Supply, Install and Configure the memory in the server unit. (**as specified in ANNEXURE 4**).

4.1.2 SERVER HARD DRIVE (Primary & Secondary SCADA)

4.1.2.1 Maintain Existing Server Hard Drive

The Tenderer will be required to perform full maintenance of the hard drive ensuring reliability at top operating capacity.

The scope of the maintenance will include the following tasks:

- Error checking
- Deleting old files
- Disk clean-up
- Defragging of hard drive

4.1.2.2 Supply Server Hard Drive

The tenderer will be required to supply and install new hard drive with the minimum specifications on **ANNEXURE 4**

4.1.2.3 Install, Configure & Commission Server Hard Drive

The tenderer shall perform a full installation, configuration and commissioning of the new SERVER HARD DRIVE to match the existing software architecture of the Hydrological Monitoring System for the analysis and interpretation.

The tender shall furthermore make provision for capacity extension to the hard drive when capacity reach critical limits. The capacity extension shall be done in line with the manufacturers detailed guidelines and presented to the project manager before extension is implemented.

4.1.3 SERVER CABINET COOLING FANS

4.1.3.1 Supply & Install Server Fans

The tender shall supply & install, new server cooling fans ensuring it conforms to the existing server cabinet installation and operating requirements. The tenderer shall supply the looing fan as per the minimum specification on **ANNEXURE 4**

4.1.4 MULTI DISPLAY PC MONITOR SWITCH**4.1.4.1 Inspect & Test PC Switch**

The tender shall inspect and test existing Keyboard Video & Mouse (KVM) type monitor switch for problems and defects. He tenderer shall run a hardware and software diagnostic test on the device and ensure device is functioning at optimal functionality.

4.1.4.2 Supply & Install PC Switch

The tender shall supply & install, new multi display pc monitor KVM 4 port USB & VGA switch. The multi display monitor switch shall conform with the ~~below~~ minimum specification on **ANNEXURE 4**.

4.1.5 LCD / LED MONITORS

The monitor(s) shall meet the ~~below~~ minimum specification on **ANNEXURE 4**

4.1.5.1 Supply & Install 14 inch Monitor

The tenderer shall supply & install a new 14 inch monitor that will be housed in the server cabinet.

4.1.5.2 Supply & Install 40 inch Monitor

The tender shall supply & install a new 40 inch overview display screen as per the below minimum specification, that will be located in the Hydrological Monitoring Operating room. (view / user node?)

4.1.6 OPERATOR COMPUTER (HMI USER NODE) - Primary SCADA**4.1.6.1 Maintain HMI (User Node and Field Devices)**

The tenderer will be required to perform full maintenance of the user node ensuring reliability of the unit.

- Supply & Install full anti-virus version to existing user node
- Remove treats to computer using anti-virus
- Update all patches on Windows Operating system
- Verify synchronization between SCADA and User node

4.1.6.2 Supply, Install, Configuration & Commission an Operator Computer

The Tenderer will be required to Supply a complete new Operator Computer (**as specified in ANNEXURE 4**). Install, Configure and Commission the new and install new new Operator Computer (HMI USER Node) to match the existing software architecture of the Hydrological Monitoring System for the analysis and interpretation.

Tenderer shall on completion of configuration and commissioning process provide all the relevant installation discs.

4.1.7 FIELD DEVICES (HMI USER NODE)**4.1.7.1 Supply & Configure Tablet Field Devices**

The tenderer shall Supply & Configure, new tablet devices, for mobile interaction with both central SCADA and remote monitoring outstations. The tablet shall have all relevant software allowing it to retrieve data from the existing outstations in the event of communications failure with the central base stations.

The tablet field device shall meet the minimum specifications on **ANNEXURE 4** and shall be configured with the relevant software packages to allow for the communications with the central SCADA & remote monitoring outstations

4.1.8 VIRTUAL SERVER (Corporate Server – Managed Environment)**4.1.8.1 Maintain Virtual Server**

The tender shall maintain the hydrological monitoring Hyper-V Virtual(Replication) Server. The exist-ing virtual server is located on a TCP port.

The tenderer shall perform maintenance to the Virtual(Replication) Server to improve the reliability, performance and security of the host infrastructure for the Virtual Server. The maintenance of the Virtual machine shall be performed in line but not limited to the below detailed items.

The scope of the maintenance will include the following tasks:

- Perform software patching updates.
- Back up virtual server database.
- Clean up storage.
- Identify and rectify bugs
- Verify backups are working
- Monitor Raid Alarms
- Monitor disk usage
- Update operating system
- Update Control Panel
- Check for application updates
- Check remote management tools
- Check for hardware errors
- Check server utilization
- Review user accounts
- Check System Security

4.1.8.2 Configure User Profiles On Virtual Server

The tenderer shall create new user profile for the existing staff. The user will have and local administrator role in line with the existing virtual server framework. The new user profile will have access to Stormwater virtual server when completed. The tenderer shall acquire the necessary licenses for the creation of the user profiles on an if and when required basis.

All configurations shall be in line with city of Cape Town IS&T Policies and procedures.

4.1.9 **OPERATING SOFTWARE**

Supervisory Control & Data Acquisition(SCADA) Software Package

4.1.9.1 Maintenance of SCADA Software Package

The tenderer will be required to perform full maintenance of the SCADA server ensuring reliability of the centralised data storage and reporting of the information being transmitted from the outstations. The maintenance shall be performed on a weekly basis.

The scope of the maintenance will include the following tasks:

- Perform configuration Backup on Central SCADA and provide storage media. (Note: make use of virus free storage media).
- Evaluate the existing system and install latest relevant applicable updates & patches of SCADA software.
- Install latest relevant updates of existing IP communication software.
- Correct SCADA-generated errors.
- Examine and correct log files
- Install latest updates of anti-virus & security essentials software compatible to our operations system
- Restore & Record all SCADA software related faults found.
- Verify data synchronization between RTU (Remote Terminal Unit) and SCADA.
- Check & Confirm integrity of data received between RTU and SCADA.
- Ensure valid functionality connection with SQL database server.
- Update Tele-bridge software and provide all relevant updates and patches.

4.1.9.2 Supply, Install, Configure & Commission SCADA HMI Package Solution

The tenderer shall supply a fully licensed, fully compatible, fully integratable SCADA software package solution. This SCADA package needs to seamlessly integrate into the existing SCADA system configuration, to prevent long system downtime or loss of transactional logs.

The SCADA package will have the relevant user licenses as required and allow for easy operator interfacing.

4.1.9.3 TCP/IP Protocol Converter (Telebridge)

The tenderer shall supply a latest & fully licensed fully intergratable TCP/IP protocol converter software compatible with the existing system configuration. This protocol converter will allow seamless communication between Primary / Secondary SCADA and Remote Monitoring Stations

Tenderer shall on completion of configuration and commissioning process provide all the relevant installation devices.

The final product must be able to deliver reliable communications with all outstations listed in this document.

4.1.10 **SQL DATABASE SERVER**

4.1.10.1 MAINTAIN SQL DATABASE SERVER

The tenderer will be required to perform full maintenance of the Microsoft SQL server ensuring reliability of the centralised data storage and reporting of the information being transmitted from the outstations.

The scope of the maintenance task will include the following:

- Correct All Field Structure.
- Validate data backups.
- Assess and correct data irregularities.
- Update Windows Server.
- Update SQL Server Instances.
- Validate Recovery Strategy
- Check Database and Instance Performance and Health
- Review and Adjust baselines
- Validate Capacity Plan

The above maintenance tasks shall be performed on the below packages on and if and when re-quired basis in consultation with the project manager / client's representative

4.1.10.2 Supply & Install SQL Database Management System

The tenderer shall supply fully licensed relational SQL database management system for the purpose of storing and retrieving rainfall and river level recorded data. The supply shall include all fully licensed and compatible security software packages. The supply of the software will be on an if when required bases. The software required if deemed necessary will be based on the below software packages. See the minimum specifications on **ANNEXURE 4**

4.1.10.3 Configure, Test & Commission SQL Server

The tenderer shall perform a full configuration and commissioning of the new SQL server to match the existing software architecture of the Hydrological Monitoring System for the analysis and interpretation.

Tenderer shall on completion of configuration and commissioning process provide all the relevant installation discs (Microsoft Server 2008 - R2, Microsoft Server 2012, Version 11.0, Microsoft Server 2014, Version 12.0, Microsoft Server 2017)

The final product must be able to deliver reliable and accurate data.

4.1.11 **TECHNICAL REPORT**

The Tenderer shall Compile and Produce a detailed Technical Report containing data collected from the SCADA & Database activities covered in the maintenance project. The First Draft of the Report shall be presented to the Project Manager for approval before final version is completed.

The Report Structure shall comprise of the following layout and structure as listed below:

- Front Matter
- Front cover
- Title Page
- Table of Contents
- Body of Report
- Introduction
- Core of Report
- Conclusions
- End Master (Recommendations to prevent future equipment/instrument failure)
- Local System Architecture Diagram
- Back Over

4.1.11.1 SCADA Report

The Core of the SCADA Report shall address and include the following information:

1. Server Name, Data & Time of Visit.
2. Person who perform maintenance work.
3. Detail software update performed.
4. Hardware maintenance procedure.
5. Document server shutdown procedure.
6. Provide hardware maintenance procedure.
7. Provide database management procedure in line with this project specification.

4.1.11.2 Remote Monitoring Station Report

The Core of the Remote Monitoring Station Report shall address and include the following information:

1. Station Names, Data & Time of Visit.
2. Person who perform maintenance work.
3. Detailed Root Cause Analysis(RCA) on equipment/instrument failure.
4. Detailed steps taken when RCA was performed on failed equipment/instrument.
5. Replacement equipment/instrument detail and operating function.
6. Date & time of installation of replacement instrument.
7. Detailed installation procedure and steps.
8. Instrument Calibration reading before and after installation
9. Person who performed calibration test
10. Date & Time of Calibration

The document shall be presented in MS Word Format in electronic and print / hard copy version, and be hand delivered to the Project Manager on completion of the project. The document shall be compiled in a professional and detail manner.

4.1.12 PROGRAMMABLE LOGIC CONTROLLER (PLC)**4.1.12.1 Maintain Programmable Logic Controller**

The tenderer shall be required maintain the PLC with the aim of increasing the longevity of the unit and minimizing the chance of equipment failure during peak operating time. It is with this in mind that the tenderer will be required to perform the following proactive maintenance tasks, as detailed below.

The tenderer will be required to perform the following tasks:

1. Backup PLC programming
2. Check all LED Indicators
3. Check battery status
4. Replace battery if necessary
5. Check operating environments
6. Check for indications of overheated components
7. Clear dust and check venting
8. Check connections
9. Update & Configure PLC firmware (software)

4.1.12.2 Supply Programmable Logic Controller (PLC)

The tenderer shall supply new Programmable Logic Controller (PLC) as per the minimum specification on **ANNEXURE 4**.

4.1.12.3 Install, Configure, Test & Commission Programmable Logic Control (PLC)

The tenderer shall Install, Configure, Test & commission new PLC that will be installed in hydrological monitoring outstation for the purpose of recording digital and analog signaling from river level sensors and rain gauge. The PLC shall conform to the below minimum specification.

4.1.13 HUMAN MACHINE INTERFACE (HMI)**4.1.13.1 Maintain Human Machine Interface (HMI)**

The tenderer shall be required maintain the Delta HMI with the aim of increasing the longevity of the unit and minimizing the chance of equipment failure during peak operating time. It is with this in mind that the tenderer will be required to perform the following proactive maintenance tasks, as detailed below.

The tenderer will be required to perform the following tasks:

- Check and Update Date and Time
- Backup HMI configuration programming
- Check all LED Indicators
- Check battery status
- Replace battery if necessary
- Check operating environments
- Check for indications of overheated components
- Clear dust and check venting
- Check connections
- Update & Configure PLC firmware(software)
- Check touch display responsiveness.

4.1.13.2 Supply, Install, Configure & Commission Human Machine Interface (HMI)

The tenderer shall supply & configure a new HMI that will be installed in hydrological monitoring out-station for the purpose displaying relevant site information and user interaction with remote station. The HMI shall conform to the below minimum specification and is required to be compatible and in-tergratable with the existing customized Remote Terminal Unit detail on **ANNEXURE 4**.

4.1.14 DATA LOGGER

The data logger will be required in the event of communication failures the information will be stored locally or collected manually.

- Tele-logger firmware last installed: version V2.50.13

Maintain Data Logger (Existing logger a Tele-logger)

The tenderer shall be required to test & inspect the tele-logger hardware & firmware and insure the logger is operating at optimum capacity. While performing these tasks, the tenderer shall adhere to the industry best practices & standards for data acquisition systems.

The tenderer will be required to perform the following:

1. Test & Inspect Tele-logger hardware
2. Update, Configure & Calibrate Tele-logger firmware(software)

4.1.14.1 Maintain Data logger (Hardware)

The tenderer will be required to maintain and test the tele-logger functionality in line with the following functions:

- Testing the voltage, ensuring the power supply is in line with the expected supply for the device to be operational & that the communications hardware is receiving power.
- Inspect & fasten connection points on the logger.
- Fasten all loose wiring.
- Ensure that the wiring is connected to the correct terminals.
- Ensure wiring is matching the tele-logger programming.
- Ensure the antenna connections are firm.

4.1.14.2 Update Firmware(Software) Data logger

The tenderer will be required to update the or most recent available and calibrate the logger to the existing on-site parameters, ensuring the correct measurements are being recorded, displayed and transmitted in line with the existing system architecture for the recording and transmitting of the raw rainfall and raw river level data.

The functions required to be performed by the tenderer shall be in line with the following:

- a. Update existing tele-logger firmware to latest version of firmware available from the manufacturer.
- b. Recommission program instructions:
 - Ensure the correct values and statements are displayed on the onsite Human Machine Inter-face.
 - Ensure existing onsite communications protocols is re-established after performing firmware update.
 - Ensure the integration of the tele-logger is in sync with all instruments and equipment on site.

- Ensure the rainfall parameters are calibrated and recorded at each site.
- Ensure the river level parameters are calibrated and recorded at each site.

On completion of the firmware update, the service provider shall then calibrate the tele-logger to the rainfall & river level parameters measured on-site, which varies from site to site.

4.1.14.3 Supply Data Logger

The tenderer shall supply a new data logger that will be installed in hydrological monitoring outstation for the purpose of recording digital and analog signaling from river level sensors and rain gauge. The data logger shall conform to the below minimum specification.

Minimum Specification:

- Must be a complete unit housed inside an IP 68 rated enclosure.
- Operate with an internal battery for more than 3 years.
- Operating Temperature (-30 to 85 Deg C).
- Must operate through the GSM network, also be able to operate using the Wi-Fi technology.
- Standard MODBUS protocol between Sensors and RTU using RS485 interface.
- An IO Module with a minimum of two (2) Digital inputs and two (2) Analogue Inputs.
- 5min sampling time of all parameters.
- Connector cables – logger
- Storage space for a month after the transmission.
- Data must be downloadable manually from the remote location with a field device or laptop.
- Must be equipped with LCD display unit to display the various configurable parameters.
- The system shall have a built-in OPC Server to allow the remote stations to communicate directly to the master station OPC server (via GSM network).
- Must provide the data to the Adroit SCADA software.
- Must be able to SMS directly the alarm conditions as set-up in the unit to a mobile phone.
- Must be able to save up to 60 000 data values with time stamping.
- The RTU unit shall be capable to interface with other instrumentation such as,
 - Differential pressure level sensors,
 - Pressure sensors.
 - Other water quality sensors.
 - Rainfall meter.
 - Flow meters.

4.1.14.4 Install, Configure & Commission Data Logger

The tenderer shall install, configure & commission the Data Logger on site, ensuring that it is fully functional and conforms to the manufacturer's specification for installation and configuration procedures in order for the device to operate within the scope of its design.

4.1.15 LEVEL SENSORS (ULTRASONIC LEVEL SENSOR & PRESSURE SENSOR)

The river level instrument consists of two types of 4 to 20 mA sensors which are a contact level sensor (pressure) and non-contact level sensor (ultrasonic controller). For the purpose of this contract, the focus will only be on the maintenance of the contact level sensors.

The tenderer shall calibrate both contact & non-contact level sensors to enable accurate water depth recording on both high and low flow levels.

