


TENDER DOCUMENT GOODS AND SERVICES		 CITY OF CAPE TOWN ISIXEKO SASEKAPA STAD KAAPSTAD
SUPPLY CHAIN MANAGEMENT		
SCM - 542	Approved by Branch Manager: February 2024	Version: 10

TENDER NO: 025G.2024/25

TENDER DESCRIPTION: SUPPLY, INSTALL, CONNECT & COMMISSION ADVANCED WATER METERING INFRASTRUCTURE IN VARIOUS AREAS ACROSS THE CITY OF CAPE TOWN

CONTRACT PERIOD: 36 MONTHS FROM THE COMMENCEMENT DATE OF THE CONTRACT

CLOSING DATE [30 AUGUST 2024]

CLOSING TIME 10:00 am

TENDER BOX NUMBER [144]

TENDER FEE [R200]

Non – refundable tender fee payable to the City of Cape Town (CCT) for a hard copy of the tender document. This fee is not applicable to website downloads of the tender document.

TENDERER	
NAME of Company/Close Corporation or Partnership / Joint Venture/ Consortium or Sole Proprietor /Individual (hereinafter the "Tenderer")	
TRADING AS (if different from above)	
Registration number of Tenderer	
Physical address and chosen domicilium citandi et executandi of Tenderer	

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

TENDER SERIAL NO.:
SIGNATURES OF CCT OFFICIALS AT TENDER OPENING
1
2
3

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THE TENDER

T.1 GENERAL TENDER INFORMATION

- TENDER ADVERTISED : [19 JULY 2024]
- SITE VISIT/CLARIFICATION MEETING : Time: [10:00 am] on Date: [2 AUGUST 2024]
(Not compulsory, but strongly recommended)
- VENUE FOR SITE VISIT/CLARIFICATION MEETING : Virtual [Skype meeting]
[<https://meet.capetown.gov.za/jaco.debruyn/KJQLYNJS>]
- TENDER BOX & ADDRESS : Tender Box as per front cover at the Tender & Quotation Boxes Office, 2nd Floor (Concourse Level), Civic Centre, 12 Hertzog Boulevard, Cape Town.
- : The Tender Document (which includes the Form of Offer and Acceptance) completed and signed in all respects, plus any additional supporting documents required, must be submitted in a sealed envelope with the name and address of the tenderer, the endorsement "**TENDER NO. 025G.20121/22 - SUPPLY, INSTALL, CONNECT & COMMISSION ADVANCED WATER METERING INFRASTRUCTURE IN VARIOUS AREAS ACROSS THE CITY OF CAPE TOWN**", the tender box number, and the closing date indicated on the envelope. The sealed envelope must be inserted into the appropriate official tender box before closing time.
If the tender offer is too large to fit into the abovementioned box or the box is full, please enquire at the public counter (Tender Distribution Office) for alternative instructions. It remains the tenderer's responsibility to ensure that the tender is placed in either the original box or as alternatively instructed.
- CCT TENDER REPRESENTATIVE : Email: scm.tenders7@capetown.gov.za

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

T.2 CONDITIONS OF TENDER

2.1 General

2.1.1 Actions

2.1.1.1 The City of Cape Town (hereafter referred to as the "CCT") and each tenderer submitting a tender offer (hereinafter referred to as the "tenderer" or the "supplier") shall comply with item T.2 of this Tender Document Goods and Services (hereinafter referred to as these "Conditions of Tender"). The tenderer and the CCT shall collectively hereinafter be referred to as the "Parties" and individually a "Party"). In their dealings with each other, the Parties shall discharge their duties and obligations as set out in these Conditions of Tender, timeously and with integrity, and behave equitably, honestly, and transparently, and shall comply with all legal obligations imposed on the Parties herein and in accordance with all applicable laws.

The Parties agree that this Tender Document Goods and Services (hereinafter referred to as the "Tender" / "Tender Document"), its evaluation and acceptance and any resulting 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 and as amended from time to time. If the CCT adopts a new SCM Policy which contemplates that any clause therein would apply to the Contract emanating from this tender (hereinafter referred to as the "Contract"), such clause shall also be applicable to that Contract. Please refer to this document contained on the CCT's website.

Abuse of the supply chain management system is not permitted and may result, inter alia, (1) in the tender being rejected; (2) cancellation of the contract; (3) restriction of the supplier, and/or (4) the exercise by the CCT of any other remedies available to it as provided for in the SCM Policy and/or the Contract and/or this tender and/or any applicable laws .

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

2.1.1.3 The CCT shall not seek, and a tenderer shall not submit a tender, without having a firm intention and capacity to proceed with the contract.

2.1.2 Interpretation

2.1.2.1 The additional requirements contained in Annexure F to the contract (hereinafter referred to as the "returnable documents" / "Returnable Schedules") are part of these Conditions of Tender and are specifically hereby incorporated into these Conditions of Tender.

2.1.2.2 These Conditions of Tender and returnable Documents which are required for CCT's tender evaluation purposes herein, shall form part of the Contract arising from the CCT's corresponding invitation to tender.

2.1.3 Communication during tender process

Verbal or any other form of communication, from the CCT, its employees, agents or advisors during site visits/clarification meetings or at any other time prior to the award of the Contract, will not be regarded as binding on the CCT, unless communicated by the CCT in writing to suppliers / tenderers by its Director: Supply Chain Management or his nominee. Similarly, any communication of the tenderer / supplier that is not reduced to writing by the tenderer / supplier, its employees, agents, or advisors, shall not be regarded as binding on the CCT, unless communicated to the CCT in writing by the suppliers / tenderers, or their duly authorised representatives.

2.1.4 The CCT's right to accept or reject any tender offer.

2.1.4.1 The CCT may accept or reject any tender offer and may cancel the corresponding tender process or reject all tender offers at any time before the formation of a contract. The CCT may, prior to the award of the tender, cancel a tender if:

- (a) due to changed circumstances, there is no longer a need for the services, works or goods requested; or
- (b) funds are no longer available to cover the total envisaged expenditure; or
- (c) no acceptable tenders are received.
- (d) there is a material irregularity in the tender process; or
- (e) the Parties are unable to negotiate market related pricing.

The CCT shall not accept or incur any liability to a tenderer for such cancellation or rejection but will give written reasons for such action upon receiving a written request to do so.

2.1.5 Procurement procedures

2.1.5.1 General

Unless otherwise stated in the Conditions of Tender, a contract will be concluded with the tenderer who scores the highest number of tender adjudication points.

The CCT intends to appoint a single tenderer for the allocation of work. If insufficient responsive bids are received, the CCT reserves the right not to appoint a tenderer at all.

The contract period shall be for a period of **36** months from the commencement date of the contract.

2.1.5.2 Proposal procedure using the two-stage system

A two-stage system will not be followed.

2.1.5.3 Nomination of Standby Bidder

"Standby Bidder" means a bidder, identified by the CCT at the time of awarding a bid that will be considered for award should the contract be terminated for any reason whatsoever. In the event that a contract is terminated during the execution thereof, the CCT may consider the award of the contract, or non-award, to the Standby Bidder in terms of the procedures included its SCM Policy, as amended from time to time.

2.1.6 Objections, complaints, queries, and disputes/ Appeals in terms of Section 62 of the Systems Act/ Access to court

2.1.6.1 Disputes, objections, complaints, and queries

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

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

2.1.6.2 Appeals

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

- iv. It must state the remedy sought; and
 - v. It must be accompanied with a copy of the notification advising the person of the decision.
- c) The relevant CCT appeal authority must consider the appeal and **may confirm, vary, or revoke** the decision that has been appealed, but no such revocation of a decision may detract from any rights that may have accrued as a result of the decision.

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

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

**2.1.6.4 All requests referring to sub clauses 2.1.6.1 and 2.1.6.2 must be submitted in writing to:
The City Manager - C/o the Manager: Legal Compliance Unit, Legal Services Department, Office of the City Manager**

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

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

Via email at: MSA.Appeals@capetown.gov.za

**2.1.6.5 All requests referring to clause 2.1.6.3 must be submitted in writing to:
The City Manager - C/o the Manager: Access to Information Unit, Legal Service Department, Office of the City Manager**

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

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

Via email at: Access2info.Act@capetown.gov.za

2.1.6.6 The minimum standards regarding accessing and 'processing' of any personal information belonging to another in terms of Protection of Personal Information Act, 2013 (POPIA).

The Employer, its employees, representatives and sub-contractors may, from time to time, Process the Contractor's and/or its employees', representatives' and/or sub-contractors' Personal Information, for purposes of, and/or relating to, the tender, this agreement, for research purposes, and/or as otherwise may be envisaged in the Employer's Privacy Notice and/or in relation to the Employer's Supply Chain Management Policy or as may be otherwise permitted by law. This includes the employer's due diligence assurance provider and the Appeal Authority.

The CCT, its employees, representatives and sub-contractors may, from time to time, Process the tenderer's and/or its employees', representatives' and/or sub-contractors' Personal Information, for purposes of, and/or relating to, the tender, the contract and these Conditions of Tender, for research purposes, and/or as otherwise may be envisaged in the CCT's Privacy Notice and/or in relation to the CCT's Supply Chain Management Policy or as may be otherwise permitted by law. This includes the Processing of the latter Personal Information by the CCT's due diligence assurance provider, professional advisors and the Appeal Authority as applicable. The CCT's justification for the processing of such aforesaid Personal Information is based on section 11(1)(b) of POPIA, i.e., in terms of which the CCT's Processing of the said Personal Information is necessary to carry out actions for the conclusion and/or performance of the contract, to which the applicable data subject (envisaged in this clause 2.1.6.6 above) is a party.

All requests relating to data protection must be submitted in writing to:

The City Manager - C/o the Information Officer, Office of the City Manager

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

Via post at: Private Bag X9181, Cape Town, 8000

Via email at: Popia@capetown.gov.za.

2.1.6.7 Compliance to the CCTs Appeals Policy.

In terms of the CCT's Appeals Policy, a fixed upfront administration fee will be charged. In addition, a surcharge may be imposed for vexatious and frivolous or otherwise manifestly inappropriate tender related appeals.

The current approved administration fee is R300.00 and may be paid at any of the Municipal Offices or at the Civic Centre in Cape Town using the GL Data Capture Receipt attached as Annexure F.13: Appeal Application Form. Alternatively, via EFT into the CCT's NEDBANK Account: CITY OF CAPE TOWN and using Reference number: 198158966. You are required to send proof of payment when lodging your appeal.

The current surcharge for vexatious and frivolous or otherwise manifestly inappropriate tender related appeals will be calculated as $\frac{1}{2}$ (Administrative cost of the tender appeal) + 0.25 % (Appellant's tender price).

Should the payment of the administration fee of R300.00 or the surcharge not be received, such fee or surcharge will be added as a Sundry Tariff to the bidder's municipal account.

In the event where the bidder does not have a Municipal account with the CCT, the fee or surcharge may be recovered in terms of the CCT's Credit Control and Debt Collection By-law, 2006 (as amended) and its Credit Control and Debt Collection Policy.

2.1.7 CCT Supplier Database Registration

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

Tenderers who wish to register on the CCT's Supplier Database may collect registration forms from 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). Registration forms and related information are also available on the CCT's website www.capetown.gov.za (follow the Supply Chain Management link to Supplier registration).

It is each tenderer's responsibility to keep all the information on the CCT Supplier Database updated.

2.1.8 National Treasury Web Based Central Supplier Database (CSD) Registration

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

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

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

2.2 Tenderer's obligations

2.2.1 Eligibility Criteria

2.2.1.1 Tenderers are obligated to submit a tender offer that complies in all aspects to the conditions as detailed in this tender document and the Conditions of Tender. An 'acceptable tender must "COMPLY IN ALL" aspects with the tender, Conditions of Tender, all Specifications (i.e., item C.5.1 below, hereinafter the "Specifications"), pricing instructions herein and the Contract including its conditions.

2.2.1.1.1 Submit a tender offer.

Only those tender submissions from which it can be established, *inter alia* that a clear, irrevocable, and unambiguous offer has been made to CCT, by whom the offer has been made and what the offer constitutes, will be declared responsive.

2.2.1.1.2 Compliance with requirements of CCT SCM Policy and procedures

Only those tenders that are compliant with the requirements below will be declared responsive:

- a) A completed **Details of Tenderer** to be provided (applicable schedule below to be completed);
- b) A completed **Certificate of Authority for Partnerships/ Joint Ventures/ Consortiums** to be provided authorising the tender to be made and the signatory to sign the tender on the partnership /joint venture/consortium's (applicable schedule below to be completed);

- c) A copy of the partnership / joint venture / consortium agreement to be provided, where applicable.
- d) A completed **Declaration of Interest – State Employees** to be provided and which does not indicate any non-compliance with the legal requirements relating to state employees (applicable schedule below to be completed);
- e) A completed **Declaration – Conflict of Interest and Declaration of Bidders’ past Supply Chain Management Practices** to be provided and which does not indicate any conflict or past practises that renders the tender non-responsive based on the conditions contained thereon (applicable schedules below to be completed);
- f) A completed **Certificate of Independent Bid Determination** to be provided and which does not indicate any non-compliance with the requirements of the schedule (applicable schedule below to be completed);
- g) The tenderer (including any of its representatives, directors, or members), has not been restricted in terms of abuse of the Supply Chain Management Policy,
- h) The tenderer’s tax matters with SARS are in order, or the tenderer is a foreign supplier that is not required to be registered for tax compliance with SARS
- i) The tenderer is not an advisor or consultant contracted with the CCT whose prior or current obligations creates any conflict of interest or unfair advantage
- j) The tenderer is not a person, advisor, corporate entity or a director of such corporate entity, who is directly or indirectly involved or associated with the bid specification committee
- k) A completed **Authorisation for the Deduction of Outstanding Amounts Owed to the CCT** to be provided and which does not indicate any details that renders the tender non-responsive based on the conditions contained thereon (applicable schedules below to be completed);
- l) The tenderer (including any of its representatives, directors or members), has not been found guilty of contravening the Competition Act 89 of 1998, as amended from time to time
- m) The tenderer (including any of its representatives, directors, or members), has not been found guilty on any other basis listed in the Supply Chain Management Policy.

2.2.1.1.3 Compulsory clarification meeting

Not Applicable

2.2.1.1.4 Compliance with National Standards

Notwithstanding any other compliance requirements with Standards as specified in the Technical Specifications, for the purposes of eligibility, bidders are to provide the following proof in accordance with the Legal Metrology Act, 2014. Bidders who fail to provide the required documentary evidence will be regarded as non-responsive:

- (i) For meter sizes 15 mm, 20 mm, 25 mm
 - a. NRCS Type Approval Certificate and pattern description – one certificate per type/size in this range
 - b. Certificate of accreditation and Scope of accreditation from SANAS verification accredited Manufacturer/Laboratory
 - c. Designation Certificate to be provided, confirming the NRCS designation of the verification accredited body.
- (ii) For meter sizes 40 mm, 50 mm, 80 mm, 100 mm
 - a. NRCS Letter for sale of unapproved meters – one letter per type/size – pending type approval
 - b. Certificate of accreditation and Scope of accreditation from SANS/ISO 17025 Manufacturer/Laboratory

For the meter sizes below, Bidders are required to provide the specified documentary evidence, or will be regarded as non-responsive:

- (iii) For meter sizes 150 mm, 200 mm, 250 mm

- a. Certificate of accreditation and Scope of accreditation from SANS/ISO 17025 Manufacturer/Laboratory

Tenderers must provide the above in the following annexure locations:

- Schedule F.13 (1) PART E: CERTIFICATION FOR COMPLIANCE WITH COMPULSORY NATIONAL STANDARDS.
- Schedule F.13 (1) PART F: SCHEDULE OF TYPE TESTS COMPLETED.

2.2.1.1.5 Minimum score for functionality

Only those tenders submitted by tenderers who achieve the minimum score for functionality as stated below will be declared responsive.

The description of the functionality criteria and the maximum possible score for each is shown in the table below. The score achieved for functionality will be the sum of the scores achieved, in the evaluation process, for the individual criteria.

Evaluation Criteria	Applicable Points	Weight
Track Record of Tenderer (Past performance/references)	280	72%
Expertise of Key Personnel	110	28%
TOTAL	390	100%

Note: No submission on any scoring item will result in a score of 0 for that specific item.

The minimum qualifying score for functionality is **273** out of a maximum of **390 (70%)**.

Where the entity tendering is a Joint Venture, the tenderer’s tender response must be accompanied by a statement describing exactly what aspects of the work will be undertaken by each party to the joint venture.

Tenderers shall ensure that all relevant information has been submitted with the tender offer in the prescribed format to ensure optimal scoring of functionality points for each Evaluation Criteria. Failure to provide all information **IN THIS TENDER SUBMISSION** could result in the tenderer not being able to achieve the specified minimum scoring.

A more detailed explanation of each of the functionality criteria is given below:

2.2.1.1.5.1 Track Record of Tenderer (Past Performance/References)

The tenderer shall demonstrate expertise, skills, experience and track-record of AMI, metering, and deployment scopes of work for utilities and relevant organizations (metering), for projects that have been completed (either nationally or internationally). Please note that a Project is defined as relevant Tasks/Activities which constitute a contractually bound Works Package as part of a contract’s Phase or Deliverable.

Project(s) – as made clear in each of the eight key sub-sections below – will be evaluated as described in the Track Record Scoring. The same project may be used to satisfy requirements for more than one sub-section of scoring.

Tenderers are expected to consider and apply their understanding to the full set of AMI Requirements as indicated in the Technical Specifications, including but not limited to, Key Items listed below:

- Physical metering requirements
- Communication network requirements
- IT infrastructure requirements
- Interfacing with existing processes requirements
- Meter Data validation requirements
- Head-End System (HES) & Meter Data Management System (MDMS)

- Virtual Private Cloud (VPC) Service
- Cyber Security requirements

Tenderers are to fill in the returnable schedule in Schedule F.13 (1) PART A: TRACK RECORD OF COMPANY. All Substantiating documents described below should be attached to Schedule F.13 (1) PART C: PROJECT CLOSE OUT REPORTS / PERFORMANCE REPORTS / REFERENCE LETTERS / OTHER EVIDENCE TO SUPPORT THE FUNCTIONALITY TABLE FOR COMPANY TRACK RECORD. If space is limited in the returnable schedule, additional information may be included in the supporting documentation. It is the duty of the Tenderer to supply enough relevant information such that the Employer can score the Tenderer accurately and not be considered non-responsive.

Substantiating documents should include any of the following:

- Project close-out reports
- Performance reports
- Reference letters
- Completion Certificates
- Where projects/programmes are large and in-progress, Tasks/Activities which meet the below criteria, and have Interim Completion Certificates of a contractually bound Works Package
- Other evidence to support the Functionality table for company track record.

Although an email and/or letter confirmation from a client will contribute towards demonstrating project completion, it is important that sufficient evidence be provided to confirm the level of deployment performance achieved by the Tenderer on that specific project. The information below should be provided as far as possible, subject to its release being authorised by the project client. The client(s) of these projects may be contacted to confirm the claim that was not substantiated by email and/or letter confirmation.

Information to be provided on the Returnable Schedule must include project name, client name, consulting firm name(s), scope of works with clarity on what part of that the Tenderer completed, value of works and contract period. Tenderers are to provide adequate system performance results which should include meter reading accuracy, operational reliability, percentage of meters converted to AMI and the length of time the AMI system has been operational. In addition, there should be some proof of customer satisfaction, either in a project close-out report, a reference letter, end-user satisfaction survey or by other means.

Only projects that have included a deployment volume/quantity of at least the stipulated amount in the scoring table tiers of magnitude will be scored. If a project-in-progress has surpassed the volume/quantity required through works packages, but the project as a whole was not or is not yet completed due to further deployment of meters required, it will be sufficient towards that requirement.

Completion implies more than just installing devices and meters, it includes for full quality certification, a fully functional communication system, data handling and analysis being tested and proven (i.e. all necessary contributors to a working typical AMI system).

The scoring criteria and maximum score possible for each requirement of the section is shown in the following table. Each criterion will be evaluated in tiers of magnitude as defined for each. Note that larger projects will fall into more than one tier and thus score cumulatively in each of the relevant tiers.

Scoring Criteria		Sub-cat. Score	Max. Score
1. This score is based on the track record of successful AMI <u>supply</u> of Electromagnetic/ Ultrasonic/ Static SMART Water Meters	5 000 - 15 000 Smart Water Meters: <ul style="list-style-type: none"> • 2 points for each project completed (Max. 12 points – 6 Projects) • If a single project exceeds this tier in magnitude, the tenderer will be allocated the maximum points for this tier and the project will also be considered in the following tiers. 	12	40
	15 001 - 25 000 Smart Water Meters: <ul style="list-style-type: none"> • 12 Points (to allow for smaller projects indicated in previous tier) + 4 additional points for each project completed (Max. 4 Projects) 	16	

Scoring Criteria		Sub-cat. Score	Max. Score
	<ul style="list-style-type: none"> If a single project exceeds this tier in magnitude, the tenderer will be allocated the maximum points for this tier and the project will also be considered in the following tiers. 		
	> 25 000 Smart Water Meters: <ul style="list-style-type: none"> 28 Points (to allow for smaller projects indicated in previous tiers) + 6 additional points for each project (Max. 2 Projects) 	12	
2. This score is based on the track record of successful <u>configuration and integration</u> of a HES, as well as operation and maintenance thereof as part of a comprehensive AMI project.	25 000 - 50 000 Smart Meters, (water/electricity/gas) connected through a HES solution: <ul style="list-style-type: none"> 2 points for each project completed (Max. 12 points – 6 Projects) If a single project exceeds this tier in magnitude, the tenderer will be allocated the maximum points for this tier and the project will also be considered in the following tiers. 	12	40
	50 001 - 100 000 Smart Meters (water/electricity/gas) connected through a HES solution: <ul style="list-style-type: none"> 12 Points (to allow for smaller projects indicated in previous tier) + 4 additional points for each project completed (Max. 4 Projects) If a single project exceeds this tier in magnitude, the tenderer will be allocated the maximum points for this tier and the project will also be considered in the following tiers. 	16	
	> 100 000 Smart Meters (water/electricity/gas) connected through a HES solution: <ul style="list-style-type: none"> 28 Points (to allow for smaller projects indicated in previous tiers) + 6 additional points for each project (Max. 2 Projects) 	12	
3. This score is based on the track record of successful <u>configuration, and integration</u> of a MDMS, as well as operation and maintenance thereof as part of a comprehensive AMI project.	25 000 - 50 000 Smart Meters, (water/electricity/gas) connected through a MDMS solution: <ul style="list-style-type: none"> 2 points for each project completed (Max. 12 points – 6 Projects) If a single project exceeds this tier in magnitude, the tenderer will be allocated the maximum points for this tier and the project will also be considered in the following tiers. 	12	40
	50 001 - 100 000 Smart Meters (water/electricity/gas) connected through a MDMS solution: <ul style="list-style-type: none"> 12 Points (to allow for smaller projects indicated in previous tier) + 4 additional points for each project completed (Max. 4 Projects) If a single project exceeds this tier in magnitude, the tenderer will be allocated the maximum points for this tier and the project will also be considered in the following tiers. 	16	
	> 100 000 Smart Meters (water/electricity/gas) connected through a MDMS solution: <ul style="list-style-type: none"> 28 Points (to allow for smaller projects indicated in previous tiers) + 6 additional points for each project (Max. 2 Projects) 	12	
4. This score is based on the track record of successful <u>utilization</u> of a Network Communications service as part of a comprehensive AMI project.	5 000 - 10 000 Smart Meters (water/electricity/gas) connected through specified Communications Service. <ul style="list-style-type: none"> 2 points for each project completed (Max. 12 points – 6 Projects) If a single project exceeds this tier in magnitude, the tenderer will be allocated the 	12	40

Scoring Criteria		Sub-cat. Score	Max. Score
	maximum points for this tier and the project will also be considered in the following tiers.		
	10 001 - 25 000 Smart Meters (water/electricity/gas) connected through specified Communications Service. <ul style="list-style-type: none"> • 12 Points (to allow for smaller projects indicated in previous tier) + 4 additional points for each project completed (Max. 4 Projects) • If a single project exceeds this tier in magnitude, the tenderer will be allocated the maximum points for this tier and the project will also be considered in the following tiers. 	16	
	> 25 000 Smart Meters (water/electricity/gas) connected through specified Communications Service. <ul style="list-style-type: none"> • 28 Points (to allow for smaller projects indicated in previous tiers) + 6 additional points for each project (Max. 2 Projects) 	12	
5. This score is based on the track record of successful Integration of an MDMS into a utilities billing and asset system (SAP™ or similar) , as part of a comprehensive AMI project.	Billing and Asset Systems services for 5 000 - 10 000 Smart Meters (water/electricity/gas) connected through supplier-specified system. <ul style="list-style-type: none"> • 2 points for each project completed (Max. 12 points – 6 Projects) • If a single project exceeds this tier in magnitude, the tenderer will be allocated the maximum points for this tier and the project will also be considered in the following tiers. 	12	40
	Billing and Asset Systems services for 10 001 - 25 000 Smart Meters (water/electricity/gas) connected through supplier-specified system. <ul style="list-style-type: none"> • 12 Points (to allow for smaller projects indicated in previous tier) + 4 additional points for each project completed (Max. 4 Projects) • If a single project exceeds this tier in magnitude, the tenderer will be allocated the maximum points for this tier and the project will also be considered in the following tiers. 	16	
	Billing and Asset Systems services for > 25 000 Smart Meters (water/electricity/gas) connected through supplier-specified system. <ul style="list-style-type: none"> • 28 Points (to allow for smaller projects indicated in previous tiers) + 6 additional points for each project (Max. 2 Projects) 	12	
6. This score is based on the track record of successful system-integrated Virtual Cloud Service deployment and utilization , relating to utility, municipal, or billing systems. Note: Cloud deployment refers to the process of deploying applications, services, or resources on a cloud computing platform. This involves using the infrastructure, platforms, and services provided by cloud	1-6 cloud deployments, including all the experiences as per the technical specification. <ul style="list-style-type: none"> • 2 points for each project completed (Max. 12 points – 6 Projects) • If a single project exceeds this tier in magnitude, the tenderer will be allocated the maximum points for this tier and the project will also be considered in the following tiers. 	12	40
	7-10 cloud deployments, including all the experiences as per the technical specification. <ul style="list-style-type: none"> • 12 Points (to allow for smaller projects indicated in previous tier) + 4 additional points for each project completed (Max. 4 Projects) • If a single project exceeds this tier in magnitude, the tenderer will be allocated the 	16	

Scoring Criteria		Sub-cat. Score	Max. Score
service providers to host and manage these applications and resources.	maximum points for this tier and the project will also be considered in the following tiers.		
	> 10 cloud deployments, including all the experiences as per the technical specification. <ul style="list-style-type: none"> 28 Points (to allow for smaller projects indicated in previous tiers) + 6 additional points for each project (Max. 2 Projects) 	12	
7. This score is based on the track record of successful Water Meter Field Services Contractor experience on Water-based projects, including for Project Management, Delivery, and Installation of new or replacements Meters .	5 000 - 15 000 Water Meters: <ul style="list-style-type: none"> 2 points for each project completed (Max. 12 points – 6 Projects) If a single project exceeds this tier in magnitude, the tenderer will be allocated the maximum points for this tier and the project will also be considered in the following tiers. 	12	40
	15 001 - 25 000 Water Meters: <ul style="list-style-type: none"> 12 Points (to allow for smaller projects indicated in previous tier) + 4 additional points for each project completed (Max. 4 Projects) If a single project exceeds this tier in magnitude, the tenderer will be allocated the maximum points for this tier and the project will also be considered in the following tiers. 	16	
	> 25 000 Water Meters: <ul style="list-style-type: none"> 28 Points (to allow for smaller projects indicated in previous tiers) + 6 additional points for each project (Max. 2 Projects) 	12	
Section Points Sub-Total		280	

2.2.1.1.5.2 Expertise of Key Personnel and Project Organogram

The tenderer shall propose resources with the required expertise, skills, and experience to undertake the technically complex nature of works described for this AMI project in the Technical Specifications. The resources assigned to the key roles of this project are to be suitably qualified and accredited (as applicable).

Tenderers are expected to consider and apply their understanding to the full set of AMI Requirements as indicated in the Technical Specifications, including but not limited to, Key Items listed below:

- Physical metering requirements
- Communication network requirements
- IT infrastructure requirements
- Interfacing with existing processes requirements
- Meter Data validation requirements
- Head-End System (HES) & Meter Data Management System (MDMS)
- Virtual Private Cloud (VPC) Service
- Cyber Security requirements

Tenderers must fill in the returnable schedule in Schedule F.13 (1) PART B: FUNCTIONALITY TABLES FOR KEY PERSONNEL. All Substantiating documents described below should be attached to Schedule F.13 (1) PART D: CVS / QUALIFICATIONS / OTHER EVIDENCE TO SUPPORT THE FUNCTIONALITY TABLE FOR KEY PERSONNEL.

Substantiating documents should include:

- At least one person is required for each key personnel role, on which the scoring below will be based on; only one person per role and only one role per person will be permitted. For each of the key personnel, a CV with Qualification and registration certificates, where applicable, should be

submitted along with a statement which highlights any fields of specialisation and experience that is relevant to AMI projects.

- (ii) Proof of the required project experience, like that called for under Track Record of Tenderer Scoring Criteria above.

If space is limited in the returnable schedule, additional information may be included in the supporting documentation. It is the duty of the Tenderer to supply enough relevant information such that the Employer can score the Tenderer accurately and not be considered non-responsive.

The scoring criteria and maximum score possible for each requirement of the section is shown in the following table:

Programme Manager/ Programme Director			
Evaluation Criteria	Applicable values/points	Sub-cat. Score	Max. Score
<p><i>* For professional accreditation other than SA local, note that a registration with a body who is a member of the International Engineering Alliance with its Standards and processes recognized by the Washington Accord, will also be recognised.</i></p> <p><i>Benchmark Job Description:</i> As per the Technical Specifications.</p>	<p>Minimum NQF Level 7, and:</p> <p>10 000 - 25 000 (water/electricity/gas) Smart Meters:</p> <ul style="list-style-type: none"> • 2 points for each project completed (Max. 12 points – 6 Projects) • If a single project exceeds this tier in magnitude, the tenderer will be allocated the maximum points for this tier and the project will also be considered in the following tiers. 	12	40
	<p>Minimum NQF Level 7, and:</p> <p>25 000 - 50 000 (water/electricity/gas) Smart Meters:</p> <ul style="list-style-type: none"> • 12 Points (to allow for smaller projects indicated in previous tier) + 4 additional points for each project completed (Max. 4 Projects) • If a single project exceeds this tier in magnitude, the tenderer will be allocated the maximum points for this tier and the project will also be considered in the following tiers. 	16	
	<p>Minimum NQF Level 7, and:</p> <p>> 50 000 (water/electricity/gas) Smart Meters:</p> <ul style="list-style-type: none"> • 28 Points (to allow for smaller projects indicated in previous tiers) + 6 additional points for each project (Max. 2 Projects) 	12	
	<p>ECSA (PrTech/PrEng) or SACPCMP (PrCPM) professional registration or similar international equivalent. (10 Points)</p>	10	10
Sub-Section Points Sub-Total:			50

IT Specialist			
Evaluation Criteria	Applicable values/points	Sub-cat. Score	Max. Score
<p><i>Benchmark Job Description:</i> As per the Technical Specifications – Section 8.</p> <p>At least one professional certification such as the following (or equivalent) is required:</p> <ul style="list-style-type: none"> • Cloud equivalent solution architecture certifications • IT network proficient equivalent certifications 	<p>Minimum NQF Level 5, and:</p> <p>5 000 - 15 000 IoT Devices on a Network:</p> <ul style="list-style-type: none"> • 1 point for each project completed (Max. 5 points – 5 Projects) • If a single project exceeds this tier in magnitude, the tenderer will be allocated the maximum points for this tier and the project will also be considered in the following tiers. 	5	25
	<p>Minimum NQF Level 5, and:</p> <p>15 001 - 25 000 IoT Devices on a Network:</p> <ul style="list-style-type: none"> • 5 Points (to allow for smaller projects indicated in previous tier) + 2 additional points for each project completed (Max. 5 Projects) • If a single project exceeds this tier in magnitude, the tenderer will be allocated the maximum points for this tier and the project will also be considered in the following tiers. 	10	
	<p>Minimum NQF Level 5, and:</p> <p>> 25 000 IoT Devices on a Network:</p> <ul style="list-style-type: none"> • 15 Points (to allow for smaller projects indicated in previous tiers) + 5 additional points for each project (Max. 2 Projects) 	10	
	<ul style="list-style-type: none"> • One of the following professional registrations listed (10 Point): Cloud equivalent solution architecture certifications • IT network proficient equivalent certifications 	10	10
Sub-Section Points Sub-Total:			35

Communications Network Engineer			
Evaluation Criteria	Applicable values/points	Sub-cat. Score	Max. Score
<i>Benchmark Job Description:</i> As per the Technical Specifications – Section 8.	Minimum NQF Level 5, and: 5 000 - 15 000 IoT Devices on a Network: <ul style="list-style-type: none"> • 1 point for each project completed (Max. 5 points – 5 Projects) • If a single project exceeds this tier in magnitude, the tenderer will be allocated the maximum points for this tier and the project will also be considered in the following tiers. 	5	25
	Minimum NQF Level 5, and: 15 001 - 25 000 IoT Devices on a Network: <ul style="list-style-type: none"> • 5 Points (to allow for smaller projects indicated in previous tier) + 2 additional points for each project completed (Max. 5 Projects) • If a single project exceeds this tier in magnitude, the tenderer will be allocated the maximum points for this tier and the project will also be considered in the following tiers. 	10	
	Minimum NQF Level 5, and: > 25 000 IoT Devices on a Network: <ul style="list-style-type: none"> • 15 Points (to allow for smaller projects indicated in previous tiers) + 5 additional points for each project (Max. 2 Projects) 	10	
Sub-Section Points Sub-Total:			25
Section Points Sub-Total:			110
Complete Functionality Score - Points Grand Total			390

Please refer to the checklist to ensure that all necessary information is provided - Schedule F.13 (2) TECHNICAL CHECKLIST.

2.2.1.1.6 Provision of samples

The CCT reserves the right to request samples in accordance with the Technical Specifications. Samples are to be provided within 5 days of the request from the CCT.

2.2.2 Cost of tendering

The CCT will not be liable for any costs incurred in the preparation and submission of a tender offer, including the costs of any testing necessary to demonstrate that aspects of the offer comply with requirements.

2.2.3 Check documents

The documents issued by the CCT for the purpose of a tender offer are listed in the index of this tender document.

Before submission of any tender, the tenderer should check the number of pages, and if any are found to be missing or duplicated, or the figures or writing is indistinct, or if the Price Schedule contains any obvious errors, the tenderer must apply to the CCT at once to have the same rectified.

2.2.4 Confidentiality and copyright of documents

The tenderer shall treat as strictly confidential all matters arising in connection with the tender. Use and copy the documents issued by the CCT only for the purpose of preparing and submitting a tender offer in response to the invitation.

2.2.5 Reference documents

The tenderer shall obtain, as necessary for submitting a tender offer, copies of the latest versions of standards, specifications, Conditions of Contract and other publications, which are not attached but which are incorporated into the tender document(s) by reference.

2.2.6 Acknowledge and comply with notices

The tenderer shall acknowledge receipt of notices to the tender documents, which the CCT may issue, and shall fully comply with all instructions issued in the said notices, and if necessary, apply for an extension of the closing time stated on the front page of the tender document, in order to take the notices into account. Notwithstanding any requests for confirmation of receipt of the said notices issued, the tenderer shall be deemed to have received such notices if the CCT can show proof of transmission thereof via electronic mail, facsimile, or registered post or other lawful means.

2.2.7 Clarification meeting

The tenderer shall attend, where required, a clarification meeting at which tenderers may familiarise themselves with aspects of the proposed work, services or supply and pose questions. Details of the meeting(s) are stated in the General Tender Information (i.e., in item T.1 above).

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

2.2.8 Seek clarification

The tenderer shall request clarification of the tender documents, if necessary, by notifying the CCT at least one week before the closing time stated in the General Tender Information (i.e., in item T.1 above), where possible.

2.2.9 Pricing the tender offer

2.2.9.1 The tenderer shall comply with all pricing instructions as stated on the Price Schedule.

2.2.10 Alterations to documents

The tenderer shall not make any alterations or additions to the tender documents, except to comply with instructions issued by the CCT in writing, or necessary to correct errors made by the tenderer. All signatories to the tender offer shall initial all such alterations.

2.2.11 Alternative tender offers

2.2.11.1 Unless otherwise stated in the Conditions of Tender, the tenderers may submit alternative tender offers only if a main tender offer, strictly in accordance with all the requirements of the tender documents, is also submitted.

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

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

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

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

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

In the event that the alternative is accepted, the tenderer warrants that the alternative offer complies in all respects with the CCT's standards and requirements as set out in the tender document.

2.2.11.2 Acceptance of an alternative tender offer by the CCT may be based only on the criteria stated in the Conditions of Tender or applicable criteria otherwise acceptable to the CCT.

2.2.12 Submitting a tender offer

2.2.12.1 The tenderer is required to submit one tender offer only on the original tender documents as issued by the CCT, either as a single tendering entity or as a member in a joint venture to provide the whole of the works, services or supply identified in the Conditions of Contract and described in the Specifications. Only those tenders submitted on the tender documents as issued by the CCT together with all Tender Returnable Documents duly completed and signed will be declared responsive.

2.2.12.2 The tenderer shall return the entire tender document to the CCT after completing it in its entirety, either electronically (if they were issued in electronic format) or by writing legibly in non-erasable ink.

2.2.12.3 The tenderer shall sign the original tender offer where required in terms of the Conditions of Tender. The tender shall be signed by a person duly authorised by the tenderer to do so. Tenders submitted by joint ventures of two or more firms shall be accompanied by the document of formation / founding document of the joint venture or any other document signed by all Parties, in which is defined precisely the conditions under which the joint venture will function, its period of duration, the persons authorised to represent and obligate it, the participation of the several firms forming the joint venture, and any other information necessary to permit a full appraisal of its functioning. Signatories for tenderers proposing to contract as joint ventures shall state which of the signatories is the lead partner.

2.2.12.4 Where a two-envelope system is required in terms of the Conditions of Tender, place and seal the returnable documents listed in the Conditions of Tender in an envelope marked "financial proposal" and place the remaining returnable documents in an envelope marked "technical proposal". Each envelope shall state on the outside the CCT's address and identification details stated in the General Tender Information (i.e., item T.1 above), as well as the tenderer's name and contact address.

2.2.12.5 The tenderer shall seal the original tender offer and copy packages together in an outer package that states on the outside only the CCT's address and identification details as stated in the General Tender Information. . If it is not possible to submit the original tender and the required copies (see 2.2.12.3) in a single envelope, then the tenderer must seal the original and each copy of the tender offer as separate packages marking the packages as "ORIGINAL" and "COPY" in addition to the

above-mentioned tender submission details.

2.2.12.6 The CCT shall not assume any responsibility for the misplacement or premature opening of the tender offer if the outer package is not sealed and marked as stated.

2.2.12.7 Tender offers submitted by facsimile or e-mail will be rejected by the CCT, unless stated otherwise in the Conditions of Tender.

2.2.12.8 By signing the offer part of the Form of Offer (**Section C.2 hereto**) the tenderer warrants and agrees that all information provided in the tender submission is true and correct.

2.2.12.9 Tenderers shall properly deposit its bid in the designated tender box (as detailed on the front page of this tender document) on or before the closing date and before the closing time, in the relevant tender box at the Tender & Quotation Boxes Office situated on the 2nd floor, Concourse Level, Civic Centre, 12 Hertzog Boulevard, Cape Town. If the tender submission is too large to fit in the allocated box, please enquire at the public counter for assistance.

2.2.12.10 The tenderer must record and reference all information submitted contained in other documents for example cover letters, brochures, catalogues, etc. in the Returnable Schedule titled **List of Other Documents Attached by Tenderer**.

2.2.13 Information and data to be completed in all respects

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

2.2.14 Closing time

2.2.14.1 The tenderer shall ensure that the CCT receives the tender offer, together with all applicable documents specified herein, at the address specified in the General Tender Information herein prior to the closing time stated on the front page of the tender document.

2.2.14.2 If the CCT extends the closing time stated on the front page of the tender document for any reason, the requirements of these Conditions of Tender apply equally to the extended deadline.

2.2.14.3 The CCT shall not consider tenders that are received after the closing date and time for such a tender (late tenders).

2.2.15 Tender offer validity and withdrawal of tenders

2.2.15.1 The tenderer shall warrant that the tender offer(s) remains valid, irrevocable, and open for acceptance by the CCT at any time for a period of 120 days after the closing date stated on the front page of the tender document.

2.2.15.2 Notwithstanding the period stated in clause 2.2.15.1 above, bids shall remain valid for acceptance for a period of twelve (12) months after the expiry of the original validity period, unless the CCT is notified in writing of anything to the contrary by the bidder. The validity of bids may be further extended by a period of not more than six months subject to mutual agreement by the parties, administrative processes and upon approval by the City Manager, unless the required extension is as a result of an appeal process or court ruling.

In circumstances where the validity period of a tender has expired, and the tender has not been awarded, the tender process is considered "completed", despite there being no decision (award or cancellation) made. This anomaly does not fall under any of the listed grounds of cancellation and should be treated as a "non-award". A "non-award" is supported as a recommendation to the CCT's Bid Adjudication Committee ("BAC") for noting.

2.2.15.3 A tenderer may request in writing, after the closing date, that its tender offer be withdrawn. Such withdrawal will be permitted or refused at the sole discretion of the CCT after consideration of the reasons for the withdrawal, which shall be fully set out by the tenderer in such written request for withdrawal. Should the tender offer be withdrawn in contravention hereof, the tenderer agrees that:

- a) it shall be liable to the CCT for any additional expense incurred or losses suffered by the CCT in having either to accept another tender or, if new tenders have to be invited, the additional expenses incurred, or losses suffered by the invitation of new tenders and the subsequent acceptance of any other tender;
- b) the CCT shall also have the right to recover such additional expenses or losses by set-off against monies which may be due or become due to the tenderer under this or any other tender or contract or against any guarantee or deposit that may have been furnished by the tenderer or on its behalf for the due fulfilment of this or any other tender or contract. Pending the ascertainment of the amount of such additional expenses or losses, the CCT shall be entitled to retain such monies, guarantee, or deposit as security for any such expenses or loss, without prejudice to the CCT's other rights and/or remedies available to it in accordance with any applicable laws.

2.2.16 Clarification of tender offer, or additional information, after submission

Tenderers shall promptly provide clarification of its tender offer, or additional information, in response to a written request to do so from the CCT during the evaluation of tender offers within the time period stated in such request. No change in the competitive position of tenderers or substance of the tender offer is sought, offered, or permitted.

Note: This clause does not preclude the negotiation of the final terms of the contract with a preferred tenderer following a competitive selection process, should the CCT elect to do so.

Failure, or refusal, to provide such clarification or additional information within the time for submission stated in the CCT's written request may render the tender non-responsive.

2.2.17 Provide other material

2.2.17.1 Tenderer's shall promptly provide, upon request by the CCT, any other material that has a bearing on the tender offer, the tenderer's commercial position (including joint venture agreements), preferencing arrangements, or samples of materials, considered necessary by the CCT for the purpose of the evaluation of the tender. Should the tenderer not provide the material, or a satisfactory reason as to why it cannot be provided, by the time for submission stated in the CCT's request, the CCT may regard the tender offer as non-responsive.

2.2.17.2 The tenderer shall provide, on written request by the CCT, where the transaction value inclusive of VAT **exceeds R 10 million**:

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

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

2.2.17.3 Tenderers shall be required to undertake to fully cooperate with the CCT's external service provider appointed to perform a due diligence review and risk assessment upon receipt of such written instruction from the CCT.

2.2.18 Samples, Inspections, tests, and analysis

Tenderers shall provide access during working hours to premises for inspections, tests and analysis as provided for in the Conditions of Tender or Specifications.

If the Specifications requires the tenderer to provide samples, these shall be provided strictly in accordance with the instructions set out in the Specification.

If such samples are not submitted as required in the bid documents or within any further time stipulated by the CCT in writing, then the bid concerned may be declared non-responsive.

The samples provided by all successful bidders will be retained by the CCT for the duration of any subsequent contract. Bidders are to note that samples are requested for testing purposes therefore samples submitted to the CCT may not in all instances be returned in the same state of supply and in other instances may not be returned at all. Unsuccessful bidders will be advised by the Project Manager or dedicated CCT Official to collect their samples, save in the aforementioned instances where the samples would not be returned.

2.2.19 Certificates

The tenderer must provide the CCT with all certificates as stated below:

2.2.19.1. Preference Points for Specific Goals

In order to qualify for preference points for HDI and/or Specific Goals, it is the responsibility of the tenderer to submit documentary proof (Company registration certification, Central Supplier Database report, BBBEE certificate, Proof of Disability, Financial Statements, commissioned sworn affidavits, etc.) in support of tenderer claims for such preference for that specific goal.

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

2.2.19.2 Evidence of tax compliance

Tenderers shall be registered with the South African Revenue Service (SARS) and their tax affairs must be in order and they must be tax compliant subject to the requirements of clause 2.2.1.1.2.h. In this regard, it is the responsibility of the Tenderer to submit evidence in the form of a valid Tax Compliance Status PIN 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) or included with this tender. The tenderer must record its Tax Compliance Status PIN number on the **Details of Tenderer** pages of the tender submission.

Each party to a Consortium/Joint Venture shall submit a separate Tax Compliance Status Pin.

Before making an award the CCT must verify the bidder's tax compliance status. Where the recommended bidder is not tax compliant, the bidder should be notified of the non-compliant status and be requested to submit to the CCT, within 7 working days, written proof from SARS that they have made arrangement to meet their outstanding tax obligations. The proof of tax compliance submitted by the bidder must be verified by the CCT via CSD or e-Filing. The CCT should reject a bid submitted by the bidder if such bidder fails to provide proof of tax compliance within the timeframe stated herein.

Only foreign suppliers who have answered "NO" to all the questions contained in the Questionnaire to Bidding Foreign Suppliers section on the **Details of Tenderer** pages of the tender submission, are not required to register for a tax compliance status with SARS.

2.2.20 Compliance with Occupational Health and Safety Act, 85 of 1993

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

In this regard the Tenderer shall submit **upon written request to do so by the CCT**, a Health and Safety Plan in sufficient detail to demonstrate the necessary competencies and resources to deliver the goods or

services all in accordance with the Act, Regulations and Health and Safety Specification.