The tenderer shall ensure that he/she has all necessary plant and equipment required, as certain sites are elevated and mounted against bridges crossing rivers.

4.1.15.1 Maintain, Inspect, Test & Clean Ultrasonic Level Sensor

The Tenderer shall Maintain, Inspect, Test & Clean non-contact Ultrasonic Sensor for the purpose of water depth monitoring. The Tenderer shall clean the level sensor and ensure it is installed properly in best practice or manufacturer's specifications. (The tenderer shall use a soft damp cloth and clean the transducer).

4.1.15.2 Supply Loop Powered Ultrasonic Level Sensor

The Tenderer shall Supply new certified and calibrated loop powered ultrasonic level sensor (Non-Contact level sensor) and deliver the unless instructed otherwise by employer's representative or project manager.

Minimum Specification on **ANNEXURE 4** (Non-Contact Level Sensor)

The tenderer shall use existing cabling in place and make the necessary joints.

4.1.15.3 Install, Test & Calibrate Ultrasonic Level Sensor

The Tenderer shall Install, Test & Calibrate non-contact ultrasonic sensor for the purpose of waterdepth monitoring. The non-contact ultrasonic sensor shall be connected to the data logger analog input as identified in the Remote Terminal Unit as shown in the wiring diagram.

The Tenderer shall perform the installation in line with the departments existing protocols as well as the manufacturer specification in order for the sensor be fully functional. All manufacturer warranty certificates for the instrumentation to be presented to the project manager.

The Tenderer shall perform the instrument calibration in line with the departments existing calibration protocols as well as the manufacturer specification in order for the sensor is fully functional. Calibration of the instrument shall be done in the presence of the employer representative.

4.1.15.4 Maintain, Inspect, Test & Clean Pressure Sensor

The Tenderer shall Maintain, Inspect, Test & Clean pressure sensor for the purpose of water-depth monitoring. The tender shall remove and clean the level sensor, with a soft damp cloth and clean water. The Tenderer shall hose the sump and sump inlet with pressure hose. The Tender shall ensure the sensor is re-installed properly in best practice or manufac-tures specifications.

4.1.15.5 Supply Pressure Sensor

The Tenderer shall Supply new pressure sensor (Contact Level Sensor) and deliver the unless instructed otherwise by employer's representative or project manager.

The Tenderer shall ensure the pressure transducer (contact level sensor) on site to conform with predetermined alarm levels on the logger which then in turn transmits these levels alarms to the designated City Officials site.

The new pressure transducer shall conform with the following minimum specifications on **ANNEXURE 4**

4.1.15.6 Install, Test & Calibrate Pressure Sensor

The tenderer shall Install, Test & Calibrate pressure sensor transducer for the purpose of water-depth monitoring. The pressure transducer shall be connected to the data logger analog input as identified in the Remote Terminal Unit as shown in the wiring diagram.

The tenderer shall perform the installation in line with the departments existing calibration protocols as well as the manufacturer specification in order for the sensor be fully functional. All manufacturer warranty certificates for the equipment to be presented to the project manager.

The tenderer shall perform the instrument calibration in line with the departments existing calibration protocols as well as the manufacturer specification in order for the sensor is fully functional. Calibra-tion of the instrument shall be done in the presence of the employer representative.

4.1.15.7 Calibration of Instrumentation

The service provider shall provide full comprehensive calibration of all field recording instrumentation which consist of a Rain Gauge, Ultrasonic Sensor, Pressure Sensor. The service provider shall ensure only certified, trained and qualified staff perform the instrument newly calibration.

Calibration shall consist of a **2 Phase** calibration process as detailed below:

- **PHASE 1:**

The 1st part of the process will be the certified calibration of the physical instrument [Rain Gauge, Ultrasonic Sensor, Pressure Sensor] be it onsite or in a SANAS certified environment Lab.

- **PHASE 2:**

The 2nd part of the process will be on site process where the service provider will have newly calibrated the instrument reinstalled within the process and set to a predetermined range set out by the department and against an onsite reference identified by Project Manager or his/her representative.

SANAS Accreditation

The service provider shall prior to calibration provide the Project Manager or his/her Representative with the SANAS calibration certificate of the equipment that will be used to calibrate each respective instrument. All calibration of instruments shall only be done by a SANAS accredited service provider.

Calibration Methodology

The service provider shall prior to the calibration provide the Project Manager or his/her Representative with the calibration methodology in the form of an electronic copy.

The calibration of the instrument shall be done in line with the Catchment, Stormwater & River Management Branch **ISO9001 process: Calibration of Hydrological Monitoring Electronic Measurement Instrumentation** (Amended). The calibration process shall include pre-calibration checking and recording, calibration setting and recording and recording of all variants.

- **Onsite Calibration:**

When instruments are calibrated at the sampling points/onsite the service provider shall ensure as little disruption to existing operations. The onsite calibration must be done in an SANAS accredited environment with the necessary and required equipment capable of performing onsite calibration.

On completion of the calibration of the instrument, the service provider shall then test and install the instrument into the existing process. The tenderer shall ensure that the instrument functions in its operating environment, and that all reading is reflected on the located Remote Terminal Unit stored on the local data logger and transmitted to the SCADA base stations.

- **Factory / Lab Calibration:**

When instruments are calibrated in a SANAS accredited Lab the service provider shall ensure the environment is equipped with the necessary and required equipment capable of performing the calibration.

On completion of the calibration of the instrument, the service provider shall then reinstall the instrument on site, test the instrument in the existing process. On successful testing, the tenderer shall then ensure that the instrument functions in its operating environment, and that all reading is reflected on the located Remote Terminal Unit stored on the local data logger and transmitted to the SCADA base stations.

SANAS Certification

The service provider shall on completion of the instrument calibration issue the Project Manager or his/her representative with the relevant instrument specific SANAS calibration certificate.

Refer to **ANNEXURE 3** for the list of station where calibration is required

4.1.15.8 **Preparation for Sump Cleaning**

The Tenderer shall be required to accompany the 3rd Party Cleaning Contractor and in conjunction on the same day perform the preparation work as listed below.

The Tenderer shall perform the following preparation work in order to allow the Cleaning Contractor to clean the sump:

- Open the Sump and Check the Sensor is Operational
- Remove the Sensor from the Sump and Clean it while the 3rd Party Contractor will commence cleaning the sump
- Refit the sensor and check the sensor is operational
- Close the sump
- Ensure that the station is closed, locked and secured

Refer to **ANNEXURE 3** for the list of station where sump cleaning preparation work is required

4.1.16 RAIN GAUGES**4.1.16.1 Maintain, Inspect, Test & Clean Rain Gauge**

The Tenderer shall Maintain, Inspect, Test and check for loose cable connections. Where loose cables connections are found, then tenderer shall then connect the loose connection using proper solder equipment and material to ensure that cable is joint.

The Tenderer shall clean the rain gauge funnel, base and tipping bucket. The Tenderer shall take extra care when performing this activity and not touch the read switch in order not to cause damages to the read-switch. The Tenderer shall ensure that the rain is level on the mounting bracket and adjust it if required

The inspection, checking & cleaning of the rain gauge shall be done in accordance with the following manufacturer installation and maintenance manuals that will be provided by Project Manager:

- Davis Installation manual
- Davis Maintenance, Service & Repair Information

The tenderer shall perform a Tip Test (x2) on the rain gauge and record the total accumulated before and after the tip test, to establish of the counts are being recorded and the rain gauge is fully operational. The accumulated totals are displayed on the Remote Terminal Unit, HMI display.

4.1.16.2 Supply Tipping Bucket Rain Gauge

The tender shall supply a new factory calibrated tipping bucket Rain Gauge (Davis Type) and deliver the unless instructed otherwise by employer's representative or project manager.

4.1.16.3 Install & Commission Rain Gauge

The tenderer shall install & commission the Tipping Bucket Rain Gauge on site ensuring full functionality detailed in the manufacturers installation manual / guide.

4.1.16.4 Manufacture, Supply & Fit Galvanised Steel Rain Gauge Bracket

The tenderer shall Manufacture, Supply & fit a galvanized steel bracket for the mounting of a tipping bucket rain gauge as detailed in the attached **Annexure 7: Typical Drawings**

4.1.16.5 Install Galvanised Steel Rain Gauge Bracket

The tenderer shall install the rain gauge bracket at a position determined by the project manager best suited for recording of the rainfall events. The Tenderer shall only install the bracket on written instruction on the position of the proposed rain gauge installation.

4.1.17 COMMUNICATIONS MODEM & ROUTER**4.1.17.1 Maintain the 2G GSM Communications Modem / Router**

The tenderer shall be required, as per the manufacturer's guidelines, to test & inspect the modem / router hardware & firmware and insure the logger is operating at optimum capacity. While performing these tasks, the tenderer shall adhere to the industry best practices & standards for data transmission systems.

The tenderer will be required to perform the following:

1. Test & Inspect hardware
2. Update & Configure modem / router firmware(software)

4.1.17.2 Supply 2G GSM Communications Modem

The tenderer shall supply new 2G communications unit with support for serial to IP data transfer. All manufacturer warranty certificates for the modem/router to be presented to on supply and acceptance of modem.

4.1.17.3 Install, Configure & Commission 2G GSM Communications Modem

The tenderer shall install, configure and commission a new 2G communications modem/router with support for serial to IP data transfer. The tenderer shall make the necessary upgrades to the existing RTU to include a new serial port for connection.

4.1.17.4 Supply 3G/4G Communications Router

The tenderer shall supply new 2G communications unit with support for serial to IP data transfer. All manufacturer warranty certificates for the modem/router to be presented to on supply and acceptance of modem.

4.1.17.5 Install, Configure & Commission

The tenderer shall supply, configure and install new 4G/3G communications unit with support for se-rial to IP data transfer. The tenderer shall make the necessary upgrades to the existing RTU to in-clude a new serial port for connection to a communication. All manufacturer warranty certificates for the equipment to be presented to the project manager.

4.1.18 POWER SUPPLY / BATTERY CHARGER UNIT4.1.18.1 Maintain 12V Power Supply/Battery Charger Unit

The power supply unit shall inspected & tested for full functionality and the tenderer shall record sta-tus findings of the Power Supply.

The tenderer is to check and report on the following overall functionality:

- Presently in operational (Yes or No)
- Functioning according to manufacturer specification (Yes or No, with detailed comment)
- Configured to the site specific installation specification or best practice (identify which, detailed comments)
- Overall condition of device (Excellent, Functional, Poor, detailed, comment)

4.1.18.2 Supply & Install Power Supply / Battery Charger Unit

The tenderer shall supply new power supply/ battery charger unit as per the below minimum specifi-cation on **ANNEXURE 4**

4.1.19 INSTRUMENTATION CABLE4.1.19.1 Supply 2.5mm² Instrumentation (Signal) Cabling

The tenderer shall supply, install & connect 2.5 mm², 4 core signal cable. The instrumentation cable shall be in conform to the ~~below~~ minimum specification on **ANNEXURE 4**

4.1.19.2 Install & Connect Instrumentation(Signal) Cable

The tenderer install & connect 2.5 mm², 4 core instrumentation cable. Where necessary the contrac-tor will measure down the required length between the measuring device and the Remote Terminal Unit and install the required length for the instrument ensure that it is fully functional.

4.1.20 SOLAR PANELS

The tenderer shall Supply, Install & Test new solar panel units including all fittings at hydrological monitoring stations. The tenderer shall on completion of the installation provide a full wiring diagram detailing the installation and setup. The installation needs to be done according to standard IEC 60364-7-712, SANS 959-2-4:2017 for the installation of Photovoltaic (PV) Systems.

A copy of the wiring diagram needs to be placed on site. The wiring needs to be performed All manu-facturer warranty certificates for the equipment to be presented to the project manager.

4.1.20.1 Supply Solar Panels

4.1.20.1.1 50 WATT Solar Panel

4.1.20.1.2 75 WATT Solar Panel

4.1.20.1.3 100 WATT Solar Panel

4.1.20.2 Solar Panel Installation

4.1.20.2.1 Install & Test Solar Panels

The tenderer shall Install & Install a new solar panel. The installation of the solar panel shall conform as per the below specification and in line with SANS 959-2-4:2017.

4.1.21 SOLAR REGULATOR

4.1.21.1 The tenderer shall Inspect & Test existing solar regulators. The inspections & testing of the regulator shall be done as per the manufactures guidelines as well as in line with SANS 959-2-4:2017.

4.1.21.2 The tenderer shall supply & install a new solar regulator. The installation of the regulator shall con-form as per the below specification on **ANNEXURE 4** and in line with SANS 959-2-4:2017.

4.1.22 BATTERIES (RECHARGABLE DEEP CYCLE)4.1.22.1 Inspect, Check, Test & Maintain Batteries

The tenderer shall inspect, check, test & maintain existing backup batteries. The Tenderer shall record all the findings on the relevant checklist. The tenderer shall check battery type, operating conditions, labelling, terminal heads & connections

4.1.22.2 Recharge Batteries

The tenderer shall recharge the battery where found that the battery is below the required voltage and if the battery is still in a functional condition.

The Recharging of the back-up battery shall include the removal of the existing 12V battery from site. Battery to be recharged at a safe location and reinstalled on the site where it was removed from.

The tenderer shall have a replacement battery in place in place at all solar power sites in order for the site to operate at its full operational capacity till at such time that the original battery.

4.1.22.3 Supply Batteries

The tenderer shall supply, 12V rechargeable sealed lead acid deep cycle back-up battery. All manufacturer warranty certificates for the equipment to be presented to the project manager. The new battery shall conform with the following minimum specifications on **ANNEXURE 4:**

4.1.22.3.1 12V, 40Ah Battery

4.1.22.3.2 12V, 100Ah Battery

4.1.22.4 Disposal of Battery

The tenderer shall dispose batteries in line with method detailed in SANS 959-2-4:2017. The tenderer shall supply proof disposal (disposal slip) for every battery disposed.

4.1.22.5 Battery Mounting Bracket

The Tenderer shall Manufacture, Supply and Install a Battery Mounting Bracket.

4.1.23 Galvanised Steel Mast

The tenderer shall manufacture, supply & install a new 3 m high galvanized steel mast including concrete base. The steel mast shall be coated in double gloss steel paint. The concrete base shall be constructed from 35Mpa concrete with the applicable bolts as per the attached Annexure 7: Drawings.

4.1.24 Solar Panel Bracket

The tenderer shall Manufacture, Supply & Install a new galvanized steel bracket including all fittings on the existing or new mast. The bracket shall be designed to house either of the above solar panel modules retrospectively.

4.1.25 Solar Panel Maintenance

The Tenderer shall perform the maintenance of the Photovoltaic (PV) Power System located at the Remote Station where there is no 220 volts supply. The maintenance of the PV system shall be done in accordance with SANS 959:2 Test procedures for main components

4.1.25.1 Maintain, Check and Clean Solar Panels and ensure Panel is Secure

The Tenderer shall clean the Dust, Debris, Bird Droppings, Leaf Litter and SAP from the Panel surface. Dirty panels will reduce their energy output and efficiency.

Cleaning Procedures for the Solar Panel:

- Clean with warm (not hot) soapy water and use a soft brush to remove harder bits of grime (never use an abrasive cleaning brush or sponge)
- Clean your panels in the cooler parts of the day (preferably early morning or late afternoon)

The Tenderer will further check, that your panel is in place with no signs of damage or corrosion

4.1.25.2 Check Your Solar Panels Aren't Corroded

Following on from the last checklist item, ensure that you check your solar panels for weathering, rust and damage at least twice a year (more if live by the coast)

Although highly rust-resistant solar panel may become subject to rust if there is cracks to the vacuumed sealed back sheet

When weathering or rust occurs, your solar system may become less efficient. If left unattended it may also become a safety risk. If you see signs of damage check your solar panel warranty and call your installer for a check-up

4.1.25.3 Checking Wiring Hasn't Been Damaged

It is good to get in the habit of checking the wiring on your solar system. If they are exposed to the elements ensure they are not damaged and have not been impacted by dirt or water

Wiring that is broken or corroded can lead to serious safety concern.

If you find a wire that has been damaged make sure you call your installer.

4.1.25.4 Check Access to Isolator Switches are Clear

Ensure access is always clear to the isolator switch

In the event of an emergency, you need quick access to this switch as it is the only place you can manually disconnect the solar PV system

This switch will also be used when maintenance, repairs or upgrades occur, so be sure not to store anything in front of it.

4.1.25.5 Conduct Regular Electrical Checks and System Faults Checks**Electrical Check**

Using your inverter panel, you can conduct routine checks to see if your solar system is flagging for any electrical faults.

If your solar PV comes back with ground faults, call your solar installer ASAP. Ground faults can be extremely dangerous if left unattended and cause electric shocks.

Solar PV System Faults

If you are experiencing a drop in panel efficiency or your inverter light has switched from green to red, then you may have a system fault. Check in your handbook what the fault code means

For more on why your solar panels might not be working efficiently, check out this

4.1.26 Electrical Components

The tenderer shall install electrical components in accordance with SANS 10142-1, electrical compliance in accordance with OHS act, Installation / adjustment to the LV network, removal and replacement of lamps safely.

4.1.26.1 Circuit Breakers

The tenderer shall supply & install electrical circuit breakers for setup of electrical power supply. All equipment shall be of sizes, ratings and specification as detailed in the single line diagrams. All equipment shall be approved by the Employer in writing and shall bear the SABS mark.

Cascading of circuit breakers is not allowed, but all equipment shall be coordinated and discrimination shall be taken into account.

Moulded Case Circuit Breakers (MCCB's)

Circuit breakers shall comply with SANS 156

Breakers shall be from the same supplier in one application. Discrimination is not possible when breakers of different suppliers are used in the same downstream network.

Circuit Breaker shall be equipped with an instantaneous magnetic release and a thermal release. Circuit Breakers for motor circuits shall be suitably rated. Circuit Breaker handles shall provide a clear indication of "ON", "OFF" and "TRIP" status.

Circuit Breakers shall be installed vertically with the upstream terminal on top. Minimum clearances shall be maintained. All circuit breakers shall be pad lockable in the "off" position or be supplied with means that will enable pad locking.

Circuit breakers shall be supplied and fitted with all supplementary equipment e.g. shrouds, mounting bolts, clips, adaptor plates etc.

4.1.26.1.1 60 Amp Circuit Breaker**4.1.26.1.2 40 Amp 1 pole circuit breaker****4.1.26.1.3 20 Amp single pole & neutral circuit breaker****4.1.26.1.4 10 Amp circuit breaker****4.1.26.1.5 5 Amp circuit breaker**

4.1.26.2 Surface Mounted Switches & Plug Socket

The tender shall supply & fit surface mounted SABS specification switch & socket set. The switch & socket set may be integrated or mounted together on a common cradle or plate and be metal clad.

The switch & socket set circuits must be wired with 2,5mm² conductors and 2,5mm² earth wire. In-dustrial socket wiring shall be rated according to SANS 10142.

4.1.26.2.1 4x4 Surface mounted wall plug socket

The tender shall supply & fit a 4x4 surface mounted SABS specification plug socket at the outsta-tions.

4.1.26.2.2 IP 55 16a Duo Unswitched plug socket

The tender shall supply & fit a Double 16a Unswitched IP 55 socket surface mounted SABS specifi-cation plug socket at the outstations.

4.1.26.2.3 Single Industrial Plug Socket

The tender shall supply & fit a single industrial plug socket surface mounted SABS specification at the outstations.

4.1.26.2.4 Isolator Switch

The tenderer shall supply & fit a new wall mounted industrial type 60 Amp isolator switch where re-quired deemed necessary by the Employer.

4.1.27 Luminaires (Light Bulkhead & Switches)**4.1.27.1 Light Bulkhead**

The tenderer shall supply & fit a new 40Watt 52mm × 70mm × 70 mm rectangular bulkhead with IP 20 rating for inside installation.

4.1.27.2 Light Switches

The tenderer shall supply & install new 50 × 100mm plastic surface mounted light switches inside existing or new outstation housing.

4.1.28 Distribution Board

Distribution boards manufactured from sheet metal refers to the general technical specification for distribution boards, complete with busbars, breaker trays (where applicable), labels, blanks, etc. Boards must consist of two sections separately accessible and lockable. One section shall house the bus bars and main breaker and the other section the breakers.

4.1.28.1 12 Way Surface Mounted Distribution Board

The tenderer shall supply, fit & install a new 12 Way surface mounted distribution board in accord-ance to SANS 10142-1:2017(The wiring of premises), Part 1: Low-voltage installations.

4.1.28.2 Ready Board with Bulkhead

The tenderer shall supply, fit & install a new surface mounted ready board with bulkhead in accord-ance to SANS 10142-1:2017(The wiring of premises), Part 1: Low-voltage installations.

4.1.28.3 Distribution Board Legend card

The shall supply and complete legend card at existing and new distribution boards.

4.1.28.4 Distribution Board Labelling

Breakers shall be numbered with suitable engraved two layer "Trefolite", black lettering on white. The labels shall slide into an aluminium bracket as per attached drawing. Each breaker shall have a unique number and the number shall not be repeated on the same board. However the numbering on each board shall start at 1. Multi-phase breakers shall have only one number.

Boards shall be numbered in "levels" e.g. the boards supplied by the transformer, mini substation or municipal kiosk shall be numbered MAIN DB1, MAIN DB2, etc. The sub boards supplied by these boards shall be numbered SUB DB1.1, SUB DB1.2, SUB DB2.1, etc.

The numbers shall be repeated on a legend card that is displayed on the inside of the board. The card shall indicate the following:

1. Breaker number
2. Type of circuit e.g. power points, lights, etc
3. Rooms numbers supplied
4. Number of lights, power points, etc in brackets

The proposed numbering shall be submitted to the Employer for approval prior to manufacturing of the labels. Labels that are manufactured incorrectly shall be for the account of the contractor.

Each board shall carry labelling on the main switch door as per SANS 10142.

The cost for labelling boards shall be included in the manufacturing cost and not be priced separately.

The cost to label points of outlet will be priced separately

4.1.28.5 Electrical Certificate of Compliance (CoC)

An original Certificate of Compliance shall be completed and submitted to the Principal Agent on completion of the works. The Principal Agent will then hand this certificate to the facility manager for record purposes.

The accredited person shall complete all relevant sections of the Certificate of Completion according to SANS 10142, Wiring of Premises.

The Principal Agent may request partial inspections and Certificates of Compliance for specific sections of the work.

4.1.28.6 Electrical Call Out

The Tenderer's shall when required, provide the services of ECA registered and licensed Master Electrician to test and inspect installations for faults according to SANS 10142, wiring of premises. A call out would constitute to include a minimum of Two (2) hours of labour to do the assessment.

4.1.29 Conduit and Conduit Accessories

The tenderer shall supply & fit PVC conduit and conduit accessories and shall bear the SABS mark. Conduits and conduit accessories shall be fixed onto walls, floors, structures and roof spaces as far as possible.

4.1.29.1 20mm PVC Conduit

4.1.29.2 25mm PVC Conduit

4.1.29.3 32mm PVC Conduit

4.1.29.4 50mm PVC Conduit

4.1.29.5 75mm PVC Conduit

4.1.30 INVERTORS

4.1.30.1 Supply Inverter

The tenderer shall supply a 3000W 12V inverter/charger with multi-stage surge suppressor for protection against electrical surges and spikes.

The Inverter shall meet the below minimum specification:

- 12V DC – 3000W
- AVR Function
- Charge current max 15A.
- Input range: 195-245V AC
- Low battery cut off: 20 – 24V DC
- Nominal voltage: 27.6 – 29V
- LCD / LED Panel
- Overload & short-circuit protection
- Minimum 81% efficiency
- Output transfer time: 6ms(Typical) – 10ms(Max)
- Batteries: 2 × 100Ah 12V Gel Batteries connected in series
- Battery connector cables and breaker included
- Wheeled battery box

4.1.30.1 Install, Test & Configure with CoC of an Inverter

The tender shall install, Test & configure the the Inverter in at the Hydrological Monitoring station identified by the Project Manager or his/her representative. The installation shall be in accordance to SANS 10142-1:2017(The wiring of premises), Part 1: Low-voltage installations.

The tender shall on completion of the installation, testing and configuration provide the project manager or his/her representative with a hard copy electrical certificate of compliance

4.1.31 Enclosures**4.1.31.1 Manufacture Supply Galvanized Steel Enclosure**

The tenderer shall manufacture, supply and install lockable green stainless steel enclosure. The enclosures shall be waterproof with air vents and be primer coated on both inside and outside. The enclosures shall be manufactured as per the attached Annexure 7: Drawings. The enclosure will be fitted with metal powder coated back board for the housing of a Remote Terminal Unit.

The door of the enclosure must be secured with stainless steel hinges and have a 3-point stainless steel locking mechanism.

4.1.31.2 Manufacture & Supply IP68 RTU Enclosure

The tenderer shall manufacture, supply and install lockable IP68 RTU Enclosure. The enclosures shall be waterproof with air vents and be primer coated on both inside and outside.

4.1.31.3 Cast 20Mpa Concrete Base

The tenderer shall cast a 20 Mpa concrete base with stainless steel bolts for the above mentioned galvanized steel enclosure to be mounted. The concrete base shall be cast with L-shape 50mm diameter PVC conduit as detailed in the attached **Annexure 7: Drawings**.

4.1.31.4 Supply & Fit Galvanized Razor Wire

The tenderer shall supply & fit 500mm galvanised flatwrap razor wire.

4.1.33 IP68 ANTENNA**4.1.33.1 Supply & Install IP68 3G Antenna**

The Tenderer shall supply & install a new IP68 class 3G antenna on site and ensure best positioning is determined for full and uninterrupted communications between outstation at central base station including the Goodwood disaster risk centre SCADA. The 3G antenna shall conform to the below minimum specification on **ANNEXURE 4**

4.1.33.2 Supply & Install IP68 3G/LTE High gain Antenna

The Tenderer shall supply & install a new IP68 class High Gain 3G/4G/LTE antenna on site and ensure best positioning is determined for full and uninterrupted communications between outstation at central base station including the Goodwood disaster risk centre SCADA. The High Gain antenna shall conform to the below minimum specification on **ANNEXURE 4**

4.1.34 Trenching

Trenching must be professionally and neatly carried out and shall be 700 mm or 900 mm deep and from 300 mm wide as indicated by the Principal Agent.

The surface cut of bitumen tar and paving shall be neatly made and shall be wide enough to allow trenching without undermining or subsiding of the tar edge to facilitate adequate joining of reinstated surfaces.

Where grass sods or plants are removed, they shall be neatly packed adjacent to the trench. The Contractor shall keep the grass sods or plants damp after removal by watering or otherwise to ensure that they remain alive. The Contractor must ensure that all vegetation is replanted after the trench is properly backfilled and compacted. The Contractor will have to make good at his own cost, any vegetation damaged during the excavation and not restored to its original condition.

Brick paving shall be neatly removed and stacked adjacent to the area excavated at a location that is acceptable to the user of such brick paved surface. Any breakage of bricks will be the responsibility of the Contractor. The Contractor will be responsible for reinstallation of the removed bricks to the satisfaction of the user. The same method of operation shall apply for paving slabs.

When trenching through kerbs, channels, edgings or any other edge unit, these shall be carefully removed up to the nearest whole unit and replaced. If these units are damaged, they shall be replaced with similar approved new units for the cost of the Contractor.

All excavated trenches shall be in a straight line, where possible, and marked out by using a line. Where cable trenches change direction the excavated trench may not result in the installed cable having a bending radius of less than 500 mm. Under NO circumstances shall this minimum bending radius be reduced.

While excavating, the Contractor shall remove tar pieces, stones and sharp objects from the unearthed soil and arrange for removal of such material from site. No stones, tar pieces or sharp objects may be put back in the trench.

The bottom of the cable trench shall be even and free of stones and sharp objects. Should the base of the trench consist of rocks or sharp objects, a bedding layer of approximately 100 mm of soft stone-free sand shall be installed prior to cable installation.

No excavated trenches or holes shall be left open for longer than 3 days or over a weekend.

The Contractor may not dump or store excavated material against boundary walls or on landscaped gardens. Restoration of defaced property will be the responsibility of the Contractor. Where excavated material is placed on road surfaces care should be taken not to block storm water drains or open channels.

Any water accumulating in excavated trenches or holes, either as a result of rain or due to the level of the water table, shall be pumped out by the Contractor to make work inside the trench or hole possible.

Particular care must be taken to ensure that effective barriers are erected around all trenches and excavations to ensure the safety personnel and the general public. In this regard the contractor is required to install an orange meshed barrier screen (or other type of barrier if deemed by the contractor to be more effective) up to at least a metre in height along the entire length of the trench or excavation. The barrier is to be secured in such a way that it will not be disturbed by adverse weather conditions. Where the general access across the excavation is required, suitable, safe crossings must be provided. The contractor must detail these measures in his safety plan.

Any liability arising out of the activities of the Contractor shall be his responsibility. This includes the safety of personnel and the public while the trenches are open.

Soil conditions vary from Area to Area and within each Area. To account for soil conditions that may vary along an excavated trench, rates for 3 different types of soil will be used- "Normal", "Difficult" and "Hard" excavation, as defined below.

The Tenderer will need to determine the incurred costs for each type of excavation in accordance with the following categories:

Normal Excavation

Material that can be loosened and removed using pick and shovel (such as grass covered sand, soft clay, dry earth, small stones in sand which can be removed by hand, or thin layers of "koffieklip").

Difficult Excavation

Material that is difficult to loosen and remove using pick and shovel such as large layers of "koffieklip", hard dry clay, ground containing boulders and layers of tar or where progress is slow and other services are affected. The cost of any mechanical plant used to assist in loosening the material is to be included in the given rate.

Hard Excavation

A solid mass of material, 1 m or longer, which can only be broken using a paving breaker or jackhammer and where progress is very slow.

Backfilling of trenches shall take place immediately following cable installation and inspection by the Principal Agent. The trench shall be backfilled and mechanically compacted to a depth of approximately 250 mm after which a layer of danger tape must be installed. The remaining backfilling shall be mechanically compacted in 150 mm layers and completed no later than one day after the cable installation. Backfilling and compaction shall be carried out to the specification of the local. Municipal Services Authority and be tested for compliance using a Dynamic Cone Penetrometer. A measurement of more than 20 mm difference between successive penetrating blows will be regarded as insufficient compaction. The backfilled trench shall be level with the surrounding terrain and all excess backfilling material shall be removed.

The Contractor shall be responsible for the proper reinstatement of the trench for a period of 1 year after completion of the work.

Where excavated material is unsuitable (i.e. contains stones and sharp objects which cannot be easily removed) for use as a bedding layer for the installation of electrical services the Contractor shall supply and deliver to site stone free sand for such purposes at the tendered rate. Backfill material delivered to site should be stored at an appropriate location to prevent damage and obstruction of existing services and property. An accurate record of delivered material shall be kept for verification by the Principal Agent

Reinstatement of all bitumen, brick paving or cement paving as well as cement surfaces shall be carried out by the Tenderer and shall match the original finish.

Council reserves the right to arrange the reinstatement of bitumen, brick paving or cement paving as well as cement surfaces via other tenders.

All waste material (i.e. broken tar, stones or unsuitable soils such as clay) must be removed from the worksite and dumped at the nearest recognised authorised dumping site. Transport to and any fee payable at the dumpsite will be to the Contractor's account and must be included in the rate quoted. Claims for export of material loads should be supported by receipts or other documentation from the dump site.

4.1.34.1 Site Clearance

Clearing shall consist of the removal of all trees, brush other vegetation, rubbish and all other objectionable material, including the disposal of all material resulting from the clearing and grubbing.

Site clearance shall be carried out prior to earthworks and shall be measured once. Site clearing shall also mean bush clearing. The tenderer shall pay attention to the method of moving vegetation to ensure the roots are removed without removing excessive sand material.

The tenderer shall include in his rate, cost of removal, storing protection and replanting in a protected and fenced-off area of selected vegetation.

4.1.34.2 Excavation

Tenderer to excavate by between the remote terminal unit & measuring point for the installation of a PVC conduit that will house signal cable.

Soft excavation shall be all material not falling into the category of hard rock excavation.

Excavation shall be done by hand in order to protect underground services. The amount by which the excavation is to exceed the proposed level of 0.5 × 0.5 m deep shall be sufficient to allow the proper laying, bedding, backfilling and compacting of a 110mm diameter uPVC sleeve.

All excavation areas shall be made safe from pedestrian and vehicle traffic at all times while the works is ongoing. The tenderer to have all the relevant materials on site to ensure all works is cordoned off while the trench work is ongoing (safety netting).