2.2.21 Claims arising from submission of tender.

By responding to the tender herein, the tenderer warrants that it has:

- a) Inspected the Specifications and read and fully understood the Conditions of Contract.
- b) Read and fully understood the whole text of the Specifications and Price Schedule and thoroughly acquainted himself with the nature of the goods or services proposed and generally of all matters which may influence the Contract.
- c) visited the site(s) where delivery of the proposed goods will take place, carefully examined existing conditions, the means of access to the site(s), the conditions under which the delivery is to be made, and acquainted himself with any limitations or restrictions that may be imposed by the Municipal or other Authorities in regard to access and transport of materials, plant and equipment to and from the site(s) and made the necessary provisions for any additional costs involved thereby.
- d) requested the CCT to clarify the actual requirements of anything in the Specifications and Price Schedule, the exact meaning or interpretation of which is not clearly intelligible to the Tenderer.
- e) Received any notices to the tender documents which have been issued in accordance with the CCT's Supply Chain Management Policy.

The CCT will therefore not be liable for the payment of any extra costs or claims arising from the submission of the tender.

2.3 The CCT's undertakings

2.3.1 Respond to requests from the tenderer.

2.3.1.1 Unless otherwise stated in the Conditions of Tender, the CCT shall respond to a request for clarification received up to one week (where possible) before the tender closing time stated on the front page of the tender document.

2.3.1.2 The CCT's duly authorised representative for the purpose of this tender is stated on the General Tender Information page above.

2.3.2 Issue Notices

If necessary, the CCT may issue addenda in writing that may amend or amplify the tender documents to each tenderer during the period from the date the tender documents are available until one week before the tender closing time stated in the Tender Data. The CCT reserves its rights to issue addenda less than one week before the tender closing time in exceptional circumstances. If, as a result a tenderer applies for an extension to the closing time stated on the front page of the tender document, the CCT may grant such extension and, shall then notify all tenderers who drew documents.

Notwithstanding any requests for confirmation of receipt of notices issued, the tenderer shall be deemed to have received such notices if the CCT can show proof of transmission thereof via electronic mail, facsimile or registered post.

2.3.3 Opening of tender submissions

2.3.3.1 Unless the two-envelope system is to be followed, CCT shall open tender submissions in the presence of tenderers' agents who choose to attend at the time and place stated in the Conditions of Tender.

Tenders will be opened immediately after the closing time for receipt of tenders as stated on the front page of the tender document, or as stated in any Notice extending the closing date and at the closing venue as stated in the General Tender Information.

2.3.3.2 Announce at the meeting held immediately after the opening of tender submissions, at the closing venue as stated in the General Tender Information, the name of each tenderer whose tender offer is opened and, where possible, the prices indicated.

2.3.3.3 Make available a record of the details announced at the tender opening meeting on the CCT's website (<http://www.capetown.gov.za/en/SupplyChainManagement/Pages/default.aspx>.)

2.3.4 Two-envelope system

2.3.4.1 Where stated in the Conditions of Tender that a two-envelope system is to be followed, the CCT shall open only the technical proposal of tenders in the presence of tenderers' agents who choose to attend at the time and place stated in the Conditions of Tender and announce the name of each tenderer whose technical proposal is opened.

2.3.4.2 The CCT shall evaluate the quality of the technical proposals offered by tenderers, then advise tenderers who have submitted responsive technical proposals of the time and place when the financial proposals will be opened. The CCT shall open only the financial proposals of tenderers, who have submitted responsive technical proposals in accordance with the requirements as stated in the Conditions of Tender and announce the total price and any preference claimed. Return unopened financial proposals to tenderers whose technical proposals were non-responsive.

2.3.5 Non-Disclosure

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

2.3.6 Grounds for rejection and disqualification

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

2.3.7 Test for responsiveness

2.3.7.1 Appoint a Bid Evaluation Committee and determine after opening whether each tender offer properly received:

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

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

- a) Detrimentially affect the scope, quality, or performance of the goods, services or supply identified in the Specifications,
- b) Significantly change the CCT's or the tenderer's risks and responsibilities under the contract, or
- c) affect the competitive position of other tenderers presenting responsive tenders, if it were to be rectified.

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

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

2.3.8 Arithmetical errors, omissions, and discrepancies

2.3.8.1 Check the responsive tenders for:

- a) The gross misplacement of the decimal point in any unit rate;
- b) Omissions made in completing the Price Schedule; or
- c) Arithmetic errors in:
 - i) line-item totals resulting from the product of a unit rate and a quantity in the Price Schedule; or

- ii) The summation of the prices; or
- iii) Calculation of individual rates.

2.3.8.2 The CCT must correct the arithmetical errors in the following manner:

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

Consider the rejection of a tender offer if the tenderer does not correct or accept the correction of the arithmetical error in the manner described above.

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

The tenderer will then have the option to alter and/or amend the rates and lump sums objected to and such other related amounts as are agreed on by the CCT, but this shall be done without altering the tender offer in accordance with this clause.

Should the tenderer fail to amend his tender in a manner acceptable to and within the time stated by the CCT, the CCT may declare the tender as non-responsive.

2.3.9 Clarification of a tender offer

The CCT may, after the closing date, request additional information or clarification from tenderers, in writing on any matter affecting the evaluation of the tender offer or that could give rise to ambiguity in a contract arising from the tender offer, which written request and related response shall not change or affect their competitive position or the substance of their offer. Such request may only be made in writing by the Director: Supply Chain Management using any means as appropriate.

2.3.10 Evaluation of tender offers

2.3.10.1 General

2.3.10.1.1 The CCT may reduce each responsive tender offer to a comparative price and evaluate them using the tender evaluation methods and associated evaluation criteria and weightings that are specified in the Conditions of Tender.

2.3.10.1.2 For evaluation purposes only, the effects of the relevant contract price adjustment methods will be considered in the determination of comparative prices as follows:

- a) If the selected method is based on bidders supplying rates or percentages for outer years, comparative prices would be determined over the entire contract period based on such rates or percentages.
- b) If the selected method is based on a formula, indices, coefficients, etc. that is the same for all bidders during the contract period, comparative prices would be the prices as tendered for year one.
- c) If the selected method is based on a formula, indices, coefficients, etc. that varies between bidders, comparative prices would be determined over the entire contract period based on published indices relevant during the 12 months prior to the closing date of tenders.
- d) If the selected method includes an imported content requiring rate of exchange variation, comparative prices would be determined based on the exchange rates tendered for the prices as tendered for year one. The rand equivalent of the applicable currency 14 days prior to the

closing date of tender will be used (the CCT will check all quoted rates against those supplied by its own bank).

- e) If the selected method is based on suppliers' price lists, comparative prices would be the prices as tendered for year one.
- f) If the selected method is based on suppliers' price lists and / or rate of exchange, comparative prices would be determined as tendered for year one whilst taking into account the tendered percentage subject to rate of exchange (see sub clause (d) for details on the calculation of the rate of exchange).

2.3.10.1.3 Where the scoring of functionality forms part of a bid process, each member of the Bid Evaluation Committee must individually score functionality. The individual scores must then be interrogated and calibrated if required where there are significant discrepancies. The individual scores must then be added together and averaged to determine the final score.

2.3.10.2 Decimal places

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

2.3.10.3 Scoring of tenders (price and preference)

[2.3.10.3.1 Points for price will be allocated in accordance with the formula set out in this clause based on the price per item / rates as set out in the **Price Schedule (Section C4)**:

- Based on the sum of the prices/rates in relation to a typical project/job.]

2.3.10.3.2 Points for preference will be allocated in accordance with the provisions of **Preference Schedule** and the table in this clause.

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

2.3.10.3.4 Applicable formula:

The 90/10 price/preference points system will be applied to the evaluation of responsive tenders above a Rand value of R50'000'000 (all applicable taxes included), whereby the order(s) will be placed with the tenderer(s) scoring the highest total number of adjudication points.

Price shall be scored as follows:

$$P_s = 90 \times \left(1 - \frac{(P_t - P_{min})}{P_{min}} \right)$$

Where: P_s is the number of points scored for price;
 P_t is the price of the tender under consideration;
 P_{min} is the price of the lowest responsive tender.

Preference points shall be based on the Specific Goal as per below:

Table B2: Awards above R50 mil (VAT Inclusive)

#	Specific goals allocated points	Preference Points (90/10) <i>Above R50 mil</i>	Evidence	Additional Guidance
<i>Persons, or categories of persons, historically disadvantaged- (HDI) by unfair discrimination on the basis of</i>				
1	Gender are women (ownership)* >75% - 100% women ownership: 3 points >50% - 75% women ownership: 2 points >25% - 50% women ownership: 1 point >0% - 25% women ownership: 0.5 point 0% women ownership = 0 points	3	<ul style="list-style-type: none"> • Company Registration Certification • Central Supplier Database report 	<ul style="list-style-type: none"> • Issued by the Companies and Intellectual Property Commission • Report name: CSD Registration report

2	Race are black persons (ownership)* >75% - 100% black ownership: 3 points >50% - 75% black ownership: 2 points >25% - 50% black ownership: 1 point >0% - 25% black ownership: 0.5 point 0% black ownership = 0 points	3	• B-BBEE certificate;	• South African National Accreditation System approved certificate or commissioned sworn affidavit
			• Company Registration Certification	• Issued by the Companies and Intellectual Property Commission
			• Central Supplier Database report	• Report name: CSD Registration report
3	Disability are disabled persons (ownership)* WHO disability guideline >2% ownership: 1 points >0% - 2% ownership: 0.5 point 0% ownership = 0 point	1	• Proof of disability	• Medical certificate/ South African Revenue Services disability registration
			• Company Registration Certification	• Issued by the Companies and Intellectual Property Commission
Reconstruction and Development Programme (RDP) as published in Government Gazette				
4	Promotion of Micro and Small Enterprises <i>Micro with a turnover up to R20million and Small with a turnover up to R80 million as per National Small Enterprise Act, 1996 (Act No.102 of 1996)</i> <i>SME partnership, sub-contracting, joint venture or consortiums</i>	3	• B-BBEE status level of contributor;	• Specifically in line with the respective sector codes which the company operates, • South African National Accreditation System approved certificate or commissioned sworn affidavit
			• South African owned enterprises;	• Certificate of incorporation or commissioned sworn affidavit
			• Financial Statement to determine annual turnover	• Latest financial statements (1 Year)
Total points		10		

*Ownership: main tendering entity

2.3.10.5 Risk Analysis

Notwithstanding compliance with regard to any requirements of the tender, the CCT will perform a risk analysis in respect of the following:

- a) reasonableness of the financial offer
- b) reasonableness of unit rates and prices
- c) the tenderer's ability to fulfil its obligations in terms of the tender document, that is, that the tenderer can demonstrate that he/she possesses the necessary professional and technical qualifications, professional and technical competence, financial resources, equipment and other physical facilities, managerial capability, reliability, capacity, experience, reputation, personnel to perform the contract, etc.; the CCT reserves the right to consider a tenderer's existing contracts with the CCT in this regard
- d) any other matter relating to the submitted bid, the tendering entity, matters of compliance, verification of submitted information and documents, etc.

The conclusions drawn from this risk analysis will be used by the CCT in determining the acceptability of the tender offer.

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

2.3.11 Negotiations with preferred tenderers

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

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

If negotiations fail to result in acceptable contract terms, the City Manager (or his delegated authority) may terminate the negotiations and cancel the tender or invite the next ranked tenderer for negotiations. The original preferred tenderer should be informed of the reasons for termination of the negotiations. If the decision is to invite the next highest ranked tenderer for negotiations, the failed earlier negotiations may not be reopened by the CCT.

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

The provisions of this clause will be equally applicable to any invitation to negotiate with any other tenderers.

In terms of the CCT's SCM Policy, tenders must be cancelled in the event that negotiations fail to achieve a market related price with any of the three highest scoring tenderers.

2.3.12 Acceptance of tender offer

Notwithstanding any other provisions contained in the tender document, the CCT reserves the right to:

2.3.12.1 Accept a tender offer(s) which does not, in the CCT's opinion, materially and/or substantially deviate from the terms, conditions, and specifications of the tender document.

2.3.12.2 Accept the whole tender or part of a tender or any item or part of any item or items from multiple manufacturers, or to accept more than one tender (in the event of a number of items being offered), and the CCT is not obliged to accept the lowest or any tender.

2.3.12.3 Accept the tender offer(s), if in the opinion of the CCT, it does not present any material risk and only if the tenderer(s):

- a) is not under restrictions, has any principals who are under restrictions, or is not currently a supplier to whom notice has been served for abuse of the supply chain management system, preventing participation in the CCT's procurement,
- b) can, as necessary and in relation to the proposed contract, demonstrate that he or she possesses the professional and technical qualifications, professional and technical competence, financial resources, equipment and other physical facilities, managerial capability, reliability, experience and reputation, expertise and the personnel, to perform the contract,
- c) has the legal capacity to enter into the contract,
- d) is not insolvent, in receivership, under Business Rescue as provided for in chapter 6 of the Companies Act, 2008, bankrupt or being wound up, has his affairs administered by a court or a judicial officer, has suspended his business activities, or is subject to legal proceedings in respect of any of the foregoing, complies with the legal requirements, if any, stated in the tender data, and
- e) is able, in the opinion of the CCT, to perform the contract free of conflicts of interest.

If an award cannot be made in terms of anything contained herein, the CCT reserves the right to consider the next ranked tenderer(s).

2.3.12.4 The CCT reserves the right not to make an award, or revoke an award already made, where the implementation of the contract may result in reputational risk or harm to the CCT as a result of (inter alia):

- a) reports of poor governance or unethical behaviour, or both;
- b) association with known notorious individuals and family of notorious individuals;
- c) poor performance issues, known to the CCT;
- d) negative media reports, including negative social media reports;

- e) adverse assurance (e.g. due diligence) report outcomes; and
- f) circumstances where the relevant vendor has employed, or is directed by, anyone who was previously employed in the service of the state (as defined in clause 1.53 of the SCM Policy), where the person is or was negatively implicated in any SCM irregularity.

2.3.12.5 The CCT reserves the right to nominate an Standby bidder at the time when an award is made and in the event that a contract is terminated during the execution thereof, the CCT may consider the award of the contract, or non-award, to the Standby Bidder in terms of the procedures included its SCM Policy.

2.3.13 Prepare contract documents

2.3.13.1 If necessary, revise documents that shall form part of the contract and that were issued by the CCT as part of the tender documents to take account of:

- a) Notices issued during the tender period,
- b) Inclusion of some of the returnable documents, and
- c) Other revisions agreed between the CCT and the successful tenderer.

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


2.3.14 Notice to successful and unsuccessful tenderers

2.3.14.1 Before accepting the tender of the successful tenderer the CCT shall notify the successful tenderer in writing of the decision of the CCT's Bid Adjudication Committee to award the tender to the successful tenderer. No rights shall accrue to the successful tenderer in terms of this notice.

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

2.3.15 Provide written reasons for actions taken.

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

TENDER DOCUMENT GOODS AND SERVICES		 CITY OF CAPE TOWN ISIXEKO SASEKAPA STAD KAAPSTAD
SUPPLY CHAIN MANAGEMENT		
SCM - 542	Approved by Branch Manager: February 2024	Version: 10 Page 29 of 80

TENDER NO: 025G.2024/25 TENDER DESCRIPTION: SUPPLY, INSTALL, CONNECT & COMMISSION ADVANCED WATER METERING INFRASTRUCTURE IN VARIOUS AREAS ACROSS THE CITY OF CAPE TOWN CONTRACT PERIOD: 36 MONTHS FROM THE COMMENCEMENT DATE OF THE CONTRACT

THE CONTRACT

THE CITY OF CAPE TOWN	
A metropolitan municipality, established in terms of the Local Government: Municipal Structures Act, 117 of 1998 read with the Province of the Western Cape: Provincial Gazette 5588 dated 22 September 2000, as amended (“the Purchaser”) herein represented by	
AUTHORISED REPRESENTATIVE	Director: Commercial Services, Water & Sanitation

AND

SUPPLIER	
NAME of Company/Close Corporation or Partnership / Joint Venture/ Consortium or Sole Proprietor /Individual (The “Supplier” / “tenderer”)	
TRADING AS (if different from above)	
REGISTRATION NUMBER	
PHYSICAL ADDRESS / CHOSEN DOMICILIUM CITANI ET EXECTUANDI OF THE SUPPLIER	
AUTHORISED REPRESENTATIVE	
CAPACITY OF AUTHORISED REPRESENTATIVE	

(HEREINAFTER COLLECTIVELY REFERRED TO AS “THE PARTIES” AND INDIVIDUALLY A “PARTY”)

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

C.1 DETAILS OF TENDERER/SUPPLIER

1.1 Type of Entity (Please tick one box)

- Individual / Sole Proprietor
 Close Corporation
 Company
 Partnership or Joint Venture or Consortium
 Trust
 Other:

1.2 Required Details (Please provide applicable details in full):

Name of Company / Close Corporation or Partnership / Joint Venture / Consortium or Individual /Sole Proprietor	
Trading as (if different from above)	
Company / Close Corporation registration number (if applicable)	
Postal address	Postal Code _____
Physical address (Chosen Domicilium Citandi Et Executandi)	Postal Code _____
Contact details of the person duly authorised to represent the tenderer	Name: Mr/Ms _____ (Name & Surname) Telephone :(_____) _____ Fax :(_____) _____ Cellular Telephone: _____ E-mail address: _____
Income tax number	
VAT registration number	
SARS Tax Compliance Status PIN	
CCT Supplier Database Registration Number (See Conditions of Tender)	
National Treasury Central Supplier Database registration number (See Conditions of Tender)	
Is tenderer the accredited representative in South Africa for the Goods / Services / Works offered?	<input type="checkbox"/> Yes <input type="checkbox"/> No If yes, enclose proof
Is tenderer a foreign based supplier for the Goods / Services / Works offered?	<input type="checkbox"/> Yes <input type="checkbox"/> No If yes, answer the Questionnaire to Bidding Foreign Suppliers (below)
Questionnaire to Bidding Foreign Suppliers	a) Is the tenderer a resident of the Republic of South Africa or an entity registered in South Africa? <input type="checkbox"/> Yes <input type="checkbox"/> No
	b) Does the tenderer have a permanent establishment in the Republic of South Africa? <input type="checkbox"/> Yes <input type="checkbox"/> No
	c) Does the tenderer have any source of income in the Republic of South Africa? <input type="checkbox"/> Yes <input type="checkbox"/> No
	d) Is the tenderer liable in the Republic of South Africa for any form of taxation? <input type="checkbox"/> Yes <input type="checkbox"/> No
Other Required registration numbers	

C.2 FORM OF OFFER AND ACCEPTANCE

**TENDER 025G.2024/25: Supply, Install, Connect & Commission
Advanced Water Metering Infrastructure in Various Areas across the
City of Cape Town**

C.2.1 Offer (To Be Completed by the Tenderer as Part of Tender Submission)

The tenderer, identified in the offer signature table below,

HEREBY AGREES THAT by signing the *Form of Offer and Acceptance*, the tenderer:

- 1. confirms that it has examined the documents listed in the Index (including Schedules and Annexures) and has accepted all the Conditions of Tender;
- 2. confirms that it has received and incorporated any and all notices issued to tenderers issued by the CCT;
- 3. confirms that it has satisfied itself as to the correctness and validity of the tender offer; that the price(s) and rate(s) offered cover all the goods and/or services specified in the tender documents; that the price(s) and rate(s) cover all its obligations and accepts that any mistakes regarding price(s), rate(s) and calculations will be at its own risk;
- 4. offers to supply all or any of the goods and/or render all or any of the services described in the tender document to the CCT in accordance with the:
 - 4.1 terms and conditions stipulated in this tender document;
 - 4.2 specifications stipulated in this tender document; and
 - 4.3 at the prices as set out in the **Price Schedule**.
- 5. accepts full responsibility for the proper execution and fulfilment of all obligations and conditions devolving on it in terms of the Contract.

SIGNED AT _____ (PLACE) ON THE _____ (DAY) OF _____ (MONTH AND YEAR)

For and on behalf of the Supplier
(Duly Authorised)
Name and Surname:

Witness 1 Signature
Name and Surname:

Witness 2 Signature
Name and Surname:

INITIALS OF CCT OFFICIALS		
1	2	3

FORM OF OFFER AND ACCEPTANCE (continued)

TENDER 025G.2024/25: Supply, Install, Connect & Commission Advanced Water Metering Infrastructure in Various Areas across the City of Cape Town

C.2.2 Acceptance (To Be Completed by the CCT)

By signing this part of this *Form of Offer and Acceptance*, the CCT accepts the tenderer's (if awarded the Supplier's) offer. In consideration thereof, the CCT shall pay the Supplier the amount due in accordance with the conditions of contract. Acceptance of the Supplier's offer shall form an agreement between the CCT and the Supplier upon the terms and conditions contained in this document.

The terms of the agreement are contained in the Contract (as defined) including drawings and documents or parts thereof, which may be incorporated by reference.

Deviations from and amendments to the documents listed in the tender data and any addenda thereto as listed in the *Tender Returnable Documents* as well as any changes to the terms of the offer agreed by the tenderer and the CCT during this process of offer and acceptance, are contained in the *Schedule of Deviations* attached to and forming part of this *Form of Offer and Acceptance*. No amendments to or deviations from said documents are valid unless contained in the *Schedule of Deviations*.

The Supplier shall within 2 (two) weeks after receiving a complete, copy of the Contract, including the *Schedule of Deviations* (if any), contact the CCT to arrange the delivery of any securities, bonds, guarantees, proof of insurance and any other documents to be provided in terms the *Special Conditions of Contract*. Failure to fulfil any of these obligations in accordance with those terms shall constitute a repudiation / breach of the agreement.

Notwithstanding anything contained herein, this agreement comes into effect on the Commencement Date, being the date upon which the Supplier confirms receipt from the CCT of 1 (one) complete, signed copy of the Contract, including amendments or deviations contained in the *Schedule of Deviations* (if any).

For and on behalf of the City of Cape Town
(Duly Authorised)
Name and Surname:

Witness 1 Signature
Name and Surname:

Witness 2 Signature
Name and Surname:

FORM OF OFFER AND ACCEPTANCE (continued)

**TENDER: 025G.2024/25 Supply, Install, Connect & Commission
Advanced Water Metering Infrastructure in Various Areas across the
City of Cape Town**

C.2.3 Schedule of Deviations (To be Completed by the CCT upon Acceptance)

Notes:

1. The extent of deviations from the tender documents issued by the CCT before the tender closing date, is limited to those permitted in terms of the conditions of tender.
2. A tenderer's covering letter shall not be included in the final Contract document. Should any matter in such letter, which constitutes a deviation as aforesaid, become the subject of agreements reached during the process of offer and acceptance, the outcome of such agreement shall be recorded here.
3. Any other matter arising from the process of offer and acceptance either as a confirmation, clarification or change to the tender documents and which it is agreed by the Parties to become an obligation of the Contract, shall be recorded here.
4. Any change or addition to the tender documents arising from the above agreements and recorded here, shall form part of the Contract.

1 Subject

Details

.....

.....

.....

2 Subject

Details

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3 Subject

Details

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4 Subject

Details

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.....

By the duly authorised representatives signing this agreement, the CCT and the tenderer agree to and accept the foregoing schedule of deviations as the only deviations from and amendments to this tender document and addenda thereto as listed in the *Tender Returnable Documents*, as well as any confirmation, clarification or changes to the terms of the offer agreed by the tenderer and the CCT during this process of offer and acceptance.

It is expressly agreed that no other matter whether in writing, oral communication or implied during the period between the issue of the tender documents and the Commencement Date, shall have any meaning or effect between the Parties arising from the agreement.