4.1.34.3 Install uPVC Cable Sleeve:

The tenderer is to supply and lay a 110 mm uPVC cable sleeves suitable for the housing of an signal cable, for the full length of the proposed trench.

Draw wires are to be inserted in the sleeves between each of the proposed inspection manholes, with enough slack left on each end.

4.1.34.4 Concrete Encasement of PVC conduit

The tenderer shall encase the 110 uPVC cable sleeve in 100mm concrete (15 MPa) all round.

4.1.34.5 Backfill, Compaction & Reinstatement

The tenderer shall backfill and compact the excavated area around the uPVC conduit with the excavated material.

The tenderer shall not commence with the backfilling of trenches without prior notification to the De-partment so that the cable installation may be inspected. Should the tenderer fail to give a timeous notification, the trenches shall be re-opened at the tenderer's cost. Such an inspection will not be un-reasonably delayed.

Backfilling shall be undertaken with soil suitable to ensure settling without voids.

The trench shall be backfilled and mechanically compacted to a depth of approximately 250 mm after which a layer of danger tape must be installed. The remaining backfilling shall be mechanically.

The tenderer shall reinstate the trenched area with the grass sods that was stockpiled.

SECTION 5: GENERAL SPECIFICATIONS

5.1 EXTENT OF THE WORKS

The work that is to be carried out under the contract is as provided for in the Project Specification. However, if during the course of maintenance conditions are found to differ from those anticipated, the Employer reserves the right to modify the scope of the work to suit the prevailing conditions and circumstances.

5.2 LIMITED CONTRACT FUNDS

5.2.1 Limited funding is available for the works detailed in the Project Specification and certain items may be omitted depending on tendered rates and tender amounts received. **The Employer reserves the right to omit certain works to suit the available funding for the contract without invalidating the contract.**

5.2.2 The works set out in this contract is of an if and when required bases, and falls solely at the discretion of the Director: Bulk Services or his representative

5.3 STANDARD OF WORKMANSHIP

5.3.1 The attention of Tenderers is particularly drawn to the high standard of workmanship applicable to this Contract.

5.3.2 The onus to produce work which conforms in quality and accuracy of detail to the requirements of the specifications is on the Tenderer. The Tenderer shall, at his own expense, institute a quality-control system and provide experienced, Technician / Artisans, together with all transport and equipment, to ensure adequate supervision and positive control of the works at all times.

5.3.3 The costs of all supervision and process control, including testing thus carried out by the Tenderer shall be deemed to be included in the rates tendered for the related items of work.

5.3.4 On completion of every part of the work submission thereof to the Director: Bulk Services or his representative for examination, the Tenderer shall furnish the Director: Bulk Services or his representative with photographs of all relevant completed works.

5.4 TENDERER'S SUPERINTENDENCE

5.4.1 The Tenderer shall give or provide all necessary site supervision due to the execution of the Works and must be on site at all times during the duration of the works.

5.4.2 The Tenderer or a competent and authorised agent or representative approved of in writing by the Director: Bulk Services or his Representative (which approval may at any time be withdrawn), is to be constantly on the Works and shall give his whole time to the superintendence the works. Such authorised agent or representative shall receive and execute on behalf of the Tenderer directions and instructions from the Director: Bulk Services or his Representative.

5.4.3 The superintendence must be familiar with the contents of the tender document.

5.4.4 In the event that a company is based outside the municipal area of the City of Cape Town a local office must be established within two weeks after award of a contract.

5.5 PERFORMANCE MONITORING

5.5.1 The Tenderer shall execute the Works in strict accordance with the contract to the satisfaction of the Director: Bulk Services or his Representative and shall comply with and adhere strictly to the Director: Bulk Services or his Representatives instructions and directions on any matter (whether mentioned in the contract or not). The Tenderer shall take instructions and directions only from the Director: Bulk Services or his Representative.

5.5.2 Works can only commence once the tenderer received a written instruction with an explanatory drawing from the Director: Bulk Services or his representative. No payment will be made unless the written instruction with the drawing is submitted with the tenderers payment invoice.

5.5.3 The Tenderer shall allow the Director: Bulk Services or his representative, to have access at all times to inspect the work being conducted, to inspect all records and documents maintained by the Tenderer regarding work performed, and to inspect the equipment, including spare parts inventories, stores, and workshop repair facilities.

5.5.4 A complete log of all communications via the Project Manager is to be maintained, including a record of actions to follow-up on any instructions or comments. The Tenderer shall make the record available for inspection whenever requested by the Director: Bulk Services or his representative.

5.5.5 The Tenderer shall inform the Director: Bulk Services or his Representative timeously of any problems on site

5.6 AVAILABLE SERVICES

The tenderer shall note that not all sites have listed in locations as per the Attached Annexure 19 have a standard 220V electricity supply. Therefore the tenderer shall make the necessary provisions for all electricity generating equipment where deemed that an electricity supply is required for the completion of works. Furthermore, the tender shall also make provision for a continuous electricity supply at their premises when remote monitoring of the Hydrological Monitoring System is performed in an event of disruption in electrical supply.

5.7 SITE LOCATION SPECIAL ATTENTION

The tenderer shall note the following:

- Certain hydrological monitoring sites fall outside the boundaries of the City of Cape Town metropolitan area.
- Certain sites are only accessible by the use of the 4x4 vehicle
- Certain sites are located on private property and in the neighbouring Stellenbosch Municipality

5.8 PROTECTION OF SERVICES**5.8.1 WAYLEAVES**

The Tenderer 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 Tenderer's name.

The Tenderer shall abide by any conditions imposed by such wayleaves, permissions or permits.

The Tenderer 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 Tenderer shall also ensure that any wayleaves in respect of electricity services are renewed timeously every three months.

Existing Services

"Existing Service" shall include any service which has been temporarily taken out of service to allow for the execution of the works or which has been taken out of service as a result of an event which necessitated the execution of the works.

5.8.2 Condition of Existing Services

The Tenderer acknowledges that he has inspected and examined all known existing services and all existing services subsequently discovered and is satisfied that all such services were in an acceptable and serviceable state at the commencement of the works.

In the event of a dispute as to the acceptability and/or serviceability of an existing service at the commencement of the works or upon the discovery of such service, the Tenderer shall bear the onus of proving that the service in question was not in an acceptable and/or serviceable state at the commencement of the works.

5.8.3 Maintenance and Protection of Existing Services

During the course of the works, all existing services including watermains, sewers and stormwater reticulation, electricity transmission and telephone lines, cables, poles and conduits whether in service or not shall be protected, supported and maintained to the satisfaction of the service authority or department concerned and the Employer. The Tenderer shall bear all costs in this regard.

Where on account of location or level, existing services have to be permanently altered to accommodate the proposed service, the Council will pay all charges in connection therewith.

Hydrants under pressure, watermain valve covers and manholes shall be kept unobstructed and accessible at all times.

5.8.4 Work in Close Proximity to Existing Services

The Tenderer shall note that no mechanical excavators or vibratory type compactors may be used within three (3) metres of any telecommunications or electrical services. No pegs or stakes shall be driven into the ground in the vicinity of underground services unless their exact positions have been determined.

The Tenderers attention is drawn to the following with regard to work done in proximity of ESKOM and other electrical services:

MACHINERY AND OCCUPATIONAL SAFETY ACT(Act No 6 of 1983) WITH REGULATIONS

D16(7) excavations

“The builder or excavator shall ascertain as far as practicable the location and nature of underground services likely to be affected by the excavation and take such steps as may be necessary to prevent danger to persons”

THE ELECTRICITY ACT (ACT No 40 of 1958)

Section 51(3) : Offences and penalties

“ Any person without legal right (the proof of which shall be upon him) cuts or damages or interferes with any apparatus for generating, transmitting or generating electricity, shall be guilty of an offence and liable on conviction to a fine not exceeding R 1 000.00 or to imprisonment for a period not exceeding twelve months.”

The Tenderer shall allow all reasonable access to the representatives of any Authority or department for the purpose of maintaining, laying and/or relaying any services, cables or mains during the period of the Contract.

Permanent alterations to existing services ordered in writing by the Employer, and for which no separate provision has been provided has been made in the Price Schedule, will be paid for under dayworks or extra works if required

5.9 ACCOMMODATION OF TRAFFIC

5.9.1 Safety

The Contractor shall be responsible for the safe and easy passage of pedestrian and vehicular traffic past and/or over sections of roads of which he has occupation. The Contractor shall at all times in his entire operations take the necessary care to protect the public and to facilitate the traffic flow.

The Contractor may not commence with any part of the works before he has made adequate provision for the accommodation of traffic. The safety and convenience of the travelling public is to be considered of utmost importance and every effort must be made to ensure that no work may proceed on any public road until such time as the relevant road signs, flagmen, speed controls, barricades, delineators, cones etc are in place and maintained, and that courtesy is extended to the public at all times.

The Contractor shall ensure that his employees wear high visibility safety clothing when working alongside public traffic. The safety jackets shall be of an approved Level 2 type, bright/fluorescent orange, red-orange or yellow in colour with retro-reflective strips as indicated in Chapter 13 of Volume 2 of the South African Traffic Signs Manual (SARTSM). When work is carried out between the hours of sunset and sunrise, the Level 2 safety jackets shall be replaced by Level 3 jackets.

The travelling public shall have the right of way on public roads, and the Contractor shall apply suitable methods for controlling the movement of his vehicles, plant and equipment that they will not constitute a hazard on the road.

Access to properties must be maintained at all times.

The Contractor shall nominate a knowledgeable employee on site who shall be the Traffic Safety Officer responsible for the arrangements and maintenance of all accommodation of traffic measures required for the duration of the work. He shall exercise control in terms of traffic safety over the safe movement of personnel, visitors and plant on site including the wearing of high visibility clothing, the operation of amber flashing lights and for keeping all roads signs and traffic cones clean and visible. He shall attend to the training and performance of flagmen and other personnel involved in the control of traffic.

The Contractor shall liaise with and co-operate with the relevant traffic authorities wherever the work affects existing roads.

5.9.2 Temporary Traffic-Control Facilities

The Contractor shall provide, erect and maintain the necessary traffic-control devices, road signs, channelisation devices, barricades, warning devices and road markings (hereinafter referred to as traffic-control facilities), as shown in the South African Road Traffic Signs Manual (SARTSM), and shall remove them when no longer required. It shall be incumbent upon the Contractor to see to it that the above-mentioned traffic-control facilities are present at all times and are functioning properly.

Work, including the erection and removal of traffic control facilities, shall be executed between sunrise and sunset on Monday to Saturday, inclusive. Occupation of existing traffic lanes will only be allowed during daylight hours on normal working days, which are defined as Monday to Saturday, inclusive. The existing number of lanes for each traffic movement affected by infrastructure maintenance shall not be reduced without the written authorization of the Engineer.

The Contractor shall determine the particular accommodation of traffic layout(s) on the drawings suitable to the cleaning exercise(s) planned. The Contractor shall submit the layout proposals for signage and accommodation of traffic to the Engineer for approval.

The Contractor shall indemnify the employer against all proceedings, claims, actions, damages and costs which may arise from or be related to the absence or improper functioning or placement of traffic-control facilities.

No claims will be considered for delays or inconvenience caused by the accommodation of traffic requirements.

The type of infrastructure maintenance, spacing and placement of traffic-control facilities shall be in accordance with the prescriptions and recommendation of the latest edition of SARTSM.

The Traffic shall be accommodated on the existing surfaced carriageway and shoulders. No bypasses or temporary deviations shall be constructed. Accommodation of traffic will generally be carried out by closing off one lane of traffic at a time and accommodating the traffic on the other lane(s).

5.9.3 Traffic-Control Devices

Traffic-control devices include the use of flagmen and portable STOP and GO-RY signs, and traffic signals, whichever may be the most suitable method under the prevailing circumstances. Traffic signals shall only be erected if approved by the Engineer.

If a road is partially closed and one-way traffic only is allowed over a section of road of which the length exceeds 250 m, the traffic shall be regulated by flagmen and STOP and GO-RY signs at both ends of such section. If it is necessary for effective communication between the flagmen, an approved two-way communication system shall be in operation at the control points.

Flagmen shall have a working knowledge of the road regulations.

Temporary traffic-control facilities shall be provided with portable stands adequately ballasted with sandbags to prevent the signs from being blown over by wind or wind turbulence from moving traffic.

5.9.4 Road Signs and Barricades

Road signs shall include all the statutorily required road signs in the permanent or temporary series, which shall also include delineators and moveable barriers (the barrier/sign combination type), or an appropriate combination thereof.

5.9.5 Channelization Devices and Barricades

Channelization devices shall include delineators, cones, barricades, guardrails, barriers, road studs or road markings or any appropriate combination of these devices.

5.9.6 Accommodation of Traffic Layout categories

Appended to this General Section is an extract from the South African Road Traffic Signs Manual Volume 2 Chapter 13 – Roadworks Signing. This is provided to illustrate the Accommodation of Traffic Layout Categories. The Contractor shall comply with the complete manual when implementing accommodation of traffic measures.

5.10 LIAISON WITH LOCAL AUTHORITIES

The Tenderer will have to liaise with local authorities regarding the following matters:

- (a) Dealing with traffic.
- (b) Locating of existing underground services.
- (c) Protection of existing services during construction.

All the relevant authorities were notified of above operations. It is then the Tenderer's onus to immediately contact all these authorities and to accommodate their involvement in his programme of work. The Tenderer should also warn the authorities at least 48 hours before the actual work commence. Compensation for delays, losses or accidents will not be considered should the Tenderer at any time have failed to keep the local authorities informed.

The Director: Bulk Services or his representative must immediately be notified, should the Tenderer experience any problem regarding work which involves a local authority.

5.11 Quality Conformance**5.11.1 Quality Control**

Only new materials of first class quality shall be used and be approved by the Principal Agent prior to installation.

Wherever applicable the material is to comply with the relevant South African Bureau of Standards, specifications, or to British Standard Specifications, where no SABS Specifications exist.

Materials wherever possible, must be of South African manufacture and shall bear the SABS mark of approval.

The work shall be done by, or at all times be under the personal supervision of an installation Technician appointed in writing by the Tenderer.

The tenderer shall have a complete Safety file as specified by the Construction Regulations of the OHS Act on site.

Failure to produce such an Element will result in stopping of the work until such file can be produced.

The work stoppage shall be for the account of the Tenderer and no extension of time will be allowed.

The Project Manager may, if he deems fit, require that the Tenderer removes or causes to be removed an employee of his from the construction site by virtue of that person's incapability, appearance or any such reason which in the opinion of the Project Manager is valid.

Without detracting from the safety clothing and equipment as specified in the Safety File all members of the Contract's staff shall wear clothing adequately marked with the Contractor's name or acceptable identification.

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'

2) EMPLOYMENT OF SECURITY PERSONNEL

All security staff employed by the supplier 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 CCT's agent upon request.

3) FORMS FOR CONTRACT ADMINISTRATION

The supplier shall complete, sign and submit with each invoice, the following:

- a) Monthly Project Labour Report (**Annex 3**).
- b) B-BBEE Sub-Contract Expenditure Report (**Annex 4**).
- c) Joint Venture 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.