FORM OF OFFER AND ACCEPTANCE (continued)

**TENDER 025G.2024/25: Supply, Install, Connect & Commission
Advanced Water Metering Infrastructure in Various Areas across the
City of Cape Town**

C.2.4 Confirmation of Receipt (To be Completed by Supplier upon Acceptance)

The Supplier identified in the offer part of the Contract hereby confirms receipt from the CCT of 1 (one) complete, signed copy of the Contract, including the *Schedule of Deviations* (if any) on:

The..... (Day)
Of..... (Month)
20..... (year)
At..... (Place)

For the Supplier: Signature(s)
Name(s)
Capacity
Signature and name of witness:
Signature Name

C.3 OCCUPATIONAL HEALTH AND SAFETY AGREEMENT

AGREEMENT MADE AND ENTERED INTO BETWEEN THE CCT (HEREINAFTER CALLED THE "CCT") AND

..... ,
(Supplier/Mandatory/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 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 (hereafter "OHSA") and the Regulations promulgated thereunder.

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

COID ACT Registration Number:

OR Compensation Insurer: Policy No.:

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

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

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

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

Signed aton the.....day of.....20....

Witness

Mandatory

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

Witness

for and on behalf of
CCT

C.4 PRICE SCHEDULE

Bid specifications may not make any reference to any particular trademark, 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'

Pricing Instructions:

- 5.1 State the rates and prices in Rand unless instructed otherwise in the Conditions of Tender.
- 5.2 Include in the rates, prices, and the tendered total of the prices (if any) all duties, taxes (except Value Added Tax (VAT)), and other levies payable by the successful tenderer, such duties, taxes and levies being those applicable 14 days before the closing time stated in the General Tender Information.
- 5.3 All prices tendered must include all expenses, disbursements, and costs (e.g. transport, accommodation etc.) that may be required for the execution of the tenderer's obligations in terms of the Contract, and shall cover the cost of all general risks, liabilities and obligations set forth or implied in the Contract as well as overhead charges and profit (in the event that the tender is successful). All prices tendered will be final and binding.
- 5.4 All prices shall be tendered in accordance with the units specified in this schedule.
- 5.5 Where a value is given in the Quantity column, a Rate and Price (the product of the Quantity and Rate) is required to be inserted in the relevant columns.
- 5.6 The successful tenderer is required to perform all tasks listed against each item. The tenderer must therefore tender prices/rates on all items as per the section in the Price Schedule. **An item against which no rate is/are entered, or if anything other than a rate or a nil rate (for example, a zero, a dash or the word "included" or abbreviations thereof) is entered against an item, it will also be regarded as a nil rate having been entered against that item, i.e. that there is no charge for that item. The Tenderer may be requested to clarify nil rates, or items regarded as having nil rates; and the CCT may also perform a risk analysis with regard to the reasonableness of such rates.**
- 5.7 Provide fixed rates and prices for the duration of the contract that are not subject to adjustment except as otherwise provided for in clause 17 of the Conditions of Contract and as amplified in the Special Conditions of Contract.
- 5.8 Descriptions and estimated quantities in the Specifications may not necessarily encompass the full scope of the works. Pricing should however include comprehensive and full regard for technical specifications.
- 5.9 This Pricing Schedule has not been developed in accordance with a standard system of measure and does not conform to standard trade preambles.
- 5.10 Brevity of any description herein shall not absolve the Tenderer to provide a functional installation in accordance with the Technical Specification provided.
- 5.11 Prices and rates inserted in the Pricing Schedule shall be the full inclusive prices for the work described or implied by the Technical Specification and shall cover all costs and expenses that may be required in and for the execution of the supply of the goods and services contemplated.
- 5.12 Prices and rates are inclusive of all compliance with laws and regulations, including but not limited to, those articulated in the Health, Safety, and Environmental Specifications.
- 5.13 Complete Pricing. Tenderers are advised that the intent is to appoint a single Contractor, Supplier, Joint-Venture, or Consortium with the ability to provide a complete solution. For the avoidance of

doubt, the successful Tenderer will have the ability to deliver ALL the works listed in this Package and Pricing Schedule Sections, in accordance with the Technical Specification.

PRICING SCHEDULE

Item	Description	Unit	Rate
1	Universal HES and MDMS		
1.1	<u>HEAD-END SYSTEM (HES)</u>		
	<i>Outright purchase of a HES, which include necessary functionality in accordance with Technical Specifications and installation of the Head-End System, HES to be interoperable with all open communication protocols in accordance with the Subsection 5 of the Technical Specification (Section C.5.1 of this Tender Document).</i>		
1.1.1	Head-End System (HES) Complete	sum	R
1.2	<u>METER DATA MANAGEMENT SYSTEM (MDMS)</u>		
	<i>Rental of MDMS, which include necessary functionality in accordance with the Subsection 5 of the Technical Specification (Section C.5.1 of this Tender Document). and installation of the system enabling the necessary data management and operations. The approximate forecasted meters per month and per year are:</i>		
	<ul style="list-style-type: none"> • First 12 months: Approx. 18000 meters per month • Next 24 Months: Approx. 65000 meters per month • Next 36 Months: Approx. 130 000 meters per month 		
1.2.1	Meter Data Management System (MDMS) SaaS Rental		
	Meter Data Management System (MDMS) SaaS Rental	Per Month	R
1.3	<u>SAP INTEGRATION (MDMS to SAP)</u>		
1.3.1	Flat file Integration into current CCT SAP environment	sum	R
1.4	<u>INTEGRATION (HES to MDMS)</u>		
1.4.1	HES to MDMS Integration	sum	R
1.5	<u>DEVELOPMENT</u>		
	<i>Develop 4 additional meter protocols as per Subsection 3, 5 and 6 of the Technical Specification (Section C.5.1 of this Tender Document).</i>		
1.5.1	Meter Protocols	item	R
1.6	<u>SOFTWARE DEVELOPMENT</u>		
	<i>Software development as per Sub-sections 3.1, 3.8, 5.2, 6.6, 7.2 of the Technical Specifications documents</i>		
1.6.1	Senior Software Developer	hour	R
1.7	<u>MAINTENANCE, OPERATION & SUPPORT OF HES AND MDMS</u>		
1.7.1	<u>MAINTENANCE & SUPPORT OF HES</u>		
1.7.1.1	Ongoing Maintenance HES	Month	R
1.7.1.2	Technical Operational Support of HES & MDMS	Month	R
1.8.	<u>TRAINING ON MDMS</u>		
	<i>Provide a price for training session as a price per session, based on both in person, on-site training and online / web-based training options as per Subsection 3 and 5 of the Technical Specification (Section C.5.1 of this Tender Document).</i>		
1.8.1	User Training (Onsite and Classroom) System Administrator	sum	R
1.8.2	User Training (Web-based)	sum	R
1.9	<u>TRAINING ON HES</u>		
	<i>Provide a price for training session as a price per session, based on both in person, on-site training, and online / web-based training options as per Subsection 3 and 5 of the Technical Specification (Section C.5.1 of this Tender Document).</i>		
1.9.1	User Training (Onsite and Classroom) System Administrator	sum	R

Item	Description	Unit	Rate
1.9.2	User Training (Web-based)	sum	R
1.10	<u>VIRTUAL PRIVATE CLOUD (VPC) SETUP</u>		
	<i>Provide the provisional setup costs for hardware, software licensing, initial configuration and customization, network setup and security implementation, initial security setup (firewalls, encryption, access controls), project management and technical consulting, and cyber security training for City of Cape Town staff.</i>		
1.10.1	Virtual Private Cloud (VPC) Setup	sum	R
1.11	<u>ONGOING CLOUD MANAGEMENT</u>		
	<i>Provide a Monthly price for the ongoing management and cloud hosting costs, data storage costs, data transfer/bandwidth costs, system monitoring and performance optimization, regular software updates and patch management.</i>		
1.11.1	Ongoing Cloud Management	Month	R
1.12	<u>ONGOING CYBERSECURITY MANAGEMENT</u>		
	<i>Provide a Monthly price for ongoing cybersecurity services which include, monitoring and threat detection, regular security audits and compliance checks.</i>		
1.12.1	Ongoing Cybersecurity Management	Month	R
1.13	<u>CLOUD TECHNICAL SUPPORT AND MAINTENANCE</u>		
	<i>Provide a Monthly price for dedicated technical support (24/7 availability), routine system maintenance, emergency incident response and recovery services.</i>		
1.13.1	Cloud Technical Support and Maintenance	Month	R
1.14	<u>PERFORMANCE AND SCALABILITY</u>		
	<i>Provide a Monthly price for performance optimization services and data backup services listed below:</i>		
	<i>Compute:</i>		
	<i>- Virtual Machines (VMs): Per instance hour.</i>		
	<i>- Container Instances: Per instance hour</i>		
	<i>- Serverless Compute: Per gigabyte-second of memory used.</i>		
	<i>Storage:</i>		
	<i>- Object Storage: Per gigabyte stored per month.</i>		
	<i>- Block Storage: Per gigabyte per month.</i>		
	<i>- File Storage: Per gigabyte per month.</i>		
	<i>- Backup and Disaster Recovery: Per gigabyte per month.</i>		
	<i>Networking:</i>		
	<i>- Data Transfer: Per gigabyte transferred in/out.</i>		
	<i>- Load Balancers: Per hour or per month plus additional costs per gigabyte processed.</i>		
	<i>- Content Delivery Network (CDN): Per gigabyte served.</i>		
	<i>Databases:</i>		
	<i>- Managed Database Services: Per database instance hour plus storage per gigabyte per month.</i>		
	<i>- In-memory Databases: Per database instance hour plus per gigabyte of memory per hour.</i>		
	<i>Security and Identity Services:</i>		
	<i>- Firewall Services: Per firewall instance per hour or month.</i>		
	<i>- Encryption Services: Key management per 10,000 operations.</i>		
1.14.1	Performance and Scalability	Month	R

Item	Description	Unit	Rate
2	Communications, Data Collection & Remote Meter Reading		
2.1	<u>DATA ACQUISITION AND OPERATIONS</u>		
	<p><i>Refer to Section 3.3: Pricing of the Technical Specifications Document</i></p> <p><i>Cumulative Monthly Meter Read Quantities / 12 = Qty of Meters Reads-per-Month</i></p> <ul style="list-style-type: none"> • <i>First 12 Months: Approx. 18000 meters per month</i> • <i>Next 24 Months: Approx. 65000 meters per month</i> • <i>Next 36 Months: Approx. 130 000 meters per month</i> 		
	<u>METER READING DAILY, AT HOURLY INTERVALS</u>		
2.1.1	Meter Reads per Month	Per Meter Per Month	R

Item	Description	Unit	Rate
3	Meter Replacement		
	<p>General Note: Pricing of this section should include everything necessary for the due completion of the item as listed in the schedule. This includes but is not limited to the supply, installation and commission of material, associated materials to enable such installation, labour, plant, equipment, and profit. Pricing should be inclusive of the necessary allowances and provisions for any associated costs of preliminary and general items as well as any costs pertaining to compliance with laws, provisions of guarantees, warranties, and insurances.</p>		
3.1	<u>REPLACEMENT OF WATER METERS 15 mm, 20 mm and 25 mm</u>		
3.1.1	<i>BASIC REPLACEMENT OF SMART METER, INCL. METER BOX, FITTINGS AND ANTI-TAMPER MECHANISM (15mm, 20 mm and 25 mm)</i>		
	<p><i>Basic Meter replacement refers to the process of replacing an existing water meter and meter box with a new meter and meter box while maintaining the existing infrastructure. This typically occurs when the current meter becomes outdated, damaged, or requires upgrading. This meter replacement activity should ensure compatibility, accurate measurement of water usage, and quality surface reinstatement. The primary focus is on swapping the meter and meter box, while the existing connections and infrastructure remain unchanged.</i></p>		
	<p><i>With a nominal bore between 15mm, 20 mm and 25 mm and installation on existing connections. Fully inclusive of removal of existing meter and meter box, supply of new meter and meter box, installation and surface reinstatement, and commissioning of Smart Static Meter</i></p>		
	<p><i>(Solid-State) Meters: Advanced meters leveraging ultrasonic waves or electromagnetic fields, ensuring accurate and real-time water usage measurements., Fittings and Anti-Tamper Mechanism.</i></p>		
	<p><i>This level of replacement typically includes basic restoration activities, such as the removal and reinstatement of grass and lawns. It is generally applicable when there are no complex surfaces or extensive positional or condition modifications required.</i></p>		
	<p><i>High-quality fittings such as couplings, connectors, seals, and other components required to securely connect the meter must be provided for secure and leak-free connections. Pricing to include for everything necessary including removal, supply and installation as well as incorporation of an anti-tamper mechanism as an additional security measure to prevent unauthorized access.</i></p>		
	<p><i>Removal of the existing meter and meter box to include the "Bagging-and-tagging" and all relevant final readings. Price further includes delivery of the removed meter and meter box to the CCT Facilities.</i></p>		
	<p><i>Discarding and recycling of meter boxes need to be allowed for and in accordance with prevailing Environmental Considerations and with the Subsection 7 of the Technical Specification (Section C.5.1 of this Tender Document). Proof of disposal to be provided.</i></p>		

Item	Description	Unit	Rate
3.1.1.1	Smart Static (Solid-State) Meters: Advanced Water Meter incl. Fittings 15 mm	No.	R
3.1.1.2	Smart Static (Solid-State) Meters: Advanced Water Meter incl. Fittings 20 mm	No.	R
3.1.1.3	Smart Static (Solid-State) Meters: Advanced Water Meter incl. Fittings 25 mm	No.	R
3.1.2	REMOTE FLOW RESTRICTOR		
	<i>This is provided extra-over and separate to the meter to ensure the longevity of the battery life of the meter.</i>		
	<i>Supplied with its own communication interface and battery backup. High-quality fittings such as couplings, connectors, seals, and other components must be provided to securely connect the meter must be provided for secure and leak-free connections.</i>		
3.1.2.1	Smart Remote Flow Restrictor and Shut Off Valve: 15 mm	No.	R
3.1.2.2	Smart Remote Flow Restrictor and Shut Off Valve: 20 mm	No.	R
3.1.2.3	Smart Remote Flow Restrictor and Shut Off Valve: 25 mm	No.	R
3.1.3	EXTRA-OVER FOR MODERATE METER REPLACEMENT		
	<i>Extra Over for Moderate meter replacement involves a slightly more involved process than the basic level. In addition to the removal and installation of the meter and new meter box, moderate replacement may require the removal and reinstatement of surfaces such as clay paving, interlocking block paving, cement paving, cement slabs, concrete, or gravel asphalt OR include the relocation of the meter from within the customer's property to outside the property boundaries. More than 2 meters from current position but less than 5 meters from current position.</i>		
	<i>Discarding and recycling of meter boxes needs to be allowed for and in accordance with prevailing Environmental Considerations. Proof of disposal to be provided.</i>		
3.1.3.1	Installation 15 mm – moderate	No.	R
3.1.3.2	Installation 20 mm – moderate	No.	R
3.1.3.3	Installation 25 mm – moderate	No.	R
	<i>Complex meter replacement represents the highest level of complexity and involves various intricate tasks. It includes all the activities of moderate replacement, such as the relocation of the meter and removal and reinstatement of surfaces like clay paving, interlocking block paving, cement paving, cement slabs, concrete, or gravel asphalt AND OR include the relocation of the meter from within the customer's property to outside the property boundaries.</i>		
	<i>More than 5 meters from current position but less than 12</i>		
	<i>Discarding and recycling of meter boxes need to be allowed for and in accordance with prevailing Environmental Considerations. Proof of disposal to be provided.</i>		
3.1.4.1	Installation 15 mm – complex	No.	R
3.1.4.2	Installation 20 mm – complex	No.	R
3.1.4.3	Installation 25 mm – complex	No.	R
3.2	REPLACEMENT OF WATER METERS: <u>40 mm, 50 mm, 80 mm, 100 mm, 150 mm, 200 mm and 250 mm</u>		
3.2.1	<i>Smart meter, fittings, and anti-tamper mechanism: 40 mm, 50 mm, 80 mm, 100 mm, 150 mm, 200 mm and 250 mm</i>		
	<i>With a nominal bore of 40 mm, 50 mm, 80 mm, 100 mm, 150 mm, 200 mm and 250 mm and installation on existing connections: An adjustment of piping to accommodate varying meter sizes, exceeding 1mm and not exceeding 250mm, should be allowed for in the works. Fully inclusive of supply, installation and commissioning of Smart Water Meter, Fittings and anti-tamper mechanism.</i>		

Item	Description	Unit	Rate
	<i>Meter replacement refers to the process of replacing an existing water meter with a new one, while making minor adjustments to existing infrastructure and connections. This excludes any other valves, strainers, spool pieces, couplings etc., as well as adjustments to the existing meter chamber (measured elsewhere). Meter replacement involves removing the old meter and installing a new meter in its place, ensuring compatibility and accurate measurement of water usage. The primary focus is on the swapping the meter itself.</i>		
	<i>High-quality fittings such as couplings, connectors, seals, and other components required to securely connect the meter must be provided for secure and leak-free connections, while the anti-tamper mechanism acts as an additional security measure to prevent unauthorized access.</i>		
3.2.1.1	Smart Static (Solid-State) Meters: Advanced Water Meter incl. Fittings 40 mm	No.	R
3.2.1.2	Smart Static (Solid-State) Meters: Advanced Water Meter incl. Fittings 50 mm	No.	R
3.2.1.3	Smart Static (Solid-State) Meters: Advanced Water Meter incl. Fittings 80 mm	No.	R
3.2.1.4	Smart Static (Solid-State) Meters: Advanced Water Meter incl. Fittings 100 mm	No.	R
3.2.1.5	Smart Static (Solid-State) Meters: Advanced Water Meter incl. Fittings 150 mm	No.	R
3.2.1.6	Smart Static (Solid-State) Meters: Advanced Water Meter incl. Fittings 200 mm	No.	R
3.2.1.7	Smart Static (Solid-State) Meters: Advanced Water Meter incl. Fittings 250 mm	No.	R
3.3	EXTRA-OVER FOR REPLACEMENT OF WATER METERING ACCESSORIES & PARTS: 40 mm, 50 mm, 80 mm, 100 mm, 150 mm, 200 mm and 250 mm		
	<i>Extra-Over for Spool Pieces, In-Line Strainers, Y-Strainers, Flanged Swing Check Valves, Flanged Wafer Type Check Valves, Ranger Couplings, Flanged RSV Gate Valves, Meter Interface Units (MIU) and/or Signal-Boosting Devices: 40 mm, 50 mm, 80 mm, 100 mm, 150 mm, 200 mm and 250 mm</i>		
	<i>With a nominal bore of 40 mm, 50 mm, 80 mm, 100 mm, 150 mm, 200 mm and 250 mm and installation/alteration/improvement on existing connections. Fully inclusive of supply and installation to full specification.</i>		
	<i>Accessories & Parts replacement refers to the process of replacing existing accessories and parts with new ones. The existing infrastructure and connections, as well as the existing meter chamber, largely remains unchanged. This typically occurs when the current accessories and parts are outdated, damaged, or require upgrading. Accessories & Parts replacement involves removing the old Accessories & Parts and installing new Accessories & Parts in its place, ensuring compatibility and accurate performance to full specification.</i>		
3.3.1	AMI METER INTERFACE UNIT & SIGNAL BOOSTING DEVICES (External communication modules or transmitters or repeaters or relevant signal boosters)		
	<i>For specific metering scenarios (which will be in very rare cases and estimated to be less than 0.5% of the 130 000 meters) for meters sized 40mm and larger, that are not replaced or those situated in underground chambers that have signal issues.</i>		
3.3.1.1	AMI meter interface unit &/or signal-boosting devices: 40 mm	No.	R
3.3.1.2	AMI meter interface unit &/or signal-boosting devices: 50 mm	No.	R
3.3.1.3	AMI meter interface unit &/or signal-boosting devices: 80 mm	No.	R
3.3.1.4	AMI meter interface unit &/or signal-boosting devices: 100 mm	No.	R
3.3.1.6	AMI meter interface unit &/or signal-boosting devices: 150 mm	No.	R
3.3.1.7	AMI meter interface unit &/or signal-boosting devices: 200 mm	No.	R
3.3.1.8	AMI meter interface unit &/or signal-boosting devices: 250 mm	No.	R
3.3.2	SPOOL PIECES		
3.3.2.1	40mm diameter spool piece	No.	R
3.3.2.2	50mm diameter spool piece	No.	R
3.3.2.3	80mm diameter spool piece	No.	R
3.3.2.4	100mm diameter spool piece	No.	R
3.3.2.5	150mm diameter spool piece	No.	R
3.3.2.6	200mm diameter spool piece	No.	R
3.3.2.7	250mm diameter spool piece	No.	R
3.3.3	IN-LINE STRAINERS		

Item	Description	Unit	Rate
3.3.3.1	40mm diameter in-line strainer	No.	R
3.3.3.2	50mm diameter in-line strainer	No.	R
3.3.3.3	80mm diameter in-line strainer	No.	R
3.3.3.4	100mm diameter in-line strainer	No.	R
3.3.3.5	150mm diameter in-line strainer	No.	R
3.3.3.6	200mm diameter in-line strainer	No.	R
3.3.3.7	250mm diameter in-line strainer	No.	R
3.3.4	<i>Y-STRAINERS</i>		
3.3.4.1	40mm diameter y-strainer	No.	R
3.3.4.2	50mm diameter y-strainer	No.	R
3.3.4.3	80mm diameter y-strainer	No.	R
3.3.4.4	100mm diameter y-strainer	No.	R
3.3.4.5	150mm diameter y-strainer	No.	R
3.3.4.6	200mm diameter y-strainer	No.	R
3.3.4.7	250mm diameter y-strainer	No.	R
3.3.5	<i>FLANGED SWING CHECK VALVES</i>		
3.3.5.1	40mm diameter flanged swing check valves, PN 16	No.	R
3.3.5.2	50mm diameter flanged swing check valves, PN 16	No.	R
3.3.5.3	80mm diameter flanged swing check valves, PN 16	No.	R
3.3.5.4	100mm diameter flanged swing check valves, PN 16	No.	R
3.3.5.5	150mm diameter flanged swing check valves, PN 16	No.	R
3.3.5.6	200mm diameter flanged swing check valves, PN 16	No.	R
3.3.5.7	250mm diameter flanged swing check valves, PN 16	No.	R
3.3.6	<i>FLANGED WAFER TYPE CHECK VALVES</i>		
3.3.6.1	40mm diameter wafer type check valves, PN 16	No.	R
3.3.6.2	50mm diameter wafer type check valves, PN 16	No.	R
3.3.6.3	80mm diameter wafer type check valves, PN 16	No.	R
3.3.6.4	100mm diameter wafer type check valves, PN 16	No.	R
3.3.6.5	150mm diameter wafer type check valves, PN 16	No.	R
3.3.6.6	200mm diameter wafer type check valves, PN 16	No.	R
3.3.6.7	250mm diameter wafer type check valves, PN 16	No.	R
3.3.7	<i>RANGER COUPLINGS</i>		
3.3.7.1	40mm diameter ranger couplings	No.	R
3.3.7.2	50mm diameter ranger couplings	No.	R
3.3.7.3	80mm diameter ranger couplings	No.	R
3.3.7.4	100mm diameter ranger couplings	No.	R
3.3.7.5	150mm diameter ranger couplings	No.	R
3.3.7.6	200mm diameter ranger couplings	No.	R
3.3.7.7	250mm diameter ranger couplings	No.	R
3.3.8	<i>FLANGED RSV GATE VALVES</i>		
3.3.8.1	40mm diameter flanged RSV gate valves	No.	R
3.3.8.2	50mm diameter flanged RSV gate valves	No.	R
3.3.8.3	80mm diameter flanged RSV gate valves	No.	R

Item	Description	Unit	Rate
3.3.8.4	100mm diameter flanged RSV gate valves	No.	R
3.3.8.5	150mm diameter flanged RSV gate valves	No.	R
3.3.8.6	200mm diameter flanged RSV gate valves	No.	R
3.3.8.7	250mm diameter flanged RSV gate valves	No.	R
3.4	REPAIR OR NEW CONSTRUCTION OF METER CHAMBERS: 40 mm, 50 mm, 80 mm, 100 mm, 150 mm, 200 mm and 250 mm		
	<i>Full specification - according to approved drawings - repair or new construction of meter chambers for the following nominal bore diameters: 40 mm, 50 mm, 80 mm, 100 mm, 150 mm, 200 mm and 250 mm</i>		
	<i>Repair and New Construction of meter chambers refers to the full specification process of meter chamber repair and construction - including but not limited to - preliminaries and general, material, health and safety, site clearance, protection of surfaces and services, temporary works, time-related charges, backfilling, reinstatement of surfaces, piping, fittings, covers, frames, lids, concrete slabs, wiring, touchpads, sockets, pressure gauges, testing, handover documentation, pumping out of water to maintain dry conditions, wayleaves applications and thrust boarding. This typically occurs when the current chamber is deemed inappropriate for current use, is damaged, or requires upgrading. Meter chamber repair and construction involves partial or full demolition of the existing chamber, site preparation and reconstruction, ensuring compatibility and accurate performance to full specification. Standard meter chamber drawings are provided with this tender document (Annexure K). Where necessary, in unique scenarios, new drawings will have to be provided by a qualified engineer and approved by the CCT prior to construction.</i>		
3.4.1	EXTEND METER CHAMBER		
3.4.1.1	Extend meter chamber vertically 100mm, not exceeding 300mm	No.	R
3.4.1.2	Extend meter chamber vertically 300mm, not exceeding 600mm	No.	R
3.4.1.3	Extend meter chamber vertically 600mm, not exceeding 1000mm	No.	R
3.4.1.4	Extend meter chamber horizontally 100mm, not exceeding 300mm	No.	R
3.4.1.5	Extend meter chamber horizontally 300mm, not exceeding 600mm	No.	R
3.4.1.6	Extend meter chamber horizontally 600mm, not exceeding 1000mm	No.	R
3.4.2	NEW METER CHAMBER CONSTRUCTION		
3.4.2.1	Construct new meter chamber	Item	R

Item	Description	Unit	Rate
4	New Meter Installations		
4.1	NEW INSTALLATIONS 15 mm, 20 mm and 25 mm		
4.1.1	<i>BASIC – Involves the setup of water metering infrastructure for a new ERF connection where the road crossing is approximately 10 meters in length and not exceeding 0.9 meters in depth. It includes backfilling, reinstatement to the work area, testing, and handover. This level of installation is straightforward and typically occurs during the construction of a new property or building. Includes meter and meter box.</i>		
4.1.1.1	Basic Installation 15 mm	No.	R
4.1.1.2	Basic Installation 20 mm	No.	R
4.1.1.3	Basic Installation 25 mm	No.	R
4.1.2	<i>MODERATE – Involves all the components of a basic new installation but may also require the removal and reinstatement of surfaces such as clay paving, interlocking block paving, cement paving, cement slabs, concrete, gravel, or asphalt OR where the road crossing is more than 10 meters in length and 1 meter in depth. Includes meter and meter box.</i>		
4.1.2.1	Moderate Installation 15 mm	No.	R
4.1.2.2	Moderate Installation 20 mm	No.	R
4.1.2.3	Moderate Installation 25 mm	No.	R
4.1.3	<i>COMPLEX – Involves the relocation of the water meter from within the customer's property to outside the property, along with the removal and reinstatement of surfaces such as clay paving, interlocking block paving, cement paving, cement slabs, concrete, gravel, or asphalt</i>		

Item	Description	Unit	Rate
	<i>AND where the road crossing is approximately more than 10 meters in length and 1 meter in depth. Includes meter and meter box.</i>		
4.1.3.1	Complex Installation 15 mm	No.	R
4.1.3.2	Complex Installation 20 mm	No.	R
4.1.3.3	Complex Installation 25 mm	No.	R
4.2	<u>NEW INSTALLATIONS:</u> 40 mm, 50 mm, 80 mm, 100 mm, 150 mm, 200 mm and 250 mm		
	<i>Installation of a new water meter complete with connection to the water main, a road crossing not exceeding 4 meters in length and 1.5 meters in depth, backfilling, reinstatement to the work area, testing, and handover to full specification</i>		
4.2.1	New Installation 40 mm	No.	R
4.2.2	New Installation 50 mm	No.	R
4.2.3	New Installation 80 mm	No.	R
4.2.4	New Installation 100 mm	No.	R
4.2.5	New Installation 150 mm	No.	R
4.2.6	New Installation 200 mm	No.	R
4.2.7	New Installation 250 mm	No.	R

Item	Description	Unit	Rate
5	Maintenance & Attic Stock		
5.1	<u>MAINTENANCE</u>		
	<i>During the execution of works orders, the need from the CCT will arise to commission maintenance, repair or replacement work for meters installed as per this contract.</i>		
	<i>Such requirements will follow the CCT Meter Management Standard Operating Procedures (SOPs) and will only be payable if such maintenance is not because of a failure, for which the contractor is liable.</i>		
	<i>Events under the maintenance section of this Pricing schedule includes, but is not limited to:</i>		
	<ul style="list-style-type: none"> • <i>Replacement or maintenance due to theft, damage, vandalism</i> • <i>Relocation of meters</i> • <i>Repair of leaks, not due to default of Contractor</i> • <i>Testing of Meters due to Customer Complaints and subsequently found not to be because of meter failures</i> 		
	<i>Where these events necessitate the contractor to return to a meter, and the maintenance required is verified to not be because of any of the contractor's liabilities, the contractor shall be re-imbursed in accordance with Section 5 and 6 of this pricing schedules for the relevant and applicable works undertaken and approved in terms of the SOPs.</i>		
	<i>The Extra over rate for returning to a meter previously installed includes for as many follow-on returns needed to ensure the issue / required maintenance is concluded.</i>		
	<i>For avoidance of doubt, should a return be required and for example, the meter requires replacement, the subsequent return to the meter to replace the meter, will not be compensated and is deemed to be included in the below rate.</i>		
5.1.1	Extra over for Return to Meter to Maintain	Item	R
	<i>The contractor shall provide a 24-hour standby service for the maintenance and repair of any section of work covered by this works contract.</i>		

Item	Description	Unit	Rate
	<i>He/she shall provide the CCT with an effective means of contacting the standby staff on a 24- hour basis.</i>		
	<i>All maintenance, repairs, and replacements necessary to maintain services to residents shall be carried out without delay.</i>		
5.1.2	Standby Charge	Month	R
5.2	<u>ATTIC STOCK</u>		
	<i>Supply only of a Replacement Meters, Parts and Accessories into CCT stock for its use as required. Replacement Meters, Parts and Accessories to be supplied and packaged in accordance with manufacturers specifications.</i>		
5.2.1	<i>SMART STATIC (SOLID STATE) METERS</i>		
5.2.1.1	Smart Static (Solid-State) Meters: 15 mm	No.	R
5.2.1.2	Smart Static (Solid-State) Meters: 20 mm	No.	R
5.2.1.3	Smart Static (Solid-State) Meters: 25 mm	No.	R
5.2.1.4	Smart Static (Solid-State) Meters: 40 mm	No.	R
5.2.1.5	Smart Static (Solid-State) Meters: 50 mm	No.	R
5.2.1.6	Smart Static (Solid-State) Meters: 80 mm	No.	R
5.2.1.7	Smart Static (Solid-State) Meters: 100 mm	No.	R
5.2.1.8	Smart Static (Solid-State) Meters: 150 mm	No.	R
5.2.1.9	Smart Static (Solid-State) Meters: 200 mm	No.	R
5.2.1.10	Smart Static (Solid-State) Meters: 250 mm	No.	R
5.2.2	<i>AMI METER INTERFACE UNIT & SIGNAL BOOSTING DEVICES</i>		
5.2.2.1	AMI meter interface unit &/or signal-boosting devices: 40 mm	No.	R
5.2.2.2	AMI meter interface unit &/or signal-boosting devices: 50 mm	No.	R
5.2.2.3	AMI meter interface unit &/or signal-boosting devices: 80 mm	No.	R
5.2.2.4	AMI meter interface unit &/or signal-boosting devices: 100 mm	No.	R
5.2.2.5	AMI meter interface unit &/or signal-boosting devices: 150 mm	No.	R
5.2.2.6	AMI meter interface unit &/or signal-boosting devices: 200 mm	No.	R
5.2.2.7	AMI meter interface unit &/or signal-boosting devices: 250 mm	No.	R
5.2.3	<i>SPOOL PIECES</i>		
5.2.3.1	40mm diameter spool piece	No.	R
5.2.3.2	50mm diameter spool piece	No.	R
5.2.3.3	80mm diameter spool piece	No.	R
5.2.3.4	100mm diameter spool piece	No.	R
5.2.3.5	150mm diameter spool piece	No.	R
5.2.3.6	200mm diameter spool piece	No.	R
5.2.3.7	250mm diameter spool piece	No.	R
5.2.4	<i>IN-LINE STRAINERS</i>		
5.2.4.1	40mm diameter in-line strainer	No.	R
5.2.4.2	50mm diameter in-line strainer	No.	R
5.2.4.3	80mm diameter in-line strainer	No.	R
5.2.4.4	100mm diameter in-line strainer	No.	R
5.2.4.5	150mm diameter in-line strainer	No.	R
5.2.4.6	200mm diameter in-line strainer	No.	R

Item	Description	Unit	Rate
5.2.4.7	250mm diameter in-line strainer	No.	R
5.2.5	<i>Y-STRAINERS</i>		
5.2.5.1	40mm diameter y-strainer	No.	R
5.2.5.2	50mm diameter y-strainer	No.	R
5.2.5.3	80mm diameter y-strainer	No.	R
5.2.5.4	100mm diameter y-strainer	No.	R
5.2.5.5	150mm diameter y-strainer	No.	R
5.2.5.6	200mm diameter y-strainer	No.	R
5.2.5.7	250mm diameter y-strainer	No.	R
5.2.6	<i>FLANGED SWING CHECK VALVES</i>		
5.2.6.1	40mm diameter flanged swing check valves, PN 16	No.	R
5.2.6.2	50mm diameter flanged swing check valves, PN 16	No.	R
5.2.6.3	80mm diameter flanged swing check valves, PN 16	No.	R
5.2.6.4	100mm diameter flanged swing check valves, PN 16	No.	R
5.2.6.5	150mm diameter flanged swing check valves, PN 16	No.	R
5.2.6.6	200mm diameter flanged swing check valves, PN 16	No.	R
5.2.6.7	250mm diameter flanged swing check valves, PN 16	No.	R
5.2.7	<i>FLANGED WAFER TYPE CHECK VALVES</i>		
5.2.7.1	40mm diameter wafer type check valves, PN 16	No.	R
5.2.7.2	50mm diameter wafer type check valves, PN 16	No.	R
5.2.7.3	80mm diameter wafer type check valves, PN 16	No.	R
5.2.7.4	100mm diameter wafer type check valves, PN 16	No.	R
5.2.7.5	150mm diameter wafer type check valves, PN 16	No.	R
5.2.7.6	200mm diameter wafer type check valves, PN 16	No.	R
5.2.7.7	250mm diameter wafer type check valves, PN 16	No.	R
5.2.8	<i>RANGER COUPLINGS</i>		
5.2.8.1	40mm diameter ranger couplings	No.	R
5.2.8.2	50mm diameter ranger couplings	No.	R
5.2.8.3	80mm diameter ranger couplings	No.	R
5.2.8.4	100mm diameter ranger couplings	No.	R
5.2.8.5	150mm diameter ranger couplings	No.	R
5.2.8.6	200mm diameter ranger couplings	No.	R
5.2.8.7	250mm diameter ranger couplings	No.	R
5.2.9	<i>FLANGED RSV GATE VALVES</i>		
5.2.9.1	40mm diameter flanged RSV gate valves	No.	R
5.2.9.2	50mm diameter flanged RSV gate valves	No.	R
5.2.9.3	80mm diameter flanged RSV gate valves	No.	R
5.2.9.4	100mm diameter flanged RSV gate valves	No.	R
5.2.9.5	150mm diameter flanged RSV gate valves	No.	R
5.2.9.6	200mm diameter flanged RSV gate valves	No.	R
5.2.9.7	250mm diameter flanged RSV gate valves	No.	R

6 General			
Item	Description	Unit	Rate
6.1	<u>PROVISION OF PERFORMANCE SECURITY</u>		
	<i>Provide performance security to the satisfaction of the special conditions of contract.</i>		
6.1.1	Performance Security	Sum	R
6.2	<u>HANDHELD TERMINALS</u>		
	<i>Handheld terminals as per Technical Specifications.</i>		
6.2.1	Handheld Terminals	Unit	R

INITIALS OF CCT OFFICIALS		
1	2	3

C.5.1 TECHNICAL SPECIFICATION

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1. Abbreviations

ABAP – ADVANCED BUSINESS APPLICATION PROGRAMMING
AES-128-BIT – ADVANCED ENCRYPTION STANDARD 128-BIT
AMI – ADVANCED METERING INFRASTRUCTURE
API – APPLICATION PROGRAM INTERFACE
APN – ACCESS POINT NAME
B.S.P – BRITISH STANDARD PIPE
BSD – BOX SPECIFICATIONS AND DESIGN
BW – BURST DETECTION
CL – CABLE LENGTH
COAP – CONSTRAINED APPLICATION PROTOCOL
COTS – COMMERCIAL OFF THE SHELF
CRM – CUSTOMER RELATIONSHIP MANAGEMENT
CIM – COMMON INFORMATION MODEL
COSEM – COMPANION SPECIFICATION FOR ENERGY METERING
CSV – COMMA-SEPARATED VALUES
DCU – DATA CONCENTRATOR UNIT
DMS – DIALLYL PHTHALATE MOLDING COMPOUND OR DIALLYL ISOPHTHALATE MOLDING COMPOUND
DLMS – DEVICE LANGUAGE MESSAGE SPECIFICATION
DOC- DIGITAL OPERATIONS CENTER
DMA – DISTRICT METER AREA
DZR – DEZINCIFICATION RESISTANT
EMC – ELECTROMAGNETIC COMPATIBILITY
EMI – ELECTROMAGNETIC INTERFERENCE
EBC – EXISTING BOX OR CHAMBER
ECC – ELLIPTIC CURVE CRYPTOGRAPHY
ERP – ENTERPRISE RESOURCE PLANNING
FA METER – FIELD AREA METER
FAN – FIELD AREA NETWORK
FW – FUSION WELDED
FWMS – FIELD WORKFORCE MANAGEMENT SYSTEM
GIS – GEOGRAPHICAL INFORMATION SYSTEM
GU- GATEWAY UNIT
GW – GROUND WIRING
HDPE – HIGH-DENSITY POLYETHYLENE
HES – HEAD END SYSTEM
HHT – HANDHELD TERMINAL
HTTP/HTTPS – HYPERTEXT TRANSFER PROTOCOL/SECURE
IEC – INTERNATIONAL ELECTROTECHNICAL COMMISSION
IEEE – INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS
ISO – INTERNATIONAL ORGANIZATION FOR STANDARDIZATION
JSON – JAVASCRIPT OBJECT NOTATION
LBA – LOW BATTERY ALARM
LD – LEAK DETECTION
LWM2M – LIGHTWEIGHT MACHINE TO MACHINE M2M
MDMS – METER DATA MANAGEMENT SYSTEM
ME – METER ENCLOSURE
MD – METER DATA
NFC – NEAR FIELD COMMUNICATION
NRS – NATIONAL RADIO STANDARDS
NB-IOT- NARROWBAND INTERNET OF THINGS
OBIS – OBJECT IDENTIFICATION SYSTEM
OMS – OUTAGE MANAGEMENT SYSTEM
OAUTH2 – OPEN AUTHORIZATION 2.0
OS – OUTPUT SIGNAL
PN-16 – PRESSURE NOMINAL 16

PPS – PREPAYMENT SYSTEM
POPIA – PROTECTION OF PERSONAL INFORMATION ACT
PW – PULSE WIDTH
RFD – REVERSE FLOW DETECTION AND ALARM
RTC – REAL-TIME CLOCK
SABS – SOUTH AFRICAN BUREAU OF STANDARDS
SA – SABS APPROVED
SOAP – SIMPLE OBJECT ACCESS PROTOCOL
SP – SERVICE PROVIDER
TD – TAMPER DETECTION
TOU – TIME OF USE
UDP – USER DATAGRAM PROTOCOL
UV – ULTRAVIOLET
UVS – UV STABILIZED
VEE – VALIDATION, ESTIMATION, AND EDITING
WCA – WIRE CUT ALARM
WCA – WIRE CUT ALARM
ZF – ZERO FLOW

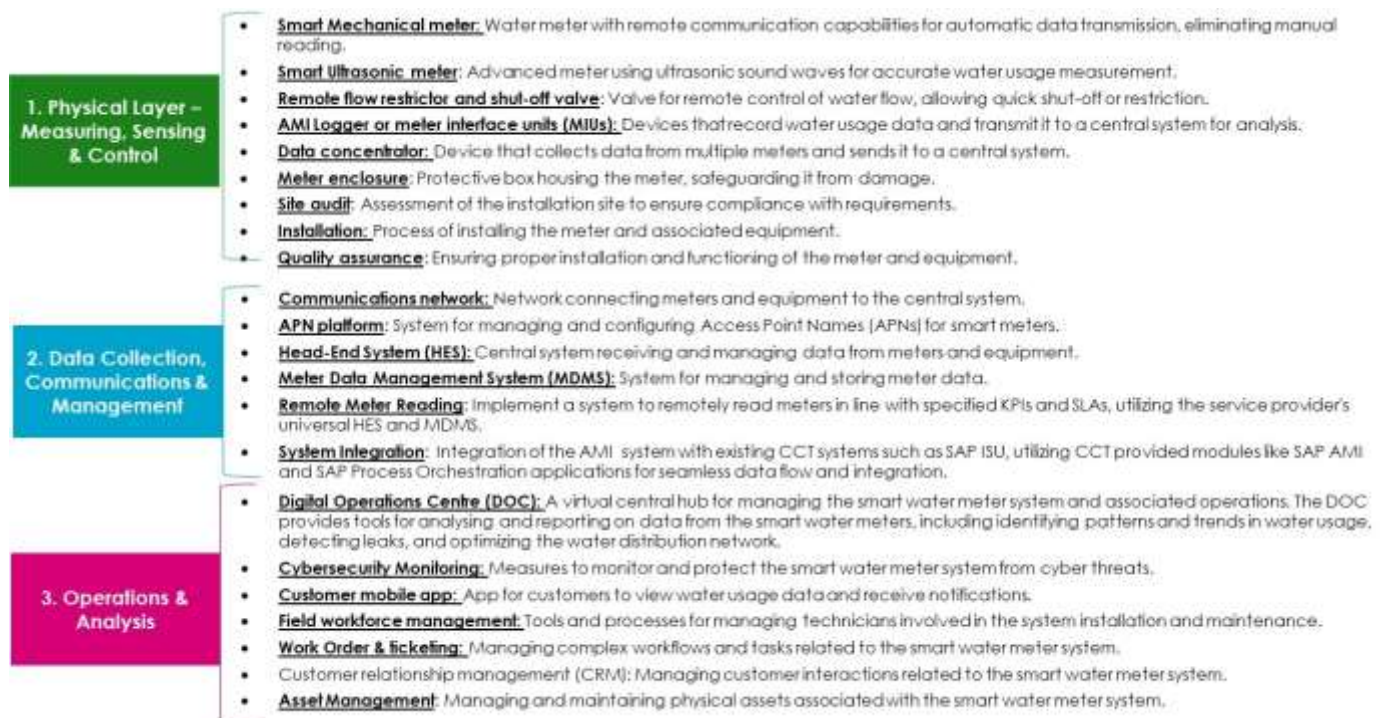
2. Context & Background

The overall project, Advance Metering Infrastructure (further referred to in this report as AMI), involves the installation of approximately 130 000 smart water meters in an AMI system with the appropriate supporting components and infrastructure for a 3-year period. The current timeframe envisages the first meter to be installed and connected to the communications network in June of 2025.

The Programme Vision has been articulated the follows: “To deliver a digital water meter solution for the City of Cape Town that assures the customer’s trust whilst contributing to water resilience into the future”. This Vision will be achieved through the fulfilment following five Strategic Objectives, or Business Drivers:

- Financial Sustainability
- Customer Satisfaction
- Operational Excellence
- Economic Imperatives
- Social & Environmental Imperatives

The “hardware and software technology ecosystem” for the end-to-end AMI Programme is depicted below.



Below are explanations and key functionalities for each of the solution components listed:

- **Physical Layer, Sensing, Collection & Communication:** Smart static meters and smart positive displacement meters are electronic devices designed to measure water flow, with the former having no moving parts for increased durability and precision and the latter using moving mechanisms like chamber systems. Both types incorporate digital communication for remote metering. Additional components in this metering ecosystem include remote flow restrictors and shut-off valves (only for 15mm, 20mm and 25mm meter sizes) that manage water flow, data concentrators that aggregate data from various meters, and meter enclosures for protection. Before installation, a site audit ensures the location meets prerequisites. Meter replacement refers to updating old meters, while new meter installation pertains to setting up meters for new erfs. Quality assurance verifies correct installation and operation.
- **Data Collection, Communications & Management** encompasses several key components to ensure efficient and streamlined handling of meter-related data. All these devices communicate via a communications network, managed, and configured through APN platforms, ensuring secure data

transmission to the head end system (HES), which oversees and organizes the received data. The Meter Data Management System (MDMS) is dedicated to managing and archiving data specifically from meters. Complementing this, the Datawarehouse serves as a centralized storage system, pooling data from diverse sources and refining it for easier querying and in-depth analysis. Crucially, integration with SAP ERP enables the data to flow smoothly into existing systems being SAP Utilities Billing, SAP Plant Maintenance, and CRM on-premises. This integration ensures that operations continue without hiccups, facilitating an uninterrupted exchange of information and a cohesive operational environment.

- **Operations & Analysis:** the smart water meter system involves the Digital Operations Centre (DOC), a central virtual hub (which is not part of the scope of this tender) for managing and leveraging the large volume of data in the future, through advanced analytic and integration capabilities, while cybersecurity ensures system protection. Customers access their water data via a mobile app.