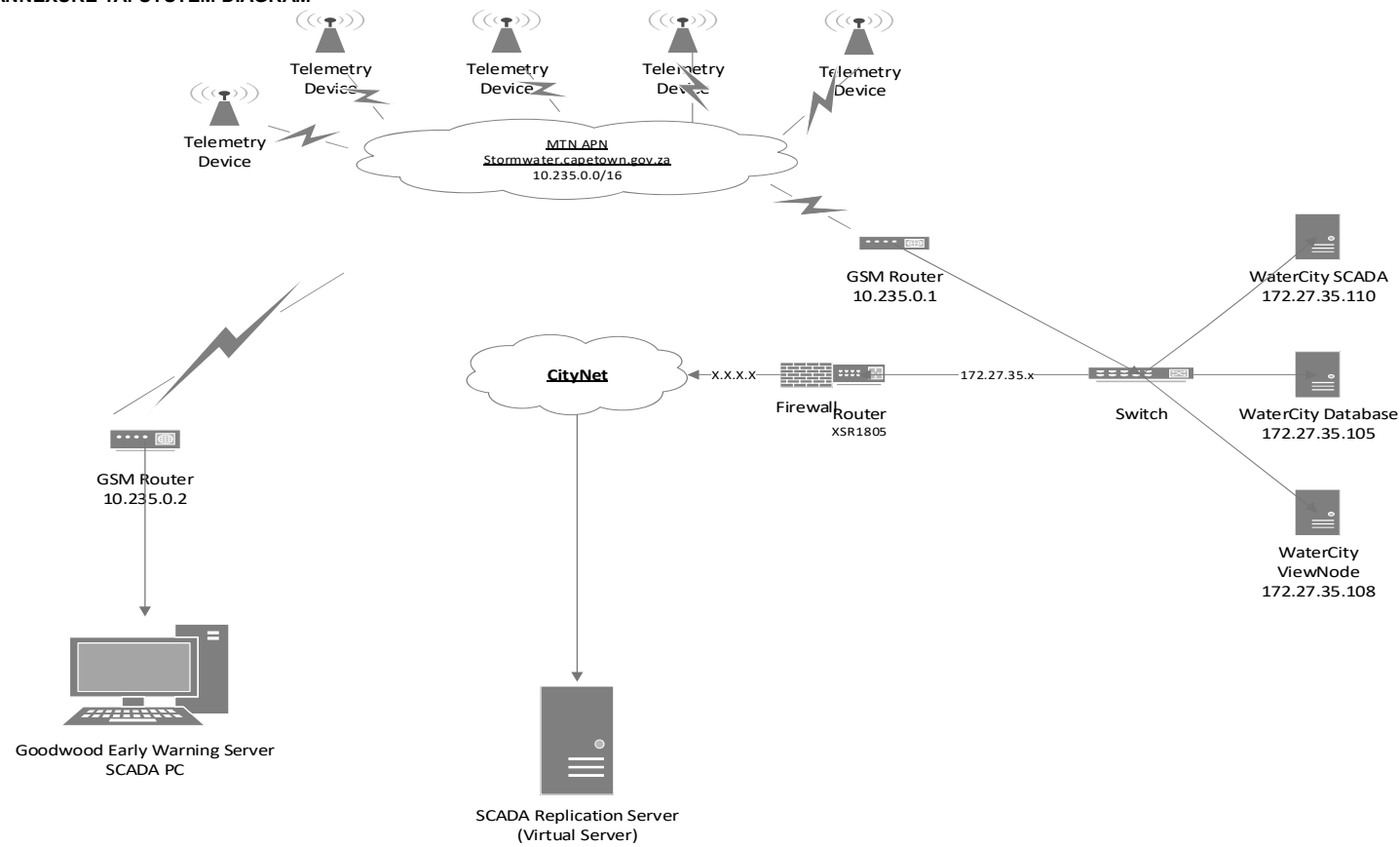
In addition to the Monthly Project Labour Report the Supplier shall simultaneously furnish the CCT's Agent with copies of the employment contracts entered into with such labour, together with certified copies of identification documents, proof of attendance in the form of attendance register or timesheets 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 CCT's Agent.

The Monthly Project Labour Reports shall be completed and submitted in accordance with the instructions therein.

The **B-BBEE Sub-Contract Expenditure Report** is required for monitoring the supplier's compliance with the sub-contracting conditions of the **Preference Schedule**.

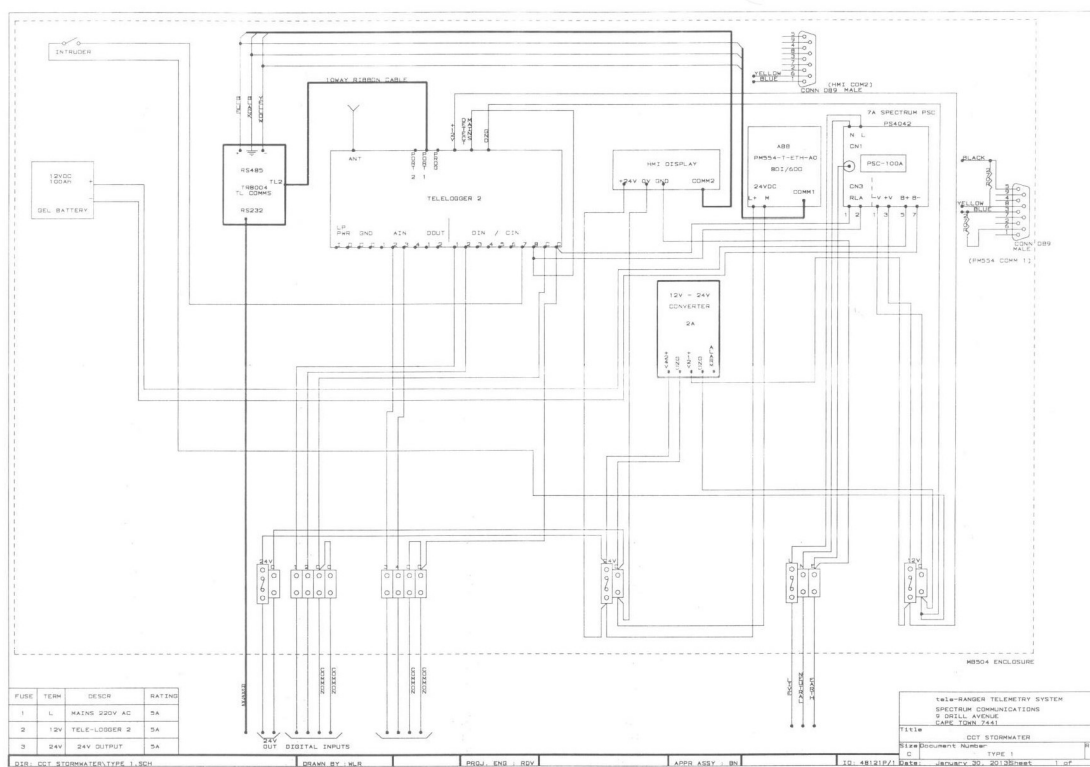
The Joint Venture Expenditure Report is required for monitoring the joint venture's/consortium/partnership compliance with the percentage contributions of the partners as tendered, where the joint venture/consortium/partnership has been awarded preference points in respect of its consolidated B-BBEE scorecard.

ANNEXURE 1A: SYSTEM DIAGRAM

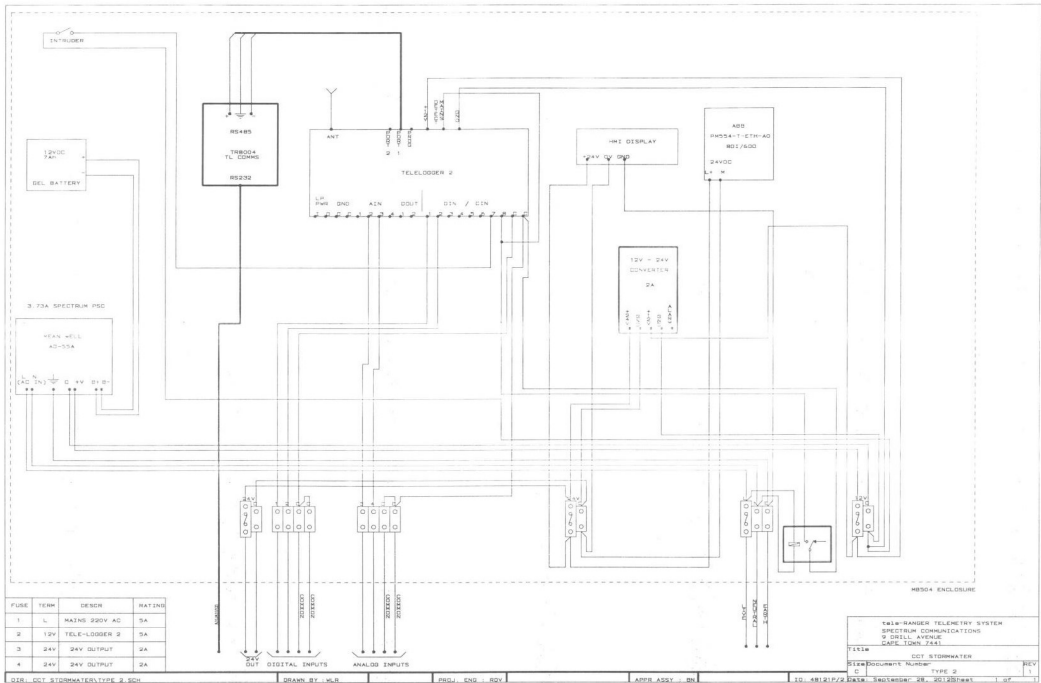


Stormwater System Diagram

ANNEXURE 1B: REMOTE MONITORING STATION WIRING DIAGRAM (TYPE 1 - 220V)



ANNEXURE 1C: REMOTE MONITORING STATION WIRING DIAGRAM (TYPE 2 - 220V)



ANNEXURE 1D: REMOTE MONITORING STATION WIRING DIAGRAM (TYPE 3 - SOLAR)



ANNEXURE 2: MONITORING STATION LIST

SCADA ST ID	CODE NAME	SITE NAME - LOCATION / ADDRESS
	Base03	CSRM - PRIMARY, 17th Floor, 12 Hertzog Blvd
	Base02	CSRM : STAND-BY, Goodwood Disaster Center
1.0	Diep01aR	Rietvlei, Milnerton Dr, Milnerton, Blaauwberg
2.0	Diep05cR	Wynberg Reservoir, Wynberg Park, Trovato Road, Wynberg
3.0	Disa09bR/S	Longkloof Weir, Hout Bay
4.0	Eers02cR/S	Jonkershoek Dam, Jonkershoek Road, Klienplasie, Stellenbosch
5.0	Elsi03cR	Tygerberg Reservoir, Java Oos Straat, Avondale
6.0	Elsi03xS	Cora Avenue, Howard Center, Pinelands
7.0	Kuil02aR/S	Macassar Bridge, Macassar Road, Macassar
8.0	Lies03gS	Paradise Road, c/o Rhodes Drive & Paradise Road, Newlands
9.0	Lour06bR/S	Vergelegen Farm, Vergelegen Road, Somerset West - Entrance
10.0	Lour06cR	Lourensford Farm, Lourensford Road, Somerset West - Waterval
11.0	Lour06dR	Vergelegen Farm, Vergelegen Road, Somerset West - Langklippie
12.0	Lour06eR	Lourensford Farm, Lourensford Road, Somerset West - Bliksberg
13.0	Vyge03gR	Athlone Treatment Works, Jan Smuts Ave, Athlone - Control Room
14.0	Vyge03jS	Athlone Treatment Works, Jan Smuts Ave, Athlone
15.0	Zvou05fS	Zandvlei Outlet, Thessen Bridge, Axminister Road, Muizenberg
16.0	Blac03xS	Sybrand Park, Next to Canal, downstream of Klipfontein Rd, Sybrand Park
17.0	Diep05bR	Southfield Depot, Alduwa Road, Southfield
18.0	Diep05cS	Doordrift Road, Constantia
19.0	Disa09aR/S	Princess Road, Hout Bay
20.0	Elsi03bR	Dagbreek Reservoir, Paardeberg Road, Durbanville Hills
21.0	Elsi03dR	Goodwood Bowling Greens, c/o Milton & Alice Rds Goodwood
22.0	Elsi03eR	Pinelands Roads Depot, Pinelands Maintenance Yard, Princess Path, Pinelands
23.0	Lies03hS	Durban Road, Next to Liesbeeck Parkway, Mowbray
24.0	Lotu04cS	Sixth Ave, Lotus River
25.0	Lour06aS	Historic Bridge, Main Road, Kalamuda, Somerset West
26.0	Noorh08bR	Noordhoek Forestry Station, Avondrust road, Forestry Station, Noordhoek
27.0	SPen13aR	Brooklyn Water Treatment Plant, Red Hill, Simons Town
28.0	Wild08aR	Wildevoevlei WWTW, Kommetjie Main Road, Kommetjie
29.0	Khay01R	Khayelitsha Roads Depot, Goven Mbeki Roads, Khayelitsha
30.0	Kraa01R	Kraaifontein Roads Depot, First Ave, Kraaifontein
31.0	City11bR	Molteno Dam , Molteno Road, Oranjezicht
32.0	Lour06aS	Historic Bridge, Main Road, Kalamuda, Somerset West (No #2)

ANNEXURE 2A: LIST OF ALL RMS AND BASE STATIONS (Cont.)

SCADA ST ID	CODE NAME	SITE NAME - LOCATION / ADDRESS
33.0	Diep01aR	Potsdam WWTW, Koeberg Road, Milnerton
34.0	Diep05dR	Cecilia Forest, Rhodes Ave, Klassenbosch
35.0	Diep05eR	Table Mountain, At Constantia Nek Circle take the gravel road to the top
36.0	Eers02aR/S	Klein Welmoed Farm, Off Baden Powell Road (R310), Stellenbosch
37.0	Eers02bS	Libertas Farm, Van Rhee de Road, Stellenbosch, Stellenbosch
38.0	Els03aR	Maastricht Farm, Durbanville Road, Durbanville
39.0	Jakk03mS	Jakkelsvlei N2, Next to Settlers Way, few kms past the old Athlone Power Station
40.0	Keys05fR	Tokia Forest, At the SAFCOL office at Tokai Forest
41.0	Kuil02bR/S	Waldermar Road, Oakdene, Kuils River
42.0	Lies03fR	Newlands Reservoir, Rhodes Drive, Newlands
43.0	Lotu04aR	Hanover Park Cleansing Depot, Downberg Road, Hanover Park
44.0	Lpvl05aS	Princessvlei, Consort Road, Retreat
45.0	Atla17aR	Atlantis Roads Depot
46.0	Blom03mS	College Road Pumpstation, College Road, Belgravia
47.0	Diep05aR	Kendal Water Works Depot (SPM), Kendal Road, Meadowridge
48.0	Keys05dR/S	M3 Freeway, Next to the Simon Van Der Stel Freeway
49.0	Klei02eS	Kleinvlei Canal, Faure Kleinvlei Canal downstream of Old Faure road
50.0	Kuil02eR	Stellenbosch Fire Station, c/o Cluver & Helshoogte, Stellenbosch
51.0	Lotu04aS	Springfield Road, Ottery
52.0	MPla12aR	Mitchells Plain Roads Depot
53.0	MPla12aS	Mitchells Plain SW Outlet, Sewage Pump Station, Alps Circle, Tafelsig, MP
54.0	MPla12bR	Cape Flats Treatment Plant, off Strandfontein Road
55.0	Wynb05bS	Maynardville Park, c/o Wolfe & Church Street, Wynberg
56.0	Els03eS	Durbanville Quarry, Carl Cronje Drive, Durbanville
57.0	Salt03iS	Glamis Close Pump Station, Next to M5 Black River Parkway, Maitland
58.0	Zeek04dS	Zeekoevlei Yacht Club, Peninsula Road, Zeekoevlei
59.0	Zvin05eS	Zandvlei inlet, Under the railway bridge at the inlet to the vlei
60.0	Stra01R	Strand Roads Depot, Power Ave, Strand
61.0	Diep01aS	Rietvlei, Upstream of R27 bridge over Diepriver, Milnerton, Blaauwberg
	City11cR	Devil's Peak, High Cape