3. Package A Scope Overview – Smart Meter Replacement & Remote Meter Reading

3.1. Scope

CCT aims to contract a service provider for the replacement of legacy mechanical meters by the installation of approximately 130,000 smart water meters, along with a remote reading service over a 3-year period. The CCT seeks to implement an Advanced Metering Infrastructure (AMI) system to enhance the monitoring and management of water consumption. As part of this initiative, the city intends to purchase the open standards HES and rent an enterprise-level commercially of the shelf (COTS) MDMS solution that will integrate with existing business applications and be utilized across the bulk, reticulation, and distribution Business Units of the Water & Sanitation Directorate. The scope and key objectives of this project are:

- **Provision of Smart Meters:** Supply legally compliant (manufactured to SANS 1529 part 1, 4 and 9 and be type approved (where applicable) by the National Regulator for Compulsory Specifications (NRCS) against the Legal Metrology Act of 2014 smart water meters, inclusive of approved fittings and enclosures.
- **Installation Standards:** Perform installations and ensure that installation adheres to best practice quality assurance and control standards, in accordance with SANS 1200. This standard is expanded on with relevant clauses in Section 7. Field Services – Standards, of this technical specification.
- **Remote Meter Reading:** Implement a system to remotely read meters in line with specified KPIs and SLAs as per section 3.6, utilizing the tenderers and service provider's universal HES and MDMS.
- **HES Acquisition:** The service provider must provide HES software that should be a commercial off-the-shelf (COTS) product, which is loaded into the Virtual Private Cloud, which will be sold outright to the CCT at the start of the tender. CCT's acquisition will result in full ownership of the HES, either via a perpetual license or by obtaining a distinct version the HES software capable of remotely reading, managing and maintaining a large number of smart water meters. There should not be no licensing limit on the number of meters that can be managed on the HES.
- **Setting up a Virtual Private Cloud (VPC) environment:** The service provider must set up the infrastructure to host the HES and ensure its optimal performance, in accordance with the services provider's specifications. This infrastructure must be a private cloud that is created in the CCT's name. This setup should include separate development and production environments to facilitate testing and deployment without impacting live operations. A secure gateway must be established for remote system management by authorized personnel. The provider will set up a cloud-based database to securely store and manage water consumption data and deploy a Kubernetes cluster for efficient application management and scaling. Additionally, monitoring and logging tools should be implemented to track performance and security, with defined access controls to ensure that only authorized personnel can access sensitive data and resources, maintaining security and regulatory compliance. (The
- **MDMS rental:** The service provider must provide a fully cloud hosted MDMS built on a modern data framework that should be a commercial off-the-shelf (COTS) product, which will be rented to the CCT at the start of the tender. Current technologies, methodologies, and architectures that are designed to handle large volumes of data efficiently, securely, and in real-time. A flexible data architecture within this framework ensures that the system can evolve over time without requiring complete overhauls. This

flexibility is crucial for accommodating technological advancements and changing regulatory or business needs. CCT has adopted a hybrid approach to its smart water meter solution to ensure both control and flexibility. By owning the HES and hosting it on a dedicated Virtual Private Cloud (VPC), CCT maintains complete control over data collection, ensuring data integrity and security. This VPC is distinct and separate from the rented, fully cloud hosted MDMS. Renting the MDMS allows CCT to leverage the latest data management technologies and easily adapt to future ERP system changes.

- **Operation and Maintenance:** The appointed service provider will be responsible for operating and maintaining the communication network, data transfer, HES and MDMS throughout the tender period.
- **System Integration:** The service provider is expected to integrate the month end consumption information into the CCTs billing system through a flat file integration process with existing CCT billing system so that at month end customers can be correctly billed. To accommodate CCT's strategic technology roadmap, the proposed AMI system and MDMS must also be equipped to seamlessly integrate with advanced SAP environments. It is imperative that the solutions provided are flexible and compatible with SAP's modern enterprise resource planning (ERP) systems and cloud technologies. This will ensure that as CCT transitions to more contemporary SAP products, the integration can continue without the need for extensive modifications or additional investments. The MDMS in particular should be designed to easily adapt to new data structures and integration patterns typical in cutting-edge SAP ecosystems. The MDMS should support various data integration methodologies including APIs and web services, which are conducive to interacting with SAP's latest ERP and cloud services.

This tender specification outlines the requirements for a comprehensive smart water meter installation and management solution, emphasizing legal compliance, best practices in installation, effective remote reading, and robust system integration and maintenance. A summary breakdown of the hardware, software and service components required is outlined **below but service providers must ensure the comprehensively study all the functional requirements of section 4 – 7** to fully understand the project's scope, avoid scope gaps, and ensure their proposals meet all specified criteria for successful implementation and compliance.

- **Physical Components:**
 - **Approximately 130 000 Smart Static (Solid-State) Meters:** Advanced meters leveraging ultrasonic waves or electromagnetic fields, ensuring accurate and real-time water usage measurements.
 - **Meter Interface Units (MIU) or Signal Booster Devices.** For specific metering scenarios (which will be in very rare cases and estimated to be less than 0.5% of the 130 000 meters the) for meters sized 40mm and larger that are not replaced or those situated in underground chambers where direct integration of communication technology within the meter can be challenging. This is due to constraints like limited space and potential signal limitations, especially prevalent in industrial and commercial settings.
 - **Meter Enclosure:** A robust protective casing, instrumental in safeguarding the meter from external threats, be it environmental or human induced.
 - **Fittings and valves:** Fittings in the context of water metering refer to the assortment of connectors, adapters, and other components necessary for the proper installation and connection of water meters to the existing infrastructure. Such fittings must be SABS approved. This also includes all restrictor, reflux and stop valve as per technical specifications (only for 15mm, 20mm and 25mm meter sizes).
 - **Smart Remote Flow Control:** A distinct valve that is separate from the meter, facilitating remote control to rapidly restrict or entirely shut off water flow. Remote smart flow restrictors and shut-off valves can be installed on the water line to restrict flow and reduce water usage, when necessary, based on the policies for credit control and excessive water usage. This type of valve allows for remote operation to completely stop or restrict the flow of water through the meter. It is estimated that only 2,000 valves will need to be installed for high-usage or late paying offenders (only for 15mm, 20mm and 25mm meter sizes).
 - **Handheld Units (HHT):** The purchase of the Handheld Units (HHT) will be purchased from the service provider and owned by the CCT. The service provider will need to use the HHTs sold to the CCT for the digital QA and installation process. Requirements for the HHT are included in section 7.2.

- **HES, VPC & MDMS:**
 - **HES:** is a centralized software platform that serves as the primary data collection point for various types of smart meters and related devices within the AMI solution. The term “universal” in this context signifies its capability to interface and communicate with a wide range of meter types and communication technologies.
 - **MDMS:** The MDMS is a critical component required to effectively manage the large volumes of metering data, improve meter reading processes, and meet present and future Smart Metering requirements.
 - **Operate and maintain:** The supplier is expected to provide continuous operational support and maintenance for the HES and MDMS. This includes regular software updates, data integrity checks, system monitoring for optimal performance, and troubleshooting any issues that arise.
 - **Cyber Security:** The installation of the HES and MDMS platforms, as well as end-to-end AMI solution should be underpinned by robust cybersecurity measures to protect against unauthorized access, data breaches, and other cyber threats. This includes the implementation of advanced encryption standards, secure authentication protocols, and regular security audits. The supplier must also ensure compliance with relevant data protection regulations and provide continuous monitoring and rapid response capabilities to address potential security incidents. Regular updates and patches should be part of the service to protect against evolving cyber threats, and a comprehensive cybersecurity training for CCT staff should be included to promote awareness and best practices in system security. Security updates and patches should be applied as soon as they are released by the software vendor to mitigate vulnerabilities. Comprehensive security assessments should be conducted annually as a general rule. However, more frequent audits (e.g., quarterly) may be necessary depending on the regulatory requirements, changes in the threat landscape, or following significant changes to the IT environment.
 - **Training:** The supplier must also offer training sessions for CCT staff to ensure they are proficient in using the end-to-end solution for daily operations which also includes the cybersecurity training.
- **Communications & Data Collection, Management, Analysis, Operation, and Integration:**
 - **Communication Network:** The digital infrastructure that serves as the link between meters, peripheral devices, and the primary system, enabling seamless data flow and command execution. An IoT network and specifically NB-IoT is a preferred solution for the bulk of the CCT area, for its technological advantages of ground penetration into meter chambers and in dense built-up areas. The onus is on service providers to ensure optimal smart meter performance.
 - **Data Concentrator:** A crucial device (that is only used in rare circumstances when required due to network coverage issues on the NB-IoT network) collates data from an array of meters, subsequently forwarding this accumulated data to the HES or further processing and analysis. Use and installation are dependent on the type of communication solution proposed and upfront costs are borne by the service provider.
 - **APN Platform:** A sophisticated system tailored for the streamlined management and configuration of Access Point Node, ensuring the smart meters remain connected and communicative. The APN must be created in the CCTs name.
 - **Integration into CCT’s billing and asset systems:** For the flat file integration, it is expected that suppliers will construct an interface based on CCT’s data presentation preferences and requirements. This ensures that the data will be not only relayed accurately but also displayed in an interpretable and actionable manner. This interface will act as the bridge between the CCT SAP ISU module and the HES and the MDMS.
 - **Operations:** The appointed service provider is also tasked with operating and maintaining the universal HES and MDMS during the contract period. Responsibilities include managing the smart metering system’s physical components—sensors, data collection, and communications infrastructure—and ensuring efficient data flow, processing, and integration. The provider must oversee the MDMS for handling, storing, analysing, and validating meter-related data. Each month,

the provider is required to produce a secure flat file of all meter readings, complete with error codes if applicable, for CCT's upload into the SAP system to ensure accurate billing. Furthermore, the provider must manage and secure the virtual private cloud set up for the HES, ensuring robust operational security. The smart metering system should be capable of identifying and reporting faults, events, and alerts, such as offline meters or leak detections, as specified in the tender. These issues must be reported daily to CCT for the timely creation of service orders. The provider is expected to maintain detailed records, aging and tracking of all reported issues.

- **Water Leak detection:** The service provider will be responsible for implementing this leak detection and notification functionality within the current HES and MDMS. The system should support near-real-time processing, employing advanced algorithms to detect continuous water flow indicative of leaks or burst alerts. Configurable rules and thresholds must differentiate between high usage and actual leaks, ensuring precise alerts. Data integrity is paramount. The system should include robust validation and error-checking processes. Before notifying customers, potential leaks identified by the MDMS must undergo a review and approval process by the service provider, filtering out false alarms and preventing unnecessary panic. (Service providers are required to detail their approach and methodology for how the leak detection functionality and process HES and MDMS will be provided. The methodology should include real-time processing capabilities, advanced algorithms for detecting continuous water flow indicative of leaks, burst alerts from the meter and configurable rules and thresholds to differentiate between high usage and actual leaks. The process to validate the leak, visualize it on a dashboard and notify CCT must be explained)
- **Field Services**
 - **Planning & Coordination:** Comprehensive activities that cover site evaluations, meticulous project management, installation endeavours, rigorous quality assurance checks, and seamless collaboration with third-party service providers.
 - **Installation:** The hands-on procedure of installing the meter and its associated peripherals, ensuring operational coherence.
 - **Digital Quality Assurance:** The process focused on the verification of the installation's integrity, ensuring flawless operation and data accuracy. This should be enabled through a digital process using a Field Workforce Management System (FWMS).
 - **Exception Management:** During installations, should any discrepancies arise – such as mismatched meter serial numbers or other site-specific issues – they are promptly reported. This procedure ensures that exceptions are documented, communicated, and timeously addressed, minimizing disruptions and ensuring the project remains on track.

3.2. Timelines and Installation Strategy

The 3-year contract's estimated timelines are as follows:

- Start date: March 2025 estimated.
- Mobilization period allowed: 2 months estimated. During the mobilization period the CCT and CCT Consultant will, prior to go live, through regular reviews and test procedures ensure that the service provider meets all the relevant detailed end to end functional requirements.
- Set up of CCT virtual private cloud, APN, and full installation of universal HES and MDMS: Complete within 2 months of start date.
- Meter replacement: To be started in June 2025 and over a 33-month duration (including mobilization period)
 - The CCT is arranged into 4 x Area-Based Service Delivery Areas (ODTP), which are split into platform areas. These platform areas have portions within them, which are read monthly to facilitate the billing cycle. During engagement sessions, it was reported that the billing cycle

will have no impact on the deployment.

- The geographic boundaries established by the City will be maintained in the AMI Programme to ensure ease of understanding and to assist with change management during deployment.
- While the estimated deployment sequence and volume is as follows, the CCT reserves the right to change due to unforeseen circumstances preventing appropriate progress in a specific suburb or part thereof:

Deployment Sequence	Platform	Top Priority potential totals
1	Helderberg	33900
2	South Peninsula	63080
3	Cape Town	14070
4	Blaauwberg	8720
5	Oostenberg	3150
6	Tygerberg	7080
Total		130 000



- The estimated works order package and quantities are as follows:

Month	Order #	Meter Quantity
FY 25		
2025-06	Order 1	2 350
FY25 TOTAL		2 350

FY 26		
2025-07	Order 2	2 550
2025-08	Order 3	2 750
2027-09	Order 4	2 750
2025-10	Order 5	2 750
2025-11	Order 6	2 750
2025-12	Order 7	3 000
2025		16 550
2026-01	Order 8	3 000
2026-02	Order 9	3 250
2026-03	Order 10	3 250

2026-04	Order 11	3 500
2026-05	Order 12	3 500
2026-06	Order 13	3 750
2026		20 250
FY26 TOTAL		36 800

FY 27		
2026-07	Order 14	4 000
2026-08	Order 15	4 500
2026-09	Order 16	4 500
2026-10	Order 17	5 000
2026-11	Order 18	5 000
2026-12	Order 19	5 000
2026		28 000
2027-01	Order 20	5 000
2027-02	Order 21	5 000
2027-03	Order 22	5 000
2027-04	Order 23	5 000
2027-05	Order 24	5 000
2027-06	Order 25	4 830
2026		29 830
FY27 TOTAL		57 830

FY 28		
2027-07	Order 26	4 690
2027-08	Order 27	4 690
2027-09	Order 28	4 690
2027-10	Order 29	4 360
2027-11	Order 30	4 360
2027-12	Order 31	3 150
2027		25 940
2028-01	Order 32	3 540
2028-02	Order 33	3 540
2028		7 080

FY28 TOTAL		33 020
TOTAL		130 000

- Network, data and remote meter reading operations: 34 months duration.
- Handover: during the last 4 months of the 3year contract the handover of all processes, configurations, knowledge, critical data and information to enable the remote meter operations.

The focus of the approximately 130 000 smart water meter replacement is focussed on the commercial, industrial, and high revenue consumption users at the CCT which are geographically spread through the CCT.

3.3. Pricing Strategy – Additional Notes

- Ownership & Acquisition:
 - The CCT will purchase and retain ownership of both the Physical Components and the Field Services & Maintenance components from the service provider.
 - An instance or copy of the software for the universal HES will be procured from the service provider and subsequently owned by the CCT.
 - The Handheld Units (HHT) will be purchased from the service provider and owned by the CCT. The service provider will need to use the HHTs sold to the CCT for the digital QA and installation process. Requirements for the HHT are included in section 7.2.
- Quantity & Replacements:
 - The full scope of the Programme is for approximately 130000 smart water meters.
 - No guarantees are provided regarding the final quantities.
- Technological Advancements:
 - In the event of technological advancements or innovations in metering and communications, the CCT reserves the right to adopt such updates. Any changes in technology will be processed through the contract's designated change mechanisms and CCT governance processes.
- Payment Terms for Installation:
 - Payment for the installation of a smart water meter is contingent upon its successful commissioning, demonstrating full integration into the Advanced Metering Infrastructure (AMI) system.
 - A pre-requisite for payment confirmation includes the meter displaying a minimum of one hour of uninterrupted data flow and meeting all Quality Assurance checks, as determined by both the CCT and the Programme consultant. This validation ensures the meter's efficient operation, its seamless communication within the AMI framework, and its capability to deliver precise, consistent, and prompt data.
- Meter Data Collection & Communication:
 - Costs associated with data collection, which encompass the remote reading of meters, APN in CCTs name and management of the network must be structured on a per-meter-per-month basis.
 - The fully cloud hosted MDMS will be rented as well.
- Data Acquisition Strategy:
 - Pricing structures should be predicated on the delivery of data provided on a once-a-day frequency that includes hourly interval consumption information.
 - The term "frequency" denotes the regularity with which data is collated or readings are procured from the smart water meters.
 - "Interval" refers to the span between successive data points or meter readings.

- Technical Operational Support of HES & MDM, this encompasses:
 - Overseeing the data management aspect, ensuring efficient data flow, processing, and integration.
 - Administering the MDMS for handling meter-related data, centralized storage and analysis, Validation, Estimating, and Editing (VEE) processes.
 - Ensure the at month end the secure flat file of all month end meter readings (with relevant error codes if required) is produced and sent to the CCT for upload into the SAP system to ensure accurate billing.
 - The service provider must ensure the system can identify and report on faults, events, and alerts. These include offline meters, reverse flow, leak detection and other anomalies as detailed in the tender specifications, thereby ensuring effective monitoring and maintenance of the smart water metering infrastructure.
 - These events and alerts must be reported to the CCT on a daily basis so that service orders can be created in the SAP system by the CCT. A full a record, tracking and aging must be kept and maintained of the faults, events, and alerts by the service provider.
- Setting up and Managing the Cloud Environment
 - Initial Setup Costs:
 - The service provider is responsible for the initial setup of the Virtual Private Cloud (VPC) infrastructure that will host the HES and MDMS systems. This includes provisioning of the required hardware, software, and network resources according to CCT's specifications.
 - Pricing for the setup should include all necessary licenses, the creation of a private cloud environment in CCT's name, and any custom configurations needed to meet CCT's operational and security requirements.
 - A detailed breakdown of setup costs should be provided, outlining each component and its associated expense.
 - Performance and Security Requirements:
 - The service provider must ensure that the cloud environment meets specific performance benchmarks, including system availability, response times, and data processing speeds, as agreed upon with CCT.
 - Comprehensive cybersecurity measures must be in place to protect the cloud environment from unauthorized access, data breaches, and other cyber threats. Pricing for these security measures, including regular security audits, advanced encryption, and secure access controls, should be explicitly stated.
 - Costs associated with achieving and maintaining compliance with relevant data protection regulations and standards should also be included.
 - Contingency and Support:
 - Pricing for dedicated support services, including technical assistance, troubleshooting, and emergency response, to resolve any issues that arise with the cloud environment.
 - Details on any contingency plans or disaster recovery services offered, including data backup and system restoration capabilities, to ensure continuity of operations in the event of a system failure or data loss.
- Technological Advancements:
 - In the event of technological advancements or innovations in metering and communications, the CCT reserves the right to adopt such updates. Any changes in technology will be processed through the contract's designated change mechanisms.

3.4. Training and Documentation

To ensure the successful adoption and operation of this system, we require the implementation of a robust training, and skills transfer plan for CCT personnel. The service provider is expected to deliver a detailed and comprehensive training program covering:

- Effective utilization of the Head-End System (HES)
- Management and operation of the Meter Data Management System (MDMS)
- Installation and commissioning of smart water meters
- Cybersecurity monitoring and management
- Use of the Virtual Private Cloud (VPC)

The Delivery Methods required by the CCT are:

- Onsite and Classroom Training: This includes in-person training sessions conducted at the client's venue. These sessions are designed for interactive learning and hands-on practice.
 - System Administrator Training: In-person sessions specifically designed for system administrators, covering management, maintenance, and troubleshooting. Each session can accommodate up to 10 participants.
 - System Operation - Train the Trainer: On-site sessions to equip select individuals with the skills to operate the system and subsequently train other staff members. Each session can hold up to 10 participants.
- Online Training: Virtual training sessions conducted over the internet, suitable for larger groups and remote participation.
 - System Operation: Virtual sessions covering the operation of the system, accommodating up to 40 participants per session.
 - Web-based Training: Self-paced learning resources available online, including instructional videos and interactive modules.
 - Video Database: Online videos available for users to access at their convenience, providing flexibility in learning.

For the documentation of the training content the CCT requires:

- Comprehensive Guides: Detailed user manuals, system configuration guides, technical specifications, installation manuals, safety and compliance guides, troubleshooting checklists, cybersecurity protocols, and VPC usage guides.
- Formats: Documentation should be provided in electronic formats (PDFs, online knowledge bases) and printed materials, ensuring accessibility both online and offline.
- Updates: Ensure that all documentation is regularly updated to reflect any changes or enhancements to the system.

The CCT reserves the right to review and approve all training curricula and documentation to ensure they meet the requisite standards of clarity, comprehensiveness, and usability.

Training Content Areas will include:

- HES Training to equip CCT's Water and Sanitation Department staff with the skills to effectively utilize the HES. Content Areas:

- System navigation
- Asset and account creation
- Data management
- Reporting
- Basic troubleshooting
- MDMS Training to CCT's Water and Sanitation Department staff on effectively utilizing the MDMS. Content Areas:
 - System navigation
 - Asset and account creation
 - Data management
 - Validation rules and application
 - Reporting
 - Dashboards
 - Basic troubleshooting
- Installation and Commissioning Training to provide CCT personnel with the skills and knowledge to install and commission smart water meters. Content Areas:
 - Installation procedures and best practices
 - Safety protocols
 - Meter commissioning
 - Testing and validation
 - Troubleshooting during installation
- Cybersecurity Monitoring Training to equip CCT personnel with the knowledge to monitor and manage cybersecurity aspects of the smart water meter system. Content Areas:
 - Cybersecurity principles and best practices
 - Monitoring techniques
 - Incident response protocols
 - Regular system updates and patch management
 - Data protection and privacy measures
- Virtual Private Cloud (VPC) Training for CCT personnel on the effective use and management of VPC Content Areas:
 - VPC setup and configuration
 - Resource management
 - Security measures and best practices
 - Data storage and backup
 - Monitoring and troubleshooting VPC issues.

The service provider will also offer dedicated support services during the initial implementation phase, including training sessions CCT personnel. These training sessions will focus on equipping CCT personnel with the necessary skills and knowledge to effectively utilize the technology components. The service provider

will develop a clear skill transfer plan to facilitate knowledge transfer and ensure that CCT personnel can independently operate and maintain the system after the initial implementation. The support services will be provided for the first year to ensure a smooth transition and enable CCT personnel to confidently utilize the technology for efficient operation.

3.5. Skills Transfer

The Skills Transfer Plan must be developed by the service provider and is a comprehensive strategy designed to ensure that CCT personnel acquire the necessary skills and knowledge to operate, maintain, and enhance the smart water meter system independently. The plan aims to build internal capacity and reduce reliance on external support over time. This is to ensure long-term sustainability by enabling CCT personnel to manage the system independently and to enhance the skills and knowledge of CCT staff, promoting professional growth and development. The CCT requires the implementation of skills transfer plan by the bidder through the following actions:

- Develop detailed course outlines covering all aspects of the HES, MDMS, smart meter installation and commissioning, cybersecurity monitoring, and VPC usage. Ensure the curriculum is tailored to different user roles and responsibilities.
- Break down the training into modules focusing on different aspects of the system, ensuring relevance to each participant's job function.
- Include practical exercises and real-world scenarios under the guidance of experienced trainers to reinforce learning.
- Conduct both onsite and virtual sessions led by experts from the service provider's team. Ensure interactive and engaging training experiences.
- Provide access to online resources, manuals, and tutorials for flexible learning options.
- Implement a mix of instructor-led and self-paced learning methods to cater to different learning preferences.
- Present a clear timeline for each training module, including start and end dates. Provide a structured schedule that allows for comprehensive coverage of all topics.
- Establish specific points in the training schedule for evaluating understanding and capability through quizzes, tests, and practical assessments.
- Incorporate regular quizzes and tests to gauge understanding of the material.
- Use real-world scenarios where trainees demonstrate their ability to apply their knowledge.
- Offer certifications upon successful completion of the training modules.
- Provide comprehensive guides and reference materials that personnel can refer to during and after training.
- Develop summarized guides for common tasks and troubleshooting steps, making it easy for staff to find information quickly.
- Deliver specialized training for select CCT personnel who will then train others, ensuring knowledge retention and internal capability building.
- Provide materials and guides for internal trainers to use when conducting training sessions.
- Ensure the availability of a dedicated support line for post-training queries, offering ongoing assistance as needed.
- Submit regular progress reports to CCT, detailing training delivery, participant engagement, and assessment outcomes.
- **Feedback Mechanism:** Establish a feedback mechanism to gather input from participants and stakeholders, allowing for continuous improvement of the training program.

3.6. KPIs

The service provider must ensure all KPIs are easily displayed and reported to the CCT on a daily basis. The key KPIs that apply to the service provider are as follows:

- Meter Online & Reading:
 - Meter Operational Status: >98% - A critical metric to ensure that most meters are in active condition and capable of transmitting data when required. To emphasize the meter's ability to function and send data.
 - Meter Communication Success Rate: >95% - A critical metric to ensure that most meters can successfully transmit data when they attempt to communicate. This measures the reliability of data transmission from the meters, rather than their online status.
 - Month-End Meter Reading Success Rate: >99% - Ensures that most meters are successfully read at the end of the month.
- Meter Device Reliability:
 - Meter Battery Life: >15 years - Ensuring longevity of meters reduces maintenance costs and operational disruptions.
- Data Integrity:
 - Data Accuracy Rate: >99% - This pertains to the quality of the readings from the meters.
 - Data Transmission Success Rate: >98% - Ensures reliable data flow from meters to the system.
- System Performance:
 - System Uptime: >99.9% - Indicates system reliability.
 - Average Time to Resolve System & Field Technical Issues which are under warranty such as repairs to meters etc: 24 - 72 hours (Specific time dependent on issue severity and to be determined during contracting) - A crucial metric for responsiveness and minimizing disruptions.
- Operational Efficiency:
 - Meter Delivery and installation: As agreed each year in the monthly meter deployment plan - Aligns deliveries with planned rollouts.
 - Planned vs Actual Replacements per Month: As agreed in the issuance of work orders - Ensures timely maintenance.
- Communication Network:
 - Network Availability: >99.5% - Indicates reliability of the communication backbone.
 - Data Delivery Latency: <5 minutes - Ensures timely data transfer.
- Cloud KPIs Measurements:
 - Uptime and Availability measures the proportion of time the cloud infrastructure is operational and accessible to users, reflecting its reliability and availability.
 - Calculation: Uptime percentage = (Total operational time) / (Total time) × 100%
 - Response Time: indicates the duration between a user request and the system's response. Lower response times ensure faster interactions and better user experiences.
 - Latency: measures the delay between a user action and the system's response, including processing and network transfer time. Lower latency enhances responsiveness and user satisfaction.
Calculation: Latency = (Time taken to process request) + (Network transfer time)

- Scalability: refers to the system's ability to accommodate growing demands by adding resources dynamically. Effective scalability ensures consistent performance under varying workloads.
- Elasticity: enables the automatic provisioning and de-provisioning of resources to match changing workload requirements, optimizing cost efficiency and performance.
- Resource Utilization: measures the efficiency of resource usage relative to the allocated capacity. Higher utilization indicates optimal resource management and cost-effectiveness.
Calculation: $\text{Resource utilization} = (\text{Used resources}) / (\text{Allocated resources}) \times 100\%$
- Cost Efficiency: evaluates the balance between the cost of cloud services and the value or benefits derived from them, ensuring optimal cost management and resource allocation.
Calculation: $\text{Cost Efficiency} = (\text{Cloud service costs}) / (\text{Value or benefits gained})$
- Mean Time to Recovery (MTTR): measures the average time required to restore services after an incident or outage, reflecting the system's resilience and recovery capabilities.
Calculation: $\text{MTTR} = (\text{Total downtime}) / (\text{Number of incidents})$
- Rate of Failed Deployments: indicates the frequency of unsuccessful software deployments, highlighting potential issues in the deployment process and system stability.
- Security Incidents: quantify the frequency and severity of security threats or breaches, emphasizing the importance of robust security measures and proactive risk management.
- Compliance Levels: assess the cloud provider's adherence to regulatory requirements and industry standards, ensuring data privacy, security, and legal compliance.
- Customer Support Response Time: measures the efficiency of the support team in addressing customer inquiries or issues, reflecting service quality and responsiveness.
- SLA Compliance: evaluates the cloud provider's adherence to agreed-upon service level agreements, ensuring accountability and reliability in service delivery.
- Weekly Continuous monitoring of Meters, increasing in quantity progressively and ensuring a minimum of 90% read rate between billing cycles.
- Cybersecurity KPI's
 - Incident Response Time: The time it takes for the vendor to respond to a detected cybersecurity incident.
 - Patch Management Efficiency: The time taken to apply security patches to vulnerable systems after they are released.
 - Mean Time to Detect (MTTD): The average time it takes to detect a security threat or breach within the AMI system.
 - Mean Time to Recover (MTTR): The average time it takes to recover from a security incident and restore the AMI system to normal operations.
 - Access Control Violations: The number of unauthorized access attempts to the AMI system.
 - Network Intrusion Attempts: The number of detected and thwarted network intrusion attempts.
 - Security Audit Findings: The number and severity of findings from regular security audits performed on the AMI system.
 - Vulnerability Management: Number of discovered vulnerabilities in the AMI system over a period of time and the average time taking to remediate identified vulnerabilities.

- Penetration Testing: The number and severity of security issues discovered during penetration testing, categorized by critical, high, medium, and low risk and the percentage of test findings that have been remediated within a given timeframe.

3.7. Specific Warranties And guarantees.

Meter delivery:

- Meter delivery as per Delivery of the Goods and/or Services in accordance with the Contract conditions.

Meter useful and battery life:

- This warranty for this contract shall remain valid for **fifteen (15) years** after the goods and services contemplated in an Order, have been certified as complete. Meters will remain functional as per specifications for the 15-years with the intended warrantee. The service provider should offer a warranty for the meters, ensuring their effective operation over a 15-year lifespan from the date of installation. Any non-compliance with the defined meter specifications or premature failure within this 15-year period must be addressed by the service provider at no additional cost to CCT. The warranty terms must clearly delineate penalties applicable for any deviations from the stipulated performance standards.
- Warranties, Guarantees, and Penalties pertaining to Wireless Communication meter online status and month-end meter reading are as follows:
 - Daily Reading Rate:
 - After 48 hours: A successful reading rate of over 90% is expected.
 - After ten days: A cumulative reading rate of 97% or higher is expected. Meters should have the capacity to store readings missed due to such disruptions, and once reconnected, they should auto-backfill any missed readings from the preceding days.
 - Penalties will be incurred as per contract conditions.
 - Month-End Reading Rate during contract period:
 - A reading rate of more than 99% is necessary for month-end billing.
 - If a month end reading is not received it should be substantiated by inclusion on a fault logging system with a fault reason and code.
 - If by the 5th calendar day of each month, if accurate meter readings are not provided for 97% of billable customers on the AMI system, then the service provider must manually read those meters at no cost to the CCT.
 - Should a single meter remain offline for more than 6 consecutive weeks without a valid justification, a penalty meter offline will be charged for each day the meter continues to be offline until the issue is resolved.
 - "Valid justification" denotes a legitimate reason, often beyond a service provider's control, explaining actions or inactions. In the context of meters being offline, this might encompass unexpected events like natural disasters, vandalism, major technical malfunctions, regulatory restrictions, supply chain disruptions, or public health emergencies. For clarity in service agreements, it's vital that both parties clearly define and mutually agree upon circumstances that qualify as valid justifications to prevent future disputes.
 - Unaddressed Technical Concerns: Technical issues at a meter level, once raised in writing by CCT and left unresolved for a month, will incur a penalty.
 - Penalties will be incurred as per contract conditions.

- This warranty for this contract shall remain valid for **the periods and items indicated in the table below** after the goods and services contemplated in an Order, have been certified as complete.

Description	Warranty Period
Head-End System (HES)	5 Years
Smart Static (Solid-State) Meters	15 Years
AMI Meter Interface Unit or Signal Booster Device (Where applicable)	15 Years
Remote Flow Restrictor (Where applicable)	6 Years
Shut Off Valve, Non-Return Valves etc. (Confirm terms in Specs)	5 Years
Meter Box/Enclosure	12 Months
Meter Fittings and Components, such as couplings, connectors, seals, and other components required to securely connect the meter must be provided for secure and leak-free connections.	12 Months
Anti-Tamper Mechanism	12 Months
Civil & Building Works	12 Months

3.8. Penalties

If the Contractor fails to deliver any or all the Goods and/or Services within the period(s) specified in the Contract, the Client shall, without prejudice to its other remedies under the Contract, deduct from amounts payable, as a penalty, a sum as stated in the table below for each day of the delay until actual Delivery or performance.

Example Order Value		10,000,000.00			
Penalty Category		Cal Days Delayed	Penalty amount calculated per day based on these percentages (%) of the contract value	Daily Penalty	Cumulative Penalty
1	Completion+ 1 Day	1	0.20%	20 000.00	20 000.00
	Completion+ 2 Days	2	0.20%	20 000.00	40 000.00
	Completion+ 3 Days	3	0.20%	20 000.00	60 000.00
	Completion+ 4 Days	4	0.20%	20 000.00	80 000.00
	Completion+ 5 Days	5	0.20%	20 000.00	100 000.00
2	Completion+ 6 Days	6	0.25%	25 000.00	125 000.00
	Completion+ 7 Days	7	0.30%	30 000.00	155 000.00
	Completion+ 8 Days	8	0.35%	35 000.00	190 000.00
	Completion+ 9 Days	9	0.40%	40 000.00	230 000.00
	Completion+ 10 Days	10	0.45%	45 000.00	275 000.00
3	Completion+ 11 Days	11	0.50%	50 000.00	325 000.00
	Completion+ 12 Days	12	0.55%	55 000.00	380 000.00
	Completion+ 13 Days	13	0.60%	60 000.00	440 000.00
	Completion+ 14 Days	14	0.65%	65 000.00	505 000.00
	Completion+ 15 Days	15	0.70%	70 000.00	575 000.00
4	Completion+ 16 Days	16	0.75%	75 000.00	650 000.00
	Completion+ 17 Days	17	0.80%	80 000.00	730 000.00
	Completion+ 18 Days	18	0.85%	85 000.00	815 000.00
	Completion+ 19 Days	19	0.90%	90 000.00	905 000.00

	Completion+ 20 Days	20	0.95%	95 000.00	1 000 000.00
5	Completion+ 21 Days	21	1.00%	100 000.00	1 100 000.00
	Completion+ 22 Days	22	1.00%	100 000.00	1 200 000.00
	Completion+ 23 Days	23	1.00%	100 000.00	1 300 000.00
	Completion+ 24 Days	24	1.00%	100 000.00	1 400 000.00
	Completion+ 25 Days	25	1.00%	100 000.00	1 500 000.00

The Client shall, without prejudice to its other remedies under the contract, deduct from amounts payable, financial penalties as contained on the Preference Schedule for breaches of the conditions upon which preference points were awarded.

If the Contractor fails to achieve Key Performance Indicators as defined in the Specification, the Client shall, without prejudice to its other remedies under the contract, deduct from the specific or future order price, as a penalty, a sum as calculated in the below table for such failure.

KPI Related Penalty Table						
Estimated Meter Value	3,000.00	KPI 1: Weekly Read Rate		KPI 2: Monthly Billing Rate		Total KPI Penalty
		90%	KPI 1 Weekly Penalty Formula	99%	KPI 2 Monthly Penalty Formula	
	Cumulative Meters Installed	Actual	When Actual % is Lower than KPI %, then KPI% Less Actual % * (Meter Value / 15 years / 52.1429) = Weekly Penalty rate	Actual	When Actual % is Lower than KPI %, then KPI% Less Actual % * (Meter Value / 15 years / 12 months) = Monthly Penalty rate	Assuming daily KPI was consistently missed over a 30day period + Monthly KPI Missed
Example 1	100,000	100%	-	100%	-	-
Example 2	100,000	99%	-	99%	-	-
Example 3	100,000	98%	-	98%	16,666.67	16,666.67
Example 4	100,000	97%	-	97%	33,333.33	33,333.33
Example 5	100,000	96%	-	96%	50,000.00	50,000.00
Example 6	100,000	95%	-	95%	66,666.67	66,666.67
Example 7	100,000	94%	-	94%	83,333.33	83,333.33
Example 8	100,000	93%	-	93%	100,000.00	100,000.00
Example 9	100,000	92%	-	92%	116,666.67	116,666.67
Example 10	100,000	91%	-	91%	133,333.33	133,333.33
Example 11	100,000	90%	-	90%	150,000.00	150,000.00
Example 12	100,000	89%	3,835.61	89%	166,666.67	281,735.07
Example 13	100,000	88%	7,671.23	88%	183,333.33	413,470.13
Example 14	100,000	87%	11,506.84	87%	200,000.00	545,205.20
Example 15	100,000	86%	15,342.45	86%	216,666.67	676,940.26
Example 16	100,000	85%	19,178.07	85%	233,333.33	808,675.33
Example 17	100,000	84%	23,013.68	84%	250,000.00	940,410.39
Example 18	100,000	83%	26,849.29	83%	266,666.67	1,072,145.46
Example 19	100,000	82%	30,684.91	82%	283,333.33	1,203,880.52
Example 20	100,000	81%	34,520.52	81%	300,000.00	1,335,615.59
Example 21	100,000	80%	38,356.13	80%	316,666.67	1,467,350.65

3.9. Meter Batch testing

- To maintain high standards of accuracy and reliability, a comprehensive batch testing protocol for smart water meters will be implemented. This process will validate each batch of meters against performance and compliance specifications, ensuring that only meter's meeting CCT's stringent requirements are installed.
- Process Overview:
 - For each batch of smart water meters received per works order, a random sample ranging from 2% to 5% of the batch will be selected for testing. The exact percentage will be predetermined in accordance with the total volume of meters per batch and the criticality of the application.
 - The selected meters will undergo a series of tests to assess their accuracy, durability, and functionality. This will include, but not be limited to, performance under various environmental conditions, response accuracy, and compliance with relevant standards (e.g., SANS 1529 part 1 or 9).
 - Testing will be conducted under controlled conditions that simulate real-world operating environments to validate each meter's operational effectiveness.
 - All test results will be meticulously documented, with each meter's performance data recorded and analysed.
 - Any deviations or failures observed during the testing will be systematically recorded and reported to both the CCT and the supplier.
 - The supplier will be provided with a detailed report of the test results for the sampled meters. This report will include specific observations and, if applicable, recommendations for rectification.
 - The supplier is required to address any identified issues promptly. This may involve adjustments in the manufacturing process, replacement of faulty meters, or other corrective measures as agreed upon.
 - Once testing is complete, the meters will be handled as follows: Meters that pass all tests will be returned to the batch and cleared for installation and meters that fail will undergo further scrutiny or will be replaced by the supplier, depending on the nature of the failure and the terms agreed upon with the supplier.
 - The batch testing process will be reviewed periodically, and adjustments will be made based on feedback and observed trends to enhance testing efficacy and product reliability.
 - Testing to be undertaken within 10 – 15 days, to be agreed with the Service Provider.

3.10. Data Accuracy Standards

- Meter Reading Data Accuracy:
 - This refers to the actual readings that meter's record and report, which are indicative of water usage or any other measurable metric. Ensuring the precision of these readings is vital because it directly affects billing, consumption analysis, and other operational decisions.
 - The Service Provider must implement rigorous calibration processes for meters before installation to ensure that they record and transmit data accurately. Regular accuracy checks post-installation are also essential to cater for drifts or anomalies that might arise over time.
 - The Service Provider is to be also responsible for ensuring successful data communication, reattempting data collection if initial efforts fail, or logging communication failures for further investigation.

- Meter Master Data Integrity:
 - Meter master data pertains to the static information about the meter itself: its unique identifier, model, installation date, location, capacity, and other specific characteristics. This data sets the context for the dynamic readings the meter provides.
 - The Service Provider is responsible for ensuring that when meters are installed, the master data associated with each meter is accurate and consistent. Any discrepancy in this foundational data can lead to operational challenges, like misidentification of meters or misinterpretation of readings.

3.11. Explicit Data Storage Protocols

- All customer and meter data generated, processed, or transmitted—remains under the sole proprietorship of CCT.
- Clearly defined data storage guidelines are set to bolster data security, ensuring consistent availability and integrity.
- The Service Provider must implement robust safeguards, such as encryption and stringent access controls, to prevent unauthorized data access or breaches.
- Before data collection or processing, user consent is essential, ensuring users maintain control over their personal data.
- Practical protocols include:
 - Encrypting data both at rest and during transit.
 - Implementing regular security assessments.
 - Preparing response plans for potential data breaches.
 - Ensuring data storage complies with legal requirements and remains user accessible.

3.12. Key Management

- The tender mandates the integration of meter keys and robust key management to ensure secure data transmission and authentication in the smart water meter system.
- Key management refers to the systematic handling of cryptographic keys, ensuring secure generation, revocation, distribution, storage, logging, and periodic rotation, safeguarding data integrity and authenticity.
- All cryptographic keys utilized in the system must be transparently shared with CCT, providing the organization full access and oversight over encrypted meter data transmissions.

3.13. Handover and Cutover Plan Requirement

- This is a 3-year contract and to ensure a smooth transition and sustained performance of the smart water meter program, the service provider is required to develop and actively participate in a comprehensive cutover plan 4 months prior to the end of the contract when transferring services, assets, and HES management to a newly appointed service provider.
- The service provider will develop a detailed cutover plan outlining the steps, timelines, and dependencies involved in the transfer of services. The plan should be shared and approved by CCT at least three months before the expected transition date.

- A comprehensive list and documentation of all physical assets, including meters, communication modules, and other related equipment, must be prepared. The condition, age, and performance history of these assets must be transparently documented.
- Ensure a complete backup of all data present in the HES.
- Provide detailed documentation on the configuration and customization of the HES, especially with regards to the communication protocols. This will ensure the new provider can maintain or enhance the setup without service interruptions.
- Offer a clear diagram of all integration points, including connections to the network, interfaces with other systems, and any third-party solutions in use.
- Furnish a comprehensive list of all IoT, data, meter, and network configurations, including frequency bands, security protocols, and any customized configurations.
- Provide guides or documentation on the process of adding new devices to the network, ensuring the new service provider can continue to expand the smart meter program seamlessly.
- Share troubleshooting documentation related to common issues faced in the communication solution to aid the new provider in rapid issue resolution.
- Allocate sufficient time for training sessions where the incumbent service provider will train the new provider's team on system operations, communication intricacies, and best practices derived from their tenure.
- For the handover of the MDMS:
 - Develop an MDMS-specific cutover plan detailing steps, timelines, and dependencies for transferring MDMS operations, to be approved by CCT three months before the transition.
 - Document all MDMS-related assets and configurations, including digital assets, system customizations, and integration points with other systems.
 - Perform a complete backup of all MDMS data, ensuring data integrity and security. Establish secure protocols for efficient data transfer to the new service provider.
 - Provide detailed integration and configuration documentation, including diagrams of MDMS integration points, IoT, network configurations, and guides for adding new devices.
 - Share troubleshooting guides for common MDMS issues to assist the new provider in rapid issue resolution.

3.14. Progressive monthly Interim payment certificates

For work done shall only be valued at the milestones indicated below.

- Meter Installed and Manually readable = 40%
- Meter Installed and Commissioned = 90%
- Meter Certified Complete as Part of an Order = 100%
- Less KPI Penalties of any preceding Month
- Less any completion penalties and
- Other recovery permitted by the agreement.

The final payment milestone of any Goods and Services delivered as part of an order will only be certified for payment when the order in its entirety has been completed. For any part of an order to be certified at the 100% Milestone, the order in its entirety needs to achieve 100% completion.

4. Physical Components

Standards

The following specifications shall apply and shall be treated as compulsory requirements for the smart static / solid state meters (ultrasonic or electromagnetic) smart water meters:

15mm, 20mm, 25 mm meters

- Meters must be NRCS type approved. The NRCS Type Approval Certificate must be provided per type/size in this range. Only valid NRCS certificates with the relevant SA number, including, where relevant the AA number will be accepted. (Bidders are to note that your SA number must correlate to the relevant SA number on the NRCS type approval database. The CCT will also confirm all Type Approval Certificates with the NRCS)
- Each meter that is supplied to be installed must have an individual verification certificate from a SANAS accredited laboratory and designated by the NRCS. (bidders are to note that one Verification certificate can list multiple water meters so long as that single certificate indicates all the meter serial numbers that were tested for verification)
- Each water meter shall be clearly marked in accordance with clauses 6 of SANS1529-1 and SANS1529-9.
- Communication components should be accompanied by evidence of the relevant ICASA certification for that make and model of the meter.
- Designation Certificate of the SANAS accredited laboratory to be provided, confirming the NRCS designation of the verification accredited body.
- Certificate and Scope of accreditation from Manufacturer/Laboratory

40mm, 50mm, 80mm, 100mm

- Certificate and Scope of accreditation from Manufacturer/Laboratory
- NRCS Letter for sale of unapproved meters. one letter per type/size – pending type approval.
- Certificate and Scope of accreditation from Manufacturer/Laboratory
- Verification Certificate per Type and Size, from a SANAS verification accredited body and designated by NRCS or Calibration Certificate per Type and Size, from a SANS/ISO 17025 calibration accredited body.
- Each water meter shall be clearly marked in accordance with clauses 6 of SANS1529-1 and SANS1529-9.
- Communication components should be accompanied by evidence of the relevant ICASA certification for that make and model of the meter.
- Designation Certificate of the SANAS accredited laboratory to be provided, confirming the NRCS designation of the verification accredited body.

150 mm, 200mm, 250mm

- Certificate and Scope of accreditation from Manufacturer/Laboratory
 - Individual calibration Certificates in accordance with ISO/SANS 17025 should be provided.
 - Communication components should be accompanied by the relevant ICASA certification.
- All 15 mm, 20 mm and 25 mm water meters should be type approved for a prescribed purpose (trade use) by the National Regulator for Compulsory Specifications (NRCS) in South Africa in accordance with the requirements of SANS 1529 (-1 and 9) and Section 22 of the Legal Metrology Act, 2014 (Act 9 of 2014).
 - All smart water meters must be metrological Class C or higher.
 - All water meters up to DN100 mm shall comply to the requirements of SANS 1529 (part 1 and 9).
 - All 40 mm -100 mm water meters shall have a letter of exemption signed by the CEO of NRCS (mandatory) and shall be provided with the tender submission for all water meters DN40 to DN100mm.
 - All water meters supplied must be tested and verified within the borders of South Africa in accordance with the requirements of section 7 of the Legal Metrology Act 2014 (Act 9 of 2014). All verification must be performed by a registered Verification Officer in an SANAS Accredited Verification Laboratory.
 - These bodies, as a prerequisite for designation, need to be SANAS accredited and the NRCS makes the determination of compliance at the time of designation. NRCS issues a designation certificate to bodies appointed to carry verification on behalf of the National Regulator. SANS 10378 deals with general

requirements for the competency of verification laboratories. The CCT will request for this proof of NRCS designation.

- The CCT may also request individual test reports from each meter that has gone through the verification procedures. These test reports must be kept in electronic format and provided to the CCT when requested.
- Meter and device manufacturers should have a Quality Management System as required in ISO 9001:2015 which must be proved through the relevant ISO 9001:2015 certificate.
- Water meters shall facilitate Advanced Metering Infrastructure (AMI) technology, but the AMI technology shall not interfere with the metrological performance of the water meter.