ANNEXURE 2B: LIST OF CRITICAL RMS AND BASE STATIONS

SCADA ST ID	CODE NAME	SITE NAME - LOCATION / ADDRESS
	Base03	CSRM - PRIMARY, 17th Floor, 12 Hertzog Blvd
	Base02	CSRM : STAND-BY, Goodwood Disaster Center
1.0	Diep01aR	Rietvlei, Milnerton Dr, Milnerton, Blaauwberg
2.0	Diep05cR	Wynberg Reservoir, Wynberg Park, Trovato Road, Wynberg
5.0	Elsi03cR	Tygerberg Reservoir, Java Oos Straat, Avondale
9.0	Lour06bR/S	Vergelegen Farm, Vergelegen Road, Somerset West - Entrance
10.0	Lour06cR	Lourensford Farm, Lourensford Road, Somerset West - Waterval
11.0	Lour06dR	Vergelegen Farm, Vergelegen Road, Somerset West - Langklippie
12.0	Lour06eR	Lourensford Farm, Lourensford Road, Somerset West - Bliksberg
13.0	Vyge03gR	Athlone Treatment Works, Jan Smuts Ave, Athlone - Control Room
20.0	Elsi03bR	Dagbreek Reservoir, Paardeberg Road, Durbanville Hills
21.0	Elsi03dR	Goodwood Bowling Greens, c/o Milton & Alice Rds Goodwood
22.0	Elsi03eR	Pinelands Roads Depot, Pinelands Maintenance Yard, Princess Path, Pinelands
25.0	Lour06aS	Historic Bridge, Main Road, Kalamuda, Somerset West (No #1)
27.0	SPen13aR	Brooklyn Water Treatment Plant, Red Hill, Simons Town
29.0	Khay01R	Khayelitsha Roads Depot, Goven Mbeki Roads, Khayelitsha
30.0	Kraa01R	Kraaifontein Roads Depot, First Ave, Kraaifontein
31.0	City11bR	Molteno Dam , Molteno Road, Oranjezicht
32.0	Lour06aS	Historic Bridge, Main Road, Kalamuda, Somerset West (No #2)
33.0	Diep01aR	Potsdam WWTW, Koeberg Road, Milnerton
35.0	Diep05eR	Table Mountain, At Constantia Nek Circle take the gravel road to the top
40.0	Keys05fR	Tokia Forest, At the SAFCOL office at Tokai Forest
42.0	Lies03fR	Newlands Reservoir, Rhodes Drive, Newlands
45.0	Atla17aR	Atlantis Roads Depot
60.0	Stra01R	Strand Roads Depot, Power Ave, Strand

ANNEXURE 3: TYPICAL INFRASTRUCTURE AND INSTRUMENTATION MAINTENANCE PLAN (IIMP)

SCADA ST ID	CODE NAME	SITE NAME - LOCATION / ADDRESS	MAINTENANCE ACTIVITY	SUB-TOTAL	POWER SOURCE	JULY	AUGUST	SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER	JANUARY	FEBRUARY	MARCH	APRIL	MAY	JUNE
-	Base03	CSRM - PRIMARY, 17th Floor, 12 Hertzog Blvd	Instrumentation	12	220 v	1	1	1	1	1	1	1	1	1	1	1	1
-	Base02	CSRM : STAND-BY, Goodwood Disaster Center	Instrumentation	12	220 v	1	1	1	1	1	1	1	1	1	1	1	1
1.0	Diep01aR	Rietvlei, Milnerton Dr, Milnerton, Blaauwberg	Instrumentation	2	220 v					1						1	
2.0	Diep05cR	Wynberg Reservoir, Wynberg Park, Trovato Road, Wynberg	Instrumentation	12	220 v	1	1	1	1	1	1	1	1	1	1	1	1
3.0	Disa09bR/S	Longkloof Weir, Hout Bay	Instrumentation	2	Low Powered						1						1
			Battery Recharge	4			1			1			1			1	
			Sump Cleaning	4					1	1					1	1	
			Calibration	2						1						1	
4.0	Eers02cR/S	Jonkershoek Dam, Jonkershoek Road, Klienplasie, Stellenbosch	Instrumentation	2	220 v					1						1	
			Sump Cleaning	0					0	0					0	0	
			Calibration	2						1						1	
5.0	Elsi03cR	Tygerberg Reservoir, Java Oos Straat, Avondale	Instrumentation	12	220 v	1	1	1	1	1	1	1	1	1	1	1	1
6.0	Elsi03xS	Cora Avenue, Howard Center, Pinelands	Instrumentation	2	220 v	1						1					
			Sump Cleaning	4					1	1					1	1	
			Calibration	2						1						1	
7.0	Kuil02aR/S	Macassar Bridge, Macassar Road, Macassar	Instrumentation	2	220 v				1						1		
			Calibration	2						1						1	

TENDER NO: 23S/2021/22

SCADA ST ID	CODE NAME	SITE NAME - LOCATION / ADDRESS	MAINTENANCE ACTIVITY	SUB-TOTAL	POWER SOURCE	JULY	AUGUST	SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER	JANUARY	FEBRUARY	MARCH	APRIL	MAY	JUNE
8.0	Lies03gS	Paradise Road, c/o Rhodes Drive & Paradise Road, Newlands	Instrumentation	2	220 v	1						1					
				4					1	1					1	1	
				2						1						1	
9.0	Lour06bR/S	Vergelegen Farm, Vergelegen Road, Somerset West - Entrance	Instrumentation	12	220 v	1	1	1	1	1	1	1	1	1	1	1	1
			Calibration	2						1						1	
10.0	Lour06cR	Lourensford Farm, Lourensford Road, Somerset West - Waterval	Instrumentation	12	Solar	1	1	1	1	1	1	1	1	1	1	1	1
11.0	Lour06dR	Vergelegen Farm, Vergelegen Road, Somerset West - Langklippie	Instrumentation	12	Solar	1	1	1	1	1	1	1	1	1	1	1	1
12.0	Lour06eR	Lourensford Farm, Lourensford Road, Somerset West - Bliksberg	Instrumentation	12	Solar	1	1	1	1	1	1	1	1	1	1	1	1
13.0	Vyge03gR	Athlone Treatment Works, Jan Smuts Ave, Athlone - Control Room	Instrumentation	12	220 v	1	1	1	1	1	1	1	1	1	1	1	1
14.0	Vyge03jS	Athlone Treatment Works, Jan Smuts Ave, Athlone	Instrumentation	0						0						0	
			Calibration	0						0						0	
15.0	Zvou05fS	Zandvlei Outlet, Thessen Bridge, Axminister Road, Muizenberg	Instrumentation	12	220 v	1	1	1	1	1	1	1	1	1	1	1	1
			Calibration	2						1						1	
16.0	Blac03xS	Sybrand Park, Next to Canal, downstream of Klipfontein Rd, Sybrand Park	Instrumentation	2	220 v					1						1	
			Sump Cleaning	4					1	1					1	1	
			Calibration	2						1						1	
17.0	Diep05bR	Southfield Depot, Alduwa Road, Southfield	Instrumentation	2	220 v	1						1					
18.0	Diep05cS	Doordrift Road, Constantia	Instrumentation	12	220 v	1	1	1	1	1	1	1	1	1	1	1	1
			Sump Cleaning	4					1	1					1	1	
			Calibration	2						1						1	

TENDER NO: 23S/2021/22

SCADA ST ID	CODE NAME	SITE NAME - LOCATION / ADDRESS	MAINTENANCE ACTIVITY	SUB-TOTAL	POWER SOURCE	JULY	AUGUST	SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER	JANUARY	FEBRUARY	MARCH	APRIL	MAY	JUNE
19.0	Disa09aR/S	Princess Road, Hout Bay	Instrumentation	2	220 v						1						1
			Calibration	2						1						1	
20.0	Elsi03bR	Dagbreek Reservoir, Paardeberg Road, Durbanville Hills	Instrumentation	12	220 v	1	1	1	1	1	1	1	1	1	1	1	1
21.0	Elsi03dR	Goodwood Bowling Greens, c/o Milton & Alice Rds Goodwood	Instrumentation	12	220 v	1	1	1	1	1	1	1	1	1	1	1	1
22.0	Elsi03eR	Pinelands Roads Depot, Pinelands Maintenance Yard, Princess Path, Pinelands	Instrumentation	2	220 v	1	1	1	1	1	1	1	1	1	1	1	1
23.0	Lies03hS	Durban Road, Next to Liesbeeck Parkway, Mowbray	Instrumentation	2	220 v	1						1					
			Sump Cleaning	4					1	1					1	1	
			Calibration	2						1						1	
24.0	Lotu04cS	Sixth Ave, Lotus River	Instrumentation	2	220 v				1						1		
			Sump Cleaning	4					1	1					1	1	
			Calibration	2						1						1	
25.0	Lour06aS	Historic Bridge, Main Road, Kalamuda, Somerset West (No #1)	Instrumentation	12	220 v	1	1	1	1	1	1	1	1	1	1	1	1
			Sump Cleaning	4					1	1					1	1	
			Calibration	2						1						1	
26.0	Norh08bR	Noordhoek Forestry Station, Avondrust road, Forestry Station, Noordhoek	Instrumentation	2	220 v						1						1
27.0	SPen13aR	Brooklyn Water Treatment Plant, Red Hill, Simons Town	Instrumentation	12	220 v	1	1	1	1	1	1	1	1	1	1	1	1
28.0	Wild08aR	Wildevoelwei WWTW, Kommetjie Main Road, Kommetjie	Instrumentation	2	220 v						1						1
29.0	Khay01R	Khayelitsha Roads Depot, Goven Mbeki Roads, Khayelitsha	Instrumentation	12	220 v	1	1	1	1	1	1	1	1	1	1	1	1
30.0	Kraa01R	Kraaifontein Roads Depot, First Ave, Kraaifontein	Instrumentation	12	220 v	1	1	1	1	1	1	1	1	1	1	1	1
31.0	City11bR	Molteno Dam , Molteno Road, Oranjezicht	Instrumentation	12	220 v	1	1	1	1	1	1	1	1	1	1	1	1

TENDER NO: 23S/2021/22

SCADA ST ID	CODE NAME	SITE NAME - LOCATION / ADDRESS	MAINTENANCE ACTIVITY	SUB-TOTAL	POWER SOURCE	JULY	AUGUST	SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER	JANUARY	FEBRUARY	MARCH	APRIL	MAY	JUNE
32.0	Lour06aS	Historic Bridge, Main Road, Kalamuda, Somerset West (No #2)	Instrumentation	12	220 v	1	1	1	1	1	1	1	1	1	1	1	1
33.0	Diep01aR	Potsdam WWTW, Koeberg Road, Milnerton	Instrumentation	12	220 v	1	1	1	1	1	1	1	1	1	1	1	1
34.0	Diep05dR	Cecilia Forest, Rhodes Ave, Klassenbosch	Instrumentation	2	220 v		1					1					
35.0	Diep05eR	Table Mountain, At Constantia Nek Circle take the gravel road to the top	Instrumentation	12	Solar	1	1	1	1	1	1	1	1	1	1	1	1
36.0	Eers02aR/S	Klein Welmoed Farm, Off Baden Powell Road (R310), Stellenbosch	Instrumentation	2	Low Powered					1						1	
		Battery Recharge	4			1				1		1				1	
		Sump Cleaning	0					0	0					0	0		
		Calibration	0						0						0		
37.0	Eers02bS	Libertas Farm, Van Rheede Road, Stellenbosch, Stellenbosch	Instrumentation	2	Low Powered				1						1		
		Battery Recharge	4			1				1		1				1	
		Sump Cleaning	0					0	0					0	0		
		Calibration	0						0						0		
38.0	Els03aR	Maastricht Farm, Durbanville Road, Durbanville	Instrumentation	2	Low Powered						1						1
		Battery Recharge	4			1				1		1				1	
39.0	Jakk03mS	Jakkelsvlei N2, Next to Settlers Way, few kms past the old Athlone Power Station	Instrumentation	0						0						0	
		Sump Cleaning	0					0	0					0	0		
		Calibration	0						0						0		

TENDER NO: 23S/2021/22

SCADA ST ID	CODE NAME	SITE NAME - LOCATION / ADDRESS	MAINTENANCE ACTIVITY	SUB-TOTAL	POWER SOURCE	JULY	AUGUST	SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER	JANUARY	FEBRUARY	MARCH	APRIL	MAY	JUNE
40.0	Keys05fR	Tokia Forest, At the SAFCOL office at Tokai Forest	Instrumentation	12	220 v	1	1	1	1	1	1	1	1	1	1	1	1
41.0	Kuil02bR/S	Waldermar Road, Oakdene, Kuils River	Instrumentation	0	220 v		0						0				
			Sump Cleaning	0					0	0					0	0	
			Calibration	0						0						0	
42.0	Lies03fR	Newlands Reservoir, Rhodes Drive, Newlands	Instrumentation	12	220 v	1	1	1	1	1	1	1	1	1	1	1	1
43.0	Lotu04aR	Hanover Park Cleansing Depot, Downberg Road, Hanover Park	Instrumentation	2	220 v		1						1				
44.0	Lpvl05aS	Princessvlei, Consort Road, Retreat	Instrumentation	0	Low Powered			0						0			
			Battery Recharge	0			0			0			0			0	
			Sump Cleaning	0					0	0					0	0	
			Calibration	0						0						0	
45.0	Atla17aR	Atlantis Roads Depot	Instrumentation	12	220 v	1	1	1	1	1	1	1	1	1	1	1	1
46.0	Blom03mS	College Road Pumpstation, College Road, Belgravia	Instrumentation	0	220 v		0						0				
			Sump Cleaning	0					0	0					0	0	
			Calibration	0						0						0	
47.0	Diep05aR	Kendal Water Works Depot (SPM), Kendal Road, Meadowridge	Instrumentation	2	220 v			1						1			
48.0	Keys05dR/S	M3 Freeway, Next to the Simon Van Der Stel Freeway	Instrumentation	2	Low Powered			1						1			
			Battery Recharge	4			1			1			1			1	
			Sump Cleaning	4					1	1					1	1	
			Calibration	2						1						1	

TENDER NO: 23S/2021/22

SCADA ST ID	CODE NAME	SITE NAME - LOCATION / ADDRESS	MAINTENANCE ACTIVITY	SUB-TOTAL	POWER SOURCE	JULY	AUGUST	SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER	JANUARY	FEBRUARY	MARCH	APRIL	MAY	JUNE
49.0	Klei02eS	Kleinvlei Canal, Faure Kleinvlei Canal downstream of Old Faure road	Instrumentation	2	220 v		1					1					
			Sump Cleaning	4					1	1					1	1	
			Calibration	2						1						1	
50.0	Kuil02eR	Stellenbosch Fire Station, c/o Cluver & Helshoogte, Stellenbosch	Instrumentation	2	220 v						1						1
51.0	Lotu04aS	Springfield Road, Ottery	Instrumentation	2	220 v		1					1					
			Sump Cleaning	4					1	1					1	1	
			Calibration	2						1						1	
52.0	MPla12aR	Mitchells Plain Roads Depot	Instrumentation	2	220 v		1					1					
53.0	MPla12aS	Mitchells Plain SW Outlet, Sewage Pump Station, Alps Circle, Tafelsig, MP	Instrumentation	0							0						0
			Calibration	0						0						0	
54.0	MPla12bR	Cape Flats Treatment Plant, off Strandfontein Road	Instrumentation	2	220 v			1						1			
55.0	Wynb05bS	Maynardville Park, c/o Wolfe & Church Street, Wynberg	Instrumentation	2	Low Powered			1					1				
			Battery Recharge	4		1				1		1				1	
			Sump Cleaning	4					1	1					1	1	
			Calibration	2						1						1	
56.0	Elsi03eS	Durbanville Quarry, Carl Cronje Drive, Durbanville	Instrumentation	0	Low Powered						0						0
56.1	Elsi03eS	Durbanville Quarry, Carl Cronje Drive, Durbanville: Battery Maint	Battery Recharge	0			0			0			0			0	
			Calibration	0						0						0	

TENDER NO: 23S/2021/22

SCADA ST ID	CODE NAME	SITE NAME - LOCATION / ADDRESS	MAINTENANCE ACTIVITY	SUB-TOTAL	POWER SOURCE	JULY	AUGUST	SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER	JANUARY	FEBRUARY	MARCH	APRIL	MAY	JUNE
57.0	Salt03iS	Glamis Close Pump Station, Next to M5 Black River Parkway, Maitland	Instrumentation	0	220 v					0							0
			Sump Cleaning	0					0	0					0	0	
			Calibration	0						0						0	
58.0	Zeek04dS	Zeekoevlei Yacht Club, Peninsula Road, Zeekoevlei	Instrumentation	2	220 v			1						1			
			Calibration	2						1						1	
59.0	Zvin05eS	Zandvlei inlet, Under the railway bridge at the inlet to the vlei	Instrumentation	0					0						0		
			Calibration	0						0						0	
60.0	Stra01R	Strand Roads Depot, Power Ave, Strand	Instrumentation	12	220 v	1	1	1	1	1	1	1	1	1	1	1	1
61.0	Diep01aS	Rietvlei, Upstream of R27 bridge over Diepriver, Milnerton, Blaauwberg	Instrumentation	0	Solar					0						0	
	City11cR	Devil's Peak, High Cape	Instrumentation	0						0						0	

ANNEXURE 4: INSTRUMENTATION AND TECHNICAL SPECIFICATIONS

1. Supply Database Server Unit

Rack mounted

Windows Server O/S latest version

Minimum Specification:

- Processor speed: 3.6 GHz
- Power Supply Type: 2 Flexible slot
- Expansion slots: 8
- Maximum memory: 3.0TB with 128GB DDR4 (6)
- Memory slots: 24 DIMM slots
- Memory type: HPE DDR4 Smart Memory
- System fan features: Hot-plug redundant fans, standard
- Network controller: HPE 1Gb 331i Ethernet adapter 4-ports per controller
- Storage Controller: 1 HPE Smart Array S100i

2. Server Hard Drive

Minimum Specification:

- Hard Drive: 15K/SAS/300GB/ 737298

3. Server Cabinet Cooling Fans

Minimum Specification:

- Performance: 195m³/h
- Noise Level: <48dB
- Height: 38mm
- Width: 120mm
- Depth: 120mm
- Colour: Black
- Certification: UL and CSA

4. PERSONAL COMPUTER - PC

Minimum Specification:

- Processor – Cores: 4, Max Turbo Frequency: 3.90GHz, Base Frequency: 3.10 GHz, Cache: 8mb
- Memory – 16GB
- Chip Set – Q87
- Hard Drive - 500GB
- NVIDIA 2GB Graphics card
- Dual display including 1 × HDMI (minimum)
- Memory slots - 4
- 12 month SIP
- 240 Watt 85% PSU
- Epeat Gold Rating
- Energy Star 6.0
- Greenguard Certified
- RoHS Compliant
- Warranty – 3 Year Next Business day on-site warranty

5. PC Switch

Minimum Specification:

- Computer Connector: Keyboard & Mouse – 4 × USB 2.0
- Computer Connector: Monitor - 4 × DB-15 HDDB
- Console Connectors: Keyboard – 1 × USB female
- Console Connectors: Mouse – 1 × USB female
- Console Connectors: Monitor – 1 × DB-15 HDDB Female VGA, SVGA, XGA, MultiSync
- LEDs: 4-Port Status LEDs
- Monitor Resolution Support: Up to 2048 × 1536
- KVM Cable Length: 1.5mm
- Switching Control: Keyboard Hot Keys & Select Button
- Switching Notification: Audio Beep

6. Monitors

Minimum Specification 14'

- Display Brightness – 200cd/m²
- Display Resolution – 1336 × 768
- Aspect Ratio – 16:9
- Contrast ratio – Mega
- Response time – 5ms

Minimum specification 42'

- Monitor Type: TFT LCD
- Display Size: 42 inch
- Operational Duration: 24hrs
- Native Resolution: 1366 × 768 min
- Response Rate: 16ms
- View Angle: Horizontal & Vertical
- Brightness: 500 cd/ m²
- Contrast Ratio: 2000:1
- Display Inputs – RGB (15pin d-sub), DVI-D (24 pin), Analogue(BNC)
- Multi-screen Capability: Serially Controller. 2×2, 3×3, 4×4

7. Field Device

Minimum Specifications:

- Processor: Cores: 4, Burst Frequency: 2.24 GHz, Base Frequency: 1.44 GHz, Cache: 2mb
- Operating System: Open-source
- Graphics HD Graphics
- Memory: minimum 2GB LPDDR3
- Storage: 32GB eMMC
- Casing: Metal, plastic and PU Leather
- Battery Type: 3-cell (10200 mAh)

8. Programmable Logic Controller(PLC)

Minimum Specification:

The PLC will require to have at least the following ports and requirements:

- Minimum I/O : 16 with capacity to expand
- Voltage : 12 – 24 volts
- Ports : Ethernet, USB, RS323, HMI
- Programmed : International Electrotechnical Commission Standards (IEC 61131-3)
- Memory : Battery-backed up RAM or Non-volatile RAM

9. Human Machine Interface(HMI)

Minimum Specification:

- TFT-LCD, 16 Colours, min size 8", 12 – 24V
- Resolution 640 x 480 or higher
- Expandable Memory
- RS232 and / or USB with Network Capability / Connectivity
- IP 67 or higher

10. Sensor

10.1 Ultrasonic Level

Minimum Specification (Non-Contact Level Sensor):

1. Output Signal: Analog 4 – 20 mA
2. Range: 0 – 4 Meters
3. Power Supply: DC 10- 30Vdc
4. Level resolution: 1mm
5. Accuracy: 0.1m / 2%
6. Blanking distance: 0.3 m

10.2 Pressure

Minimum Specification (Contact Level Sensor):

1. Output Signal: 4 – 20 mA
2. Range: 0 – 5 Meters
3. Power Supply: DC 10- 30V
4. Ingress protection (per IEC 60529): IP 68
5. CE Conformity: EMC directive 2004/108/EC, EN 61326 emission (group1,class B) and immunity

11. Power Supply / Battery Charger Unit

Minimum Specifications:

- AC Voltage: 220
- DC Voltage: +13.8 – 27.6V
- BAT. CHARGE: 13.V
- Efficiency: 71%
- Dimensions: 159 x 97 x 38mm (L × B × H)
- Working Temperature: -10 - +60 C°
- Battery Low: 9.5 – 11V

12. Instrumentation Cable

Minimum specification for signal cable:

- 4 core cable
- Sheeted PVC insulation
- Core size 1mm
- Fixed: -30°C to + 70°C

13. SOLAR REGULATOR

Minimum specification:

1. System Voltage: 12V – 24V
2. Solar module current(Isc): 30A – 30A
3. Max Load Current: 30A – 30A
4. End of charge Voltage: 14.5V – 29V
5. Reconnection Voltage: 13.8V – 26.1V
6. Load Disconnect Voltage: 11.8V – 23.6V
7. Load Reconnect Voltage: 13.2V – 26.4V

14. BATTERIES (RECHARGABLE DEEP CYCLE)

14.1 12V, 7Ah Battery

Minimum Technical Specification (100Amp/hr Battery):

- Cycle use: 14.5 – 14.9 V
- Standby use: 13.6 – 13.8 V
- Initial Current: 30.0 A
- Capacity: 7Ah
- Voltage: 12V

14.2 12V, 40Ah Battery

Minimum Technical Specification (100Amp/hr Battery):

- Cycle use: 14.5 – 14.9 V
- Standby use: 13.6 – 13.8 V
- Initial Current: 30.0 A
- Capacity: 40Ah
- Voltage: 12V

14.3 12V, 100Ah Battery

Minimum Technical Specification (100Amp/hr Battery):

- Cycle use: 14.5 – 14.9 V
- Standby use: 13.6 – 13.8 V
- Initial Current: 30.0 A
- Capacity: 100Ah
- Voltage: 12V

15. IP68 ANTENNA

Minimum Specification:

- Height: 149mm
- Gain: 5dBi (3G UMTS) & 2dBi (1800 MHz, 900 MHz)
- Cable Length: 2 meters
- Operating Frequencies: 900 MHz, 1800 MHz, 2100 MHz
- Connector: FME

16. IP68 3G/LTE High gain Antenna

Minimum Specification:

- Height: Site dependant
- Gain: 8dBi (3G UMTS) & 11dBi (1800 MHz, 900 MHz)
- Cable Length: 10 & 2 meters
- Operating Frequencies: 900 MHz, 1800 MHz, 2100 MHz
- Connector: FME or SMA

ANNEXURE 5: KEY PERFORMANCE INDICATIONS

KEY PERFORMANCE INDICATIONS

(Target percentages may be adjusted as and when deemed necessary. Adjustments will be communicated timeously and measurements will be started immediately)

NO	KPI	KPI Description	Target	# NON-CONF	Results	Good	Improvement Required	Poor	Impact on Service Delivery	Weighted Ratio
1	Arrive on site within twenty-four (24) hours of receipt of purchase order	All MAINTENANCE CALL OUT must be attended to within twenty-four (24) hours	≤3%			≤3%	>3% & <6%	≥6%	Very High	15%
2	Communication	Confirm receipt all EMAIL communication within twenty-four (24) hours and Respond to the EMAIL within forty-eight (48) hours. Confirming ALL telephonic approvals in writing via email within twenty-four (24) hours	≤2%			≤2%	>2% & <4%	≥ 4%	Very High	30%
3	Submission of Quotation Requests	Call outs and Work Quotations must be delivered to the applicable department within one (1) day (24hours) of the request. 10:00am the next working day following a weekend or public holiday. Quotations must be emailed to the Project Manager or his/her representative.	≤6%			≤6%	>6% & < 12%	≥ 12%	Low	10%
4	Invoice Delivery / Email	Invoices and supporting control documents must be sent within 72 hours of the completed work.	≤1%			≤1%	>1% & 3%	≥3%	Low	15%
	Invoice Accuracy	Quality of documentation submitted i.e. Duplicate invoices submitted, Incorrect invoices, missing / incomplected supporting documentation attached to invoices etc.	≤ 1%			≤ 1%	>1% & <3%	≥3%	Low	30%
		Overall Results (Weighted result based on the Impact on Service Delivery) Green: Expectation Met Amber: Intervention Required Red: Poor Performance								

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												

TENDER NO: 23S/2021/22

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					
No.	(8) First name	(8) Surname	(8) ID number	(9) New Beneficiary (Y/N)	Gender (M/F)	Disabled (Y/N)	(10) Job seeker database (Y/N)	Contract start date (DDMMYY)	(11) Contract end date (DDMMYY)	(12) No. days worked this month (excl. training)	(13) Training days	(14) 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									

(14.2) BBBEE SUB-CONTRACT EXPENDITURE REPORT (PRO FORMA)

TENDER NO. AND DESCRIPTION: 23S/2021/22 - TERM TENDER FOR THE REPAIRS & MAINTENANCE OF THE CATCHMENT, STORMWATER & RIVER MANAGEMENT HYDROLOGICAL MONITORING SYSTEM (SCADA, DATABASE, TELEMETRY & EQUIPMENT)

SUPPLIER:

B-BBEE SUB-CONTRACT EXPENDITURE REPORT

Rand Value of the contract (as defined in Schedule 4: Preference Schedule) (**P***)

R

B-BBEE Status Level of Prime Supplier

Name of Sub-contractor (list all)	B-BBEE Status Level of supplier 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 supplier
Sub-contractor A		R	R	R
Sub-contractor B		R	R	R
Sub-contractor C		R	R	R

¹Documentary evidence to be provided

Total:

R

Expressed as a percentage of **P***

%

Signatures

Declared by supplier to be true and correct:

Date:

Verified by CCT Project Manager:

Date:

TENDER NO: 23S/2021/22

(14.3) PARTNERSHIP/ JOINT VENTURE (JV) / CONSORTIUM/ EXPENDITURE REPORT (PRO FORMA)

TENDER NO. AND DESCRIPTION: 23S/2021/22 - TERM TENDER FOR THE REPAIRS & MAINTENANCE OF THE CATCHMENT, STORMWATER & RIVER MANAGEMENT
HYDROLOGICAL MONITORING SYSTEM (SCADA, DATABASE, TELEMETRY & EQUIPMENT)

SUPPLIER: _____

PARTNERSHIP/ JOINT VENTURE (JV)/ CONSORTIUM EXPENDITURE REPORT

Rand value of the contract (as defined in Schedule 4: Preference Schedule) (P*)	R	B-BBEE Status Level of Partnership/ Joint Venture (JV)/ Consortium	
---	---	--	--

Name of partners to the Partnership/ JV / Consortium (list all)	B-BBEE Status Level of each partner at contract award	Percentage contribution of each partner as per the Partnership/ JV/ Consortium Agreement ¹	Total value of partner's contribution (excl. VAT) ¹ B = A% x P*	Value of partner's contribution to date (excl. VAT) ¹ C	Value of partner's contribution as a percentage of the work executed to date D = C/P*x100
A					
Partner A		%	R	R	%
Partner B		%	R	R	%
Partner C		%	R	R	%

¹Documentary evidence to be provided

Signatures

Declared by supplier to be true and correct: _____

Date: _____

Verified by CCT Project Manager: _____

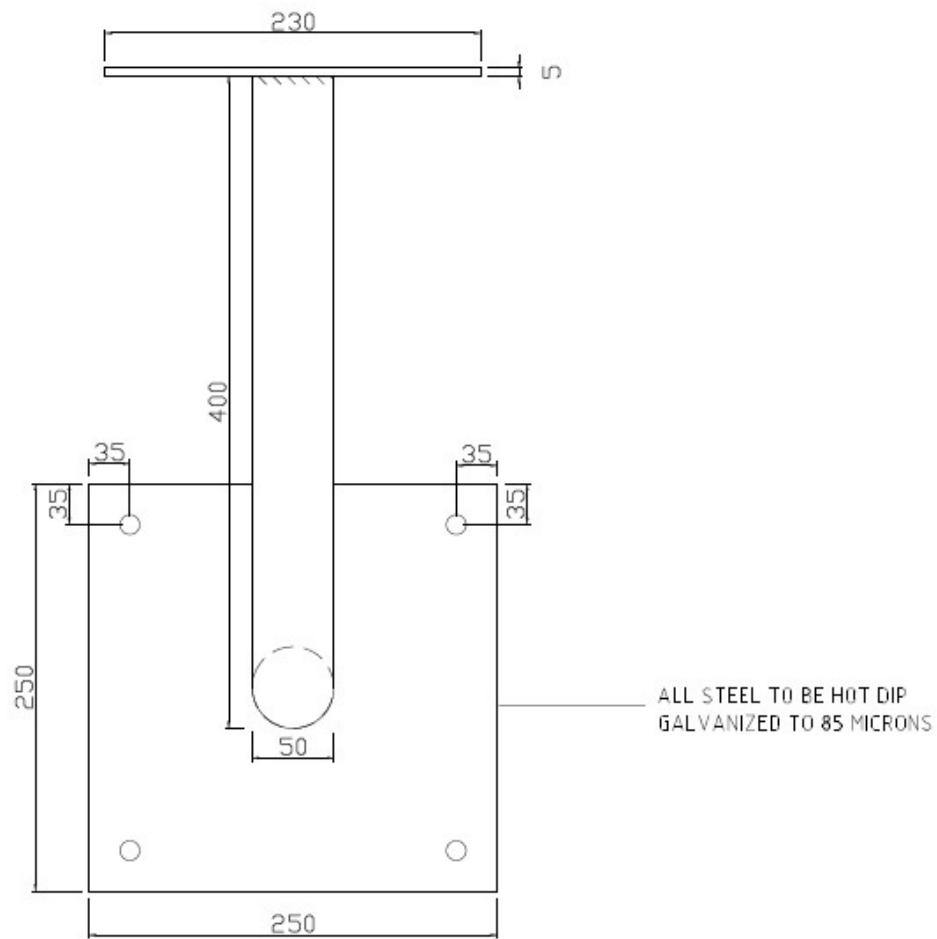
Date: _____

ANNEXURE 7: TYPICAL DRAWINGS

CONTENT:

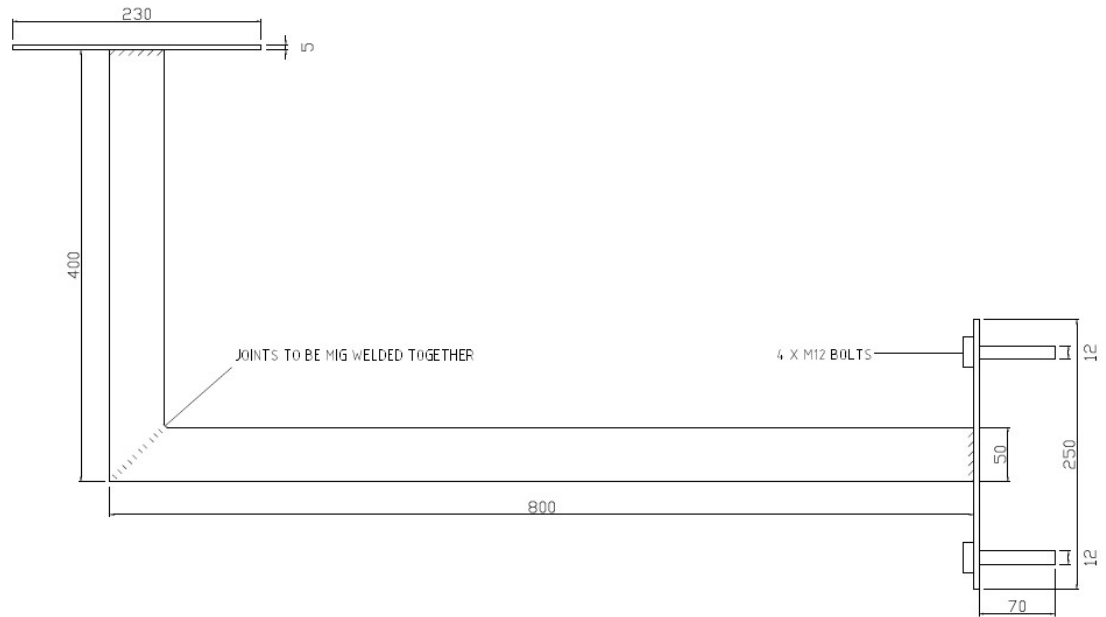
1. Rain Gauge Bracket
2. High Steel Mast & Concrete Base
3. Green Steel Enclosure & Concrete Base

1. Rain Gauge Bracket

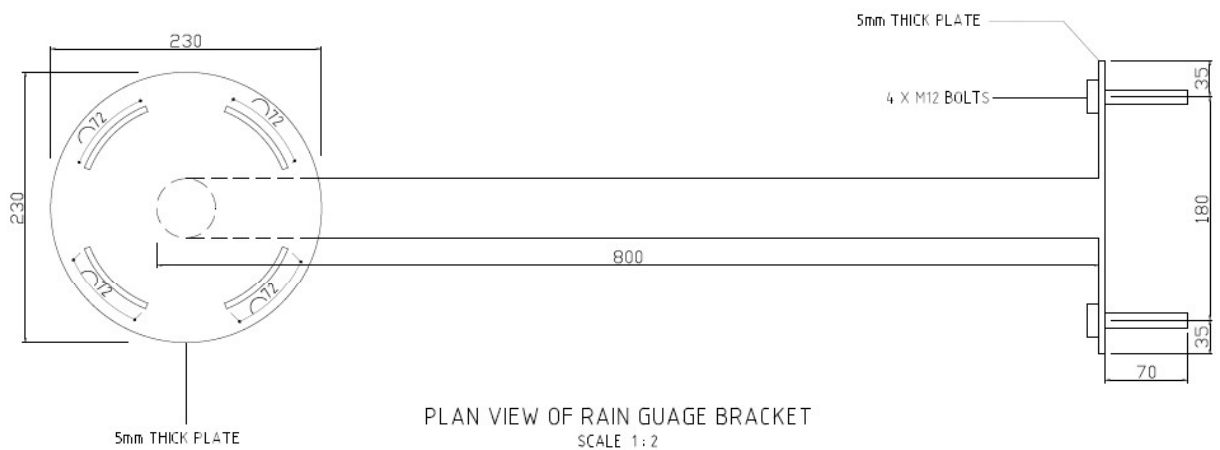


SECTION OF RAIN GUAGE BRACKET
SCALE 1:2

ANNEXURE 7: TYPICAL DRAWINGS (Continued)

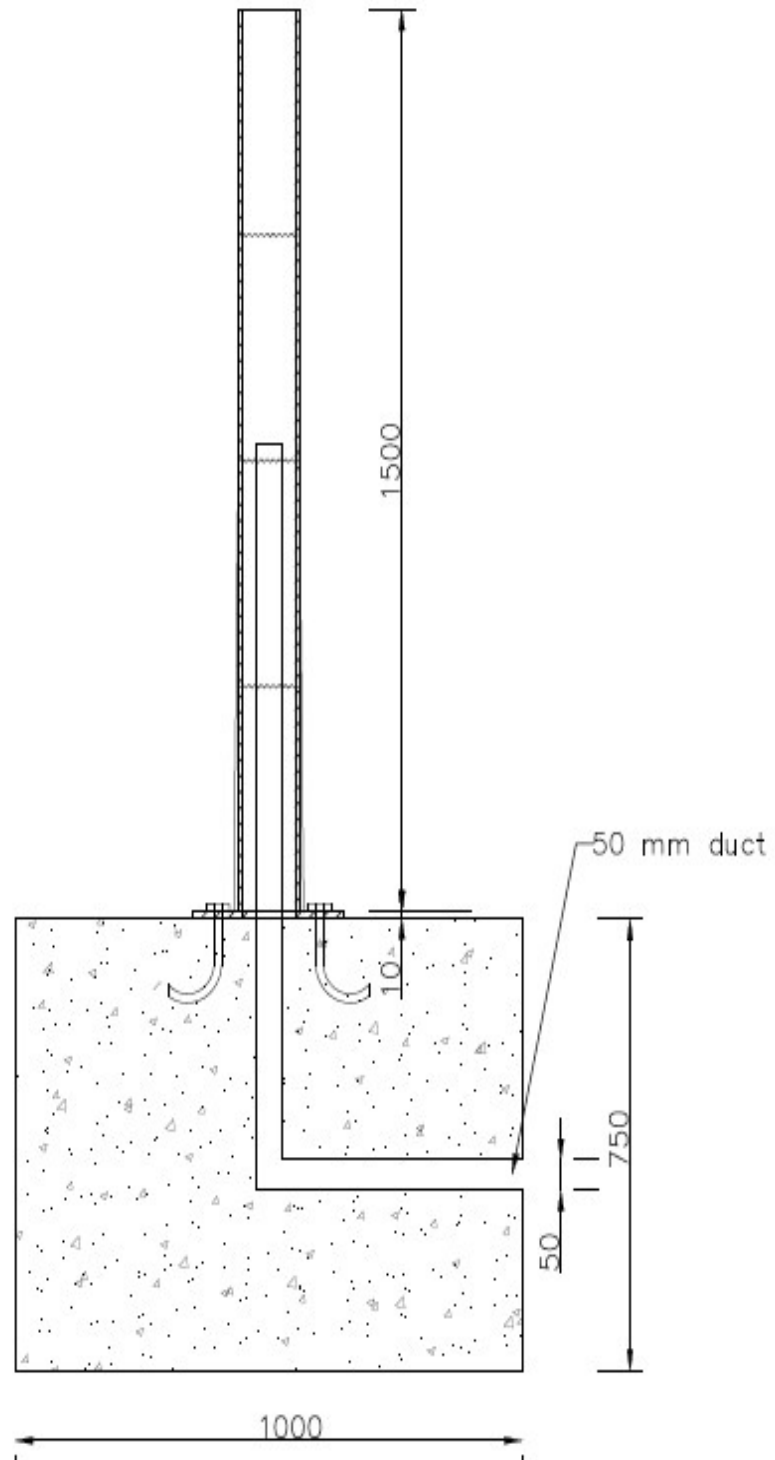


ELEVATION OF RAIN GUAGE BRACKET
SCALE 1:2

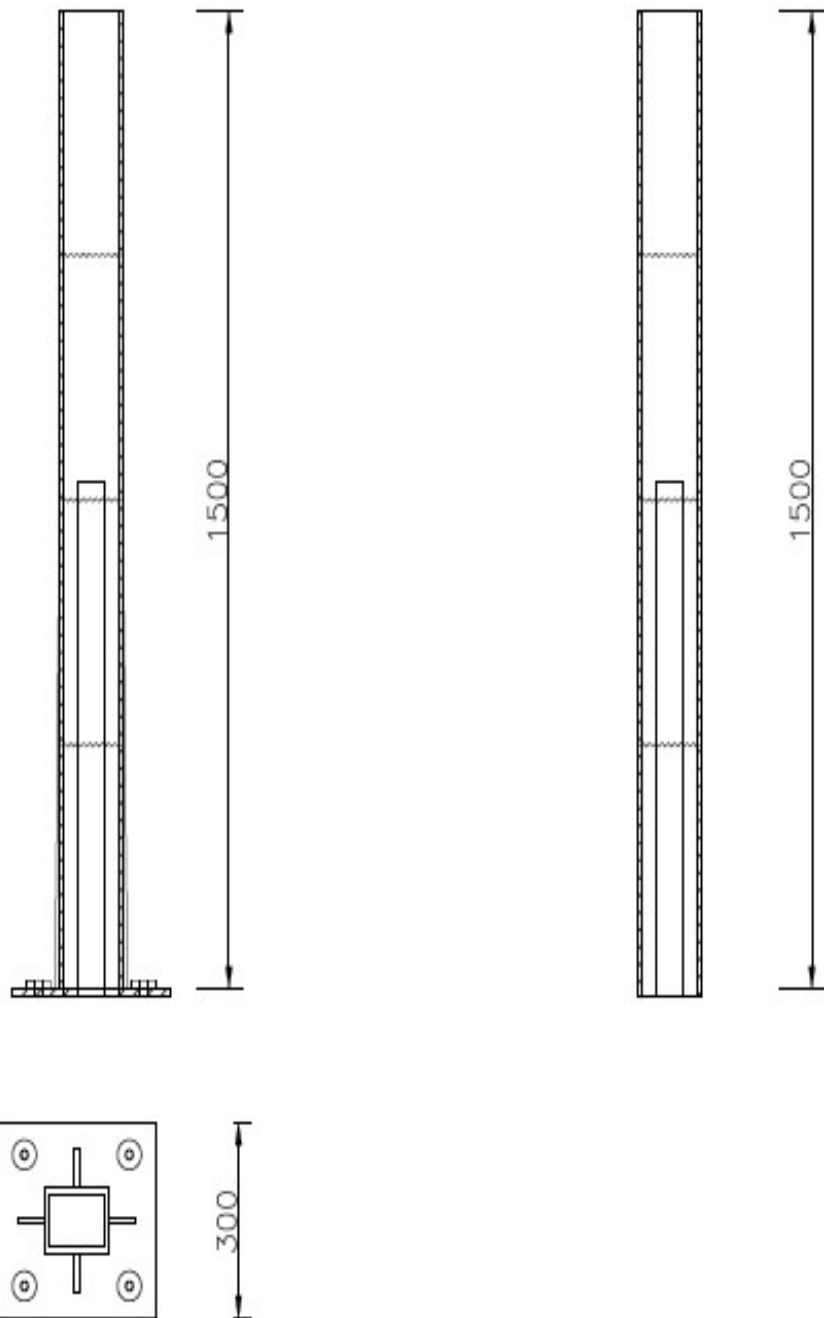


PLAN VIEW OF RAIN GUAGE BRACKET
SCALE 1:2

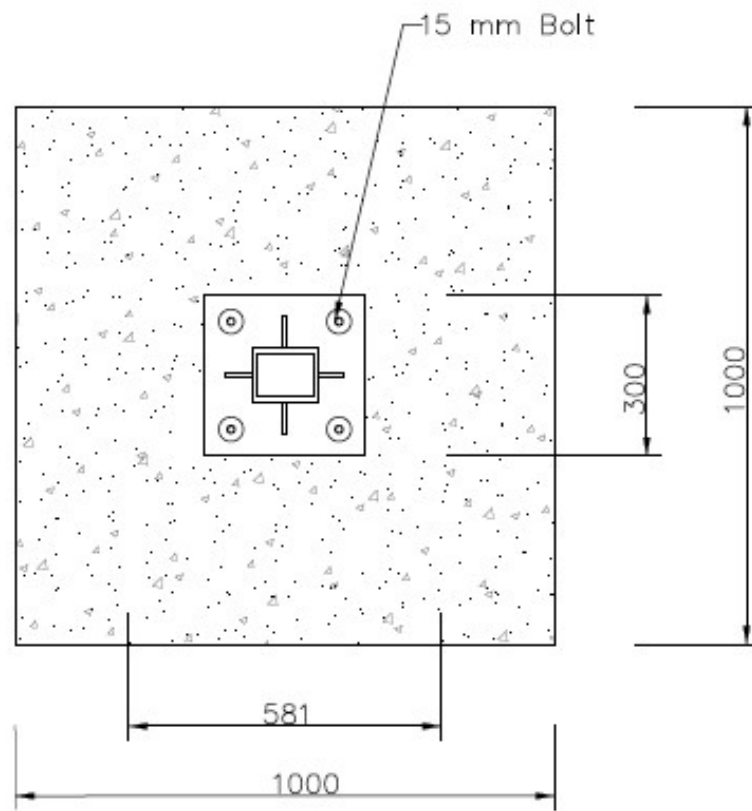
ANNEXURE 7: TYPICAL DRAWINGS (Continued)

2. HIGH STEEL MAST & CONCRETE BASE

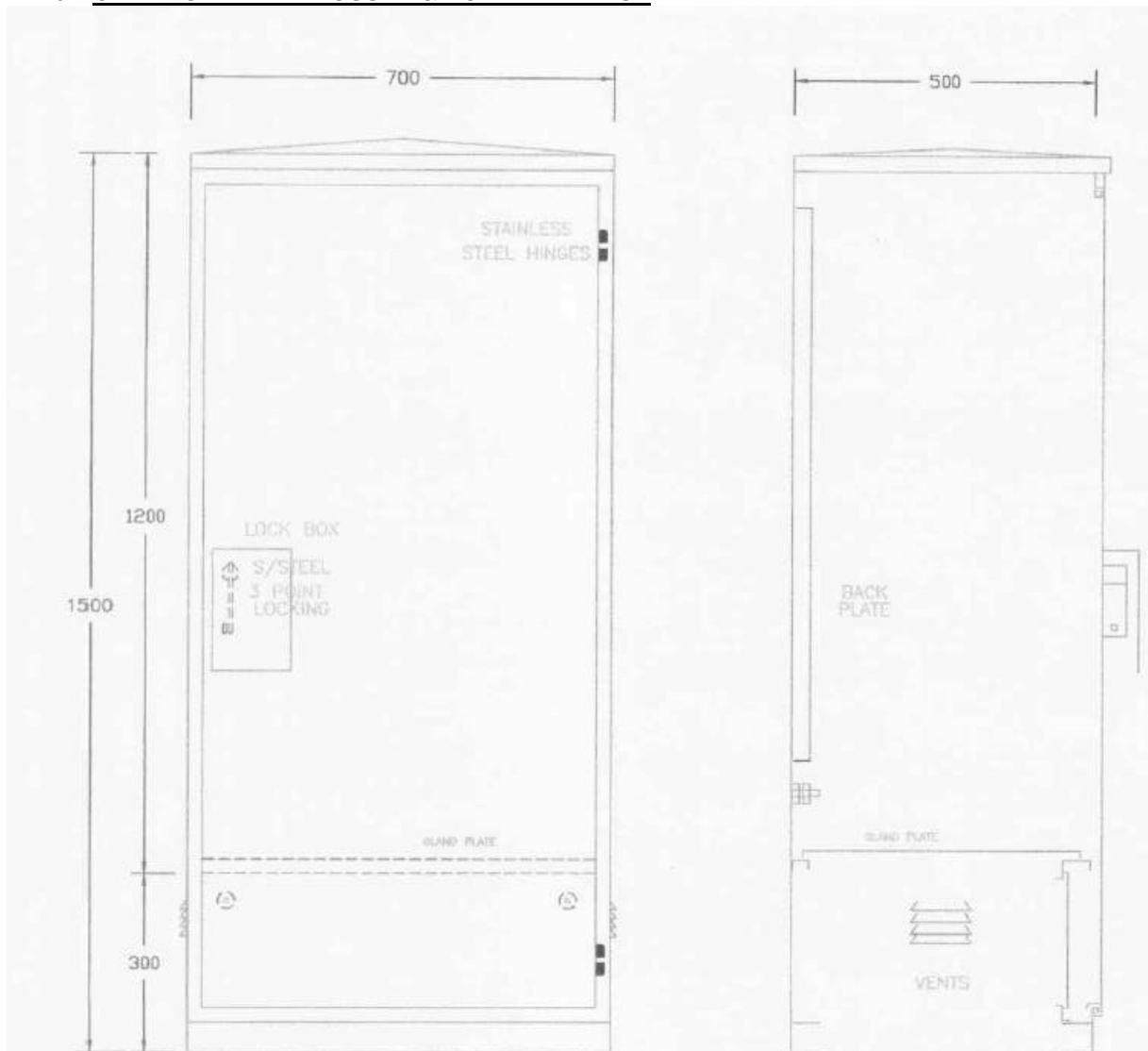
ANNEXURE 7: TYPICAL DRAWINGS (Continued)



ANNEXURE 7: TYPICAL DRAWINGS (Continued)



ANNEXURE 7: TYPICAL DRAWINGS (Continued)

3. GREEN STEEL ENCLOSURE & CONCRETE BASE

- 12mm ϕ J-Bolts
- 150mm above NGL
- 50mm ϕ
- 20 mpa concrete
- 50mm space around the enclosure