The following specifications shall apply and shall be treated as compulsory requirements for meter enclosures (boxes), fittings and valves:

- SANS 1601 is a standard that specifies the minimum requirements for valves used in water supply systems.
- The valve shall be tested and approved as per SABS-SANS specifications: SANS 16135:2009.
- The Restrictor valve shall be tested and approved for PN-16 Rating under the SABS specifications (SANS 16135) - only for 15mm, 20mm and 25mm meter sizes.
- The reflux valve shall be tested and approved for PN-16 Rating in accordance with the SABS specifications (SANS 1601) and should be JASWIC recommended.
- The stop valve shall be tested and approved for PN-16 Rating in accordance with the SABS specifications (SANS 1601) and should be JASWIC recommended.
- All meter boxes must adhere to SABS standards. Proof of performance testing must be provided in terms of SANS 558:2016 for the manhole cover and frame of a below the ground water meter box.

Standards for the communication /device/modem shall include:

- IEC61000-4-2 (Level-2): Standard for Electrostatic Discharge.
- IEC61000-4-4: Standard for Fast Transient Burst.
- IEC61000-4-5: Standard for Surges Immunity.
- IEC61000-4-6: Standard for Radio Interface Measurement (CS).
- IEC61000-3-2/CISPR22: Standard for Conducted Emission.

Functional Requirements

Smart Water Meters

The CCT existing meter asset portfolio is primarily mechanical meters that measure water volume using rotary or piston mechanisms. In addition, around 300,000 Water Management Devices have been installed with a flow restriction or shut off capability. It is envisaged that between 100 000 to 130 000 meters will need to be exchanged or installed with quantities per meter size is provided in the pricing table. The meters must be replaced with smart static (solid state) meters that are:

- Smart ultrasonic water meters or
- Smart electromagnetic water meters

The metrology standards below cover all meter types with any additional CCT specific functional requirements provided.

- Meter markings and dimensions:
As per SANS 1529 part 1 or 9, the meter must have a unique serial number. The serial number must be of a permanent nature on the meter, clearly marked on a conspicuous part of the meter. It must remain intact and must not fade for the life cycle of the meter. Serial numbers must relate to the year of manufacture of the meter. The meter serial number should be readable from same position as

- the display of ready.
- Product code
- Approval number
- Meter size and nominal flow
- Nominal bore of the meter in mm.
- Marked expiration year of measuring insert on meter faceplate.
- An arrow indicating the flow direction shall be indicated on the side of the meter.
- The meter shall record volumetric flow in cubic meters The register shall indicate volumetric readings in SI units (cubic meters/litres) and must read to three decimal places for calibration and testing purposes.
- The register shall have a transparent cover free from bubbles, dirt, or other defects that reduce transparency.
- The components that make the meter accessible such that the correct indications and/or register can be influenced, shall be sealed.
- All water meters shall be barcoded for ease of capturing and recording the asset. Scanners for uploading the barcoded Information, such as unique serial number, type of meter, manufacturer, class, and size relative to their product, shall be made available; alternatively, proof must be provided that the barcode can be scanned by the CCT mobile devices.
- Sealing: The verification and protective marks allowed to be affixed to a water meter is described in the type-approval document issued for the type approved water meter. The seal on the meter must be anti-corrosive and be made of strong material and remain intact for at least the life cycle of the water meter. The life cycle referred to in this instance is 15 years for both metrology and battery life. The meter housing shall be made of high-performance thermoplastic and shall be full IP68. The Meter shall have a device or other means of protection such that, after the meter has been verified, it can be so sealed or protected that there is no possibility of dismantling the measuring element from the indicator or altering the meter before or after installation, without damaging the seal or component parts of the meter. A seal or a means of protection, which is located inside the meter body while is in use, need not bear any markings.
- Glass cover: The register shall have a transparent cover free from bubbles, dirt or other defects that reduce transparency. Heat treated, breakage resistant glass or a comparable plastic material is preferred. The cover shall withstand normal ambient conditions and a temperature of 70 degrees Celsius without deformation. Provision should be made for the removal of condensation on the underside of the cover.
- The water meter shall contain a minimum number of wearing parts to accurately record low flow rates and withstand flows exceeding the maximum rated capacity for short periods without damage. These requirements for the type-approval of water meters are given in SANS 1529-1- and –9 is inclusive of endurance testing.
 - The meter body (with exception of piston meters) shall have an option of permanently installed moulded flow conditioner in the inlet port.
 - The meter body shall be capable of accommodating a meter mechanism to facilitate in-situ meter accuracy check and verification.
 - The meter shall be suitable for operation in water at temperatures up to 50 degrees Celsius.
 - All parts of the meter shall be robust, durable and non-corrosive.
 - All parts in contact with water must be water resistant.
 - Internal components shall be made of high-grade polymer provided it will not affect the quality of water adversely.
 - The meter body (if metallic) must be free of any blow holes and other flaws and be accurately machined.

- The requirements for pressure testing water meters are prescribed in SANS 1529-1 and -9. Meters must be suitable to withstand specified test pressure without deformation, leakage, or impairment of metrological integrity.
- As per SANS 1529-1 and -9 the use of non-corrosive metals must be used if subject to underwater use.
- All internal plastic components must be constructed of materials without any materials of scrap value.
- For larger diameter meters the cover bolts must be stainless steel for easy removal of the mechanisms and installed with stainless steel washers.
- The meter must be fitted with a hermetically sealed, dry dial, glass-faced register sealed to IP68 protection to prevent the ingress of dirt or moisture.
- Design details shall be required regarding the minimum lengths of straight pipe required upstream and downstream from each type of installation to maintain specified accuracies.
- The performance of the offered meters shall not be adversely affected by outside magnetic influences.
- Meters purchased against this tender are intended for a prescribed purpose as contemplated by the Legal Metrology Act of 2014.
- Meters falling within the scope of the Legal Metrology Act of 2014 must comply with the Act and all Regulations.
- A Certificate of Exemption signed by the director of NRCS Legal Metrology (mandatory) shall be provided with the tender submission for all water meters DN40 to DN100mm.
- Flow Rate Range Domestic meters of offer must fall within the starting and maximum flow rates as prescribed in SANS 1529-1 and -9.
- Meters supplied shall be of an in-line type (not concentric) which will be worked in the direction indicated by an arrow on the meter body.
- The flowmeter shall be capable of measuring flow total in both directions, with two independent totalisers to give flow for network management purposes.
- Size and end connection type
 - The size of meter shall mean the clear internal diameter of inlet to and outlet from meter.
 - The connection type of the meter end shall be externally threaded.
- Each meter is to be supplied with an individual calibration certificate submitted with the commissioning.
- The associated radio units with the meter shall have in-built storage capacity. It shall be able to store daily readings for a period of at least 12 calendar months and month-end readings for at least 3 years. The unit must be able to be interrogated via optical connection or near fixed communication (NFC) with a handheld unit.
- Water meters (sized 40mm and larger) using an inductive pulse, or encoder output capability, shall include a compatible MIU that is fixed to the meter.
- Data Security is critical, and individual key encryption is required to prevent unauthorized access to consumer consumption.
- Meter Battery Life: Battery life is a function of both the meter (ultrasonic and electro-magnetic) and the communications elements. Power-saving modes shall help to reduce power consumption during periods of inactivity. These modes can be enabled when the meter is not actively transmitting or receiving data and can help to prolong battery life. This will be a function of both meter and communications and shall be proposed by the meter/communications supplier.
- Battery Management System: Implementing a battery management system shall help to optimize the use of the battery and extend its life. The battery management system monitors the battery capacity, temperature, and other parameters to ensure that the battery is being used efficiently and not overworked.

- Software updates: Software updates shall optimize the performance of meters and reduce power consumption. These updates can include bug fixes, security patches, and power-saving features.
- Firmware updates: Regular firmware updates and maintenance to the meters shall ensure that the meters continue to perform optimally and avoid early failure due to firmware issues.
- Alerts
 - Meter tampering - Upon detecting unauthorized access to the meter.
 - Dry conditions - If air is present in the meter for at least 5 seconds.
 - Reverse flow - When water flow reverses in the meter at a rate greater than Q_1 for five consecutive minutes.
 - Low battery - If the battery voltage in the meter falls below the set threshold.
 - High flow - When the water flow exceeds Q_4 for 5 minutes.
 - Leakage - If there is no water flow detected for at least one continuous hour within a 24-hour period.
 - Burst - When the water flow consistently exceeds the predetermined limit for 30 minutes.

15mm to 25mm

Smart water meters not exceeding 25 mm nominal bore offered shall have metrological class of C or D. Table 1 is Metrological class of meters including starting flow rate as per table below. The estimated revenue determined by the flow rate of the meters offered will be taken into account in the evaluation.

Table 1 – Metrological class of meters

1	2	3
Metrological class of Meter	<i>For q_p not exceeding 10 m³/h</i>	
	Minimum flow rate q_{min}	Transitional flow rate q_t
C	$0.01q_p$	$0.015q_p$
D	$0.0075q_p$	$0.0115q_p$

40mm to 100mm

Smart water meters not exceeding 100 mm nominal bore offered shall have metrological class of C. Table 2 is Metrological class of meters including starting flow rate as per table below.

Table 2 – Metrological class of meters

1	2	3
Metrological Class of Meter	<i>For q_p exceeding 10 m³/h</i>	
	Minimum flow rate q_{min}	Transitional flow rate q_t
C	$0.006q_p$	$0.015q_p$

150mm to 300mm

All smart water meters offered shall have metrological Class C, or higher. Table 2 is Metrological class of meters including starting flow rate as per table below.

Table 3 – Metrological class of meters

1	2	3
Metrological Class of Meter	Minimum flow rate q_{min}	Transitional flow rate q_t

C	$0.006q_p$	$0.015q_p$
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Smart Remote Flow Restrictor

- For 15mm, 20mm and 25mm meter sizes
- Smart Remote flow restrictors must be separate and downstream from the meter. The decision to restrict flow will be governed by customer policies. However, the specifications mandate the capability for remote flow restriction, encompassing both partial and complete volume flow limitation.
- The use of remote shut-off valves offers valuable advantages, including enhanced convenience and control in various scenarios. This includes emergency situations, instances of non-payment, the need for temporary water service discontinuation, or the requirement for remote flow restriction.
- Importantly, it's estimated that only around 2,000 of these valves will be needed, primarily for cases involving high water usage or situations where water supply needs to be controlled for specific reasons.
- Communication between the Smart Remote Flow Restrictor and HES happens over the NB-IoT protocol.
- Battery lifetime must be greater than 10 years.
- The valve shall have 3 functions: open, closed, and restricted.
- When in the (R) restriction mode valve supplies water at a rate and pressure to be specified by the Employer's requirements.

AMI MIU and relevant signal boosting devices

- For specific metering scenarios (which will be in very rare cases and estimated to be less than 0.5% of the 130 000 meters the) for meters sized 40mm and larger that are not replaced or those situated in underground chambers where direct integration of communication technology within the meter can be challenging. This is due to constraints like limited space and potential signal limitations, especially prevalent in industrial and commercial settings.
- To address these challenges, the use of separable components, such as MIUs, external communication modules, or transmitters, or repeaters or relevant signal boosters relating to the service providers meter and communications technology may be required. These components can be securely installed either in close proximity or alongside the meter or within accessible areas of the meter chamber.
- A MIUs, external communication modules, or transmitters, or repeaters or relevant signal boosters serves as a key device in these scenarios to enable connectivity.
- In addition, in certain scenarios where the CCT wishes to obtain data from the non-revenue bulk meters (estimated to be 600 in number) an MIU will be the preferred option. The MIU captures water usage data and transmits it to a central system for analysis. While the ideal setup involves meters with integrated communication devices, MIUs prove invaluable when such integration isn't feasible. For instance, some water meters come with a pulse output read by the MIU. fitting these MIUs onto existing meters, especially larger ones, ensures comprehensive AMI coverage while optimizing costs. Thus, the MIU provides a flexible solution, accommodating meters where direct communication technology integration isn't practical.
- The key requirements of the MIU are as follows:
 - Only for meter sizes 40mm and larger.
 - The pulse unit or encoder shall be of same brand as the supplied water meters or certified to be 100% compatible with the meter it shall be paired with.
 - The serial numbers on the pulse unit or encoder shall be stamped/engraved.
 - The transmitter shall connect to the meter and/or sensing element to collect, store, and transmit meter readings and meter and transmitter events/alarms to a field Network Infrastructure.
 - Transmitters shall be self-contained and operate with internal battery/batteries (dry cell and maintenance free type) as the only power source. The unit should be of ultra-low battery consumption design as there is no external electricity power supply available at the meter positions. It shall remain

- operable within the limits of normal operation under local climate conditions for at least fifteen (15) years from commissioning without need of battery maintenance or replacement.
- Normal operation of transmitters is defined as having a daily transmission of at least hourly interval meter reading within 24 hours at a pre-determined time, and other successive transmission attempts to comply with the agreed System Testing and Acceptance.
 - The transmitter shall store at least 2 weeks of hourly meter readings at its non-volatile memory, and it shall be able to store daily readings for a period of at least 12 calendar months and month-end readings for at least 3 years. It is preferred, but not required, that the transmitter transmits its interval data to include at least one set of redundant transmissions. For example, if a transmitter transmits four times per day (every 6 hours), each transmission shall include the current six hourly intervals and the previous six hourly intervals.
 - The transmitter must automatically provide missing interval readings (not in the Network Operator System but stored locally in the transmitter), without manual intervention, to enable the running reports.
 - The transmitter shall be capable of generating and transmitting its system alarms such as tamper, poor signal warning, and low battery. Where encoder alarm and usage alert features are available, the transmitter should be able to differentiate, capture and transmit these alarms/alerts. Usage alerts include logs of abnormal flow events. Encoder alarms include logs of encoder dismount, encoder tamper, and encoder low battery.
 - The transmitter shall be able to transmit at least 1litre resolution but with greater resolution appropriate to meter size.
 - Transmitter must be capable of capturing pulse or encoder outputs from separate pulse generation or encoder units attached to existing or AMI-ready water meters. The generated pulses can be dry switch or open collector. Water meters installed at the customers' premises do vary in size (nominal diameter 25 mm to 300 mm), type (single or compound meters) and different models/makes. The supplier shall ensure that the transmitter units are compatible with the pulser or encoder units and the existing or AMI meters.
 - The system shall utilize real time clocks and time stamp all meter reading and event data. Time synchronization shall be provided. It is preferred that GPS is utilised to ensure synchronization is within ten milliseconds of NIST standards (or equivalent).
 - Transmitters shall permit different meter reading intervals to be transmitted to the fixed-base AMI network (15 min reads, hourly reads, etc.). Changes to the default meter reading intervals are preferred to be made over the air, through the AMI meter solution. Changes to the default meter reading intervals, for brief period, are preferred to not impact the 15-year life of the product.
 - The following functionality is required from the pulse or encoder units:
 - Minimum cabling to support functions for tamper alarms, flow direction, compensated pulse output, uncompensated pulse output, ground.
 - Compensated pulse output (if applicable)
 - Pulses (if applicable) are generated only for forward flow. Backflow (i.e., reverse flow) is compensated by the integrated electronic algorithm.
 - Directional flag (the direction pulse indicates whether the flow is forward or reverse flow)
 - Removal pulse or encoder dismount alarm (activates alarm when the pulse or encoder unit is lifted off from the meter)
 - Wire cut alarm (alarm shall be raised if the pulse or encoder cable has been externally cut)
 - Ground wiring (to ensure proper grounding and ensure good EMC/EMI protection scheme.)
 - The following output signal is required:
 - The pulse width shall be between 65ms to 80ms, shall be if applicable.
 - The output signal shall be able to connect to the compensated output and to universal Meter Interface Unit (MIU)/transmitter for meters sized 40mm and larger.

- Default output shall have a minimum resolution of at least 100 litre per pulse for the main register and 1 litre per pulse for the bypass register, or equivalent for encoder output.
- Cable length for sensing element supplied shall be at least 2m long to allow universal Meter Interface Unit (MIU) for connection.
- The design of the pulser or encoder unit shall not be limited by the supplied standard minimum cable length of 2m as there are instances whereby longer cable length might be required.
- The following battery lifespan is required:
 - Power shall be supplied to the pulser or encoder by battery. The supplier shall warrant that any battery installed in the pulse unit or encoder shall be free of manufacturing and design defects for a period of 15 years from installation to existing or AMI Meter acceptance, without pro-rating.
 - The battery lifespan of the pulse unit or encoder shall be 15 years under local climatic conditions.
 - The service provider shall submit a test certificate from an accredited local or international laboratory for the battery life cycle testing.
 - There might be instances where the water meters are exposed to direct sunlight and outdoor conditions (i.e., rain, strong sunlight, and direct UV exposure). The pulse or encoder and cabling element shall be protected against such conditions as it shall be mounted directly onto the water meters.
 - There must be a clear indication of date/manufacturing date of the battery lifespan label on the pulse or encoder unit.
- Meter Data - At a minimum the following meter data needs to include the following additional functionalities as defined by specification:
 - Tamper detection – activated on removal of communications module or battery.
 - Leak detection – the flowrate and duration of continuous flow required to activate a leak alarm shall be pre-programmed to values to be provided. It shall be possible for these to be set to alternative values by an authorised person.
 - Reverse flow detection and alarm.
 - Low battery alarm.
 - Burst detection – sudden exceedingly high surge in flow, indicative of a pipe burst.
 - Zero flow
 - The meter shall be capable of storing sub-totals of consumption at predefined tariff boundaries. Tariff boundaries may be set either at specified times or at volumetric boundaries (block tariffs).
 - The meter shall be able to store monthly water consumption totals for each tariff for at least 3 -6 months.
 - Consumption data and programmed settings shall automatically be stored by the meter for a minimum period of 30 days in the case of a battery failure.

Meter Enclosure, Fittings, Valves with Anti-Tamper Mechanism

The variety of meter enclosures, boxes, and chamber designs in CCT lacks standardization. Consequently, service providers must adhere to the specific requirements and specifications governing meter enclosure, fittings, valves, anti-tamper mechanism, housings, and chambers, encompassing all meter diameters.

All anti-tamper mechanisms are to be lockable and removable.

In cases where the supplier offers an integrated meter/box/valve configuration, they may propose recommendations for the replacement of meter enclosures tailored to each meter typology. This includes considerations for plumbing adjustments and necessary upgrades.

In general, all smart meters should be installed ground mounted (below the ground). There is instance where this may not be possible. For comprehensive guidance, we present the comprehensive set of standards and functionalities.

Specifically for 15 – 25 mm

Ground mounted enclosure and boxes:

- The general specifications for the installation of water meters from 15 mm to 25mm nominal bore are for plastic meter boxes fitted with the domestic smart water meters.
- All meter boxes must adhere to SABS standards. It is required that the tenderer provide proof in the form of certificate/s of approval which should be submitted with tender.
- Pipes, fittings and valves within the box must be to SABS standards and should be JASWIC recommended.
- Plastic meter enclosure and base plates must be made from thermoset plastic HDPE material.
- The anti-tamper mechanism must be removable and lockable.
- The meter box must accommodate a ball stop isolating valve and a non-return valve inside the box.
- Meter boxes must be fitted with B.S.P. threaded nipples and / or HDPE inlet and outlet quick coupling and the inlet and outlet ports must be of the same size.
- The lid must be UV stabilized and include access for an external lifting device to be used. The meter box lid to be of the hinged variety with the securing pin moulded in identical modified polypropylene to ensure compatibility.
- The plastic water meter boxes must be able to take a 49kN vertically.
- Any metallic parts in contact with the water must be manufactured from dezincification resistant brass which when tested in accordance with the latest provision of ISO 6509. The inlet and outlet connections must be threaded internally or externally to ISO 228 to suit the nominal bore of the meter to be installed.
- Meter box to be fitted with 22mm female BSP thread (plastic reinforced) in- and outlet.
- Size of box: $\pm 320 - 350$ mm (length) x ± 180 mm (depth) x ± 150 mm (width)
- Meter box to be fitted with a base plate to prevent the ingress of soil, water etc.
- The internal pipework is manufactured from 30% glass reinforced Nylon.
- Meter couplings to be so designed that they retract to create a gap when loosened, thus allowing easy removal of the meter without having to apply pressure to force the connectors away from the meter.
- Couplings to be designed to form a perfect seal without the aid of 'O' rings, or rubber washers.
- Joints to all fittings in the meter box to be fusion welded to prevent leaks.
- All meter boxes to be pressure tested with air to 600Kpa and pressure tested to SABS –558:2016

Restrictor valve:

- For 15mm, 20mm and 25mm meter sizes.
- The restrictor valve shall be installed upstream of the smart meter and located inside an enclosure or box.
- The valve shall be tested and approved for PN-16 Rating under the SABS specifications (SANS 16135).
- The valve shall consist of a master key and lock to adjust the valve to avoid tampering.
- The valve shall have 3 functions: open, closed, and restricted.
- When in the (R) restriction mode valve supplies water at a rate and pressure to be specified by the Employer's requirements.
- The turn of the Master Key shall initiate self-cleaning and switch between open, closed and restrict, without having to remove the valve.
- The restrictor valve shall be placed upstream of the meter in water meter box with stop tap placed downstream of the meter, the latter also in the meter box.
- Consideration will be given to vendor options on restrictor valve design and functionality subject to compliance with above standards.

Reflux Valve:

- The meter shall be fitted with a reflux valve (check valve/non return valve) upstream of the meter to avoid backflow and possible contamination of the water reticulation system located inside an enclosure or box.
- The reflux valve shall be tested and approved for PN-16 Rating in accordance with the SABS specifications (SANS 1601) and should be JASWIC recommended.

Stop Valve:

- The meter shall be fitted with a 20mm ball valve downstream of the smart meter inside the meter box.
- The valve shall be tested and approved for PN-16 Rating in accordance with the SABS specifications (SANS 1601) and should be JASWIC recommended.
- The valve shall be made of high-quality materials such as brass or stainless steel and shall be corrosion resistant.
- The valve shall be easy to operate and shall provide a positive shut-off of the water supply to the property.
- Note: All valves shall be installed in accordance with the relevant municipal by-laws and regulations and shall comply with the water service provider's requirements.

For >40mm meters

- The re-use of the existing box or chamber should be the primary consideration as part of the programme which the CCT and service provider will jointly agree on.
- Below-Ground Meter Chambers for larger diameter meters, typically those exceeding 40mm, should be designed to accommodate the size and specifications of these meters accurately.
- Due to the larger size and weight of the meters, the chambers must feature reinforced construction, ensuring structural integrity and longevity.
- The lid or cover of these chambers should provide a secure and weatherproof enclosure while allowing easy access for meter reading, maintenance, and replacement. The lid design should be sturdy and compatible with the chamber's load-bearing capacity.
- Chambers for larger diameter meters should offer ample working space to facilitate equipment replacement, bolt access, and any required maintenance procedures.
- The design of these chambers should effectively protect the meters from environmental factors, including soil, water, and temperature fluctuations, to maintain accurate meter readings.
- Like smaller meter boxes, chambers for larger meters should also include tamper-resistant features or security measures to discourage unauthorized access or tampering.
- Chambers must be designed to withstand the water pressure conditions within the system they are installed in, preventing leaks or structural failure.
- The materials used in the construction of these chambers should be highly durable, resistant to corrosion, and capable of withstanding the stresses associated with larger meters.
- The meter box must be fitted lockable hinged cover and fitted with a sealed base plate to prevent infiltration of water or foreign objects.
- Meter boxes must be made from polymer concrete or fibre cement.
- The meter box must accommodate a ball stop isolating valve, non-return valve and a strainer inside the box.
- In the case of brass ball stop isolating valves, non-return valves, strainers, and nipples it must be DZR and SABS approved.
- Meter boxes must be fitted with B.S.P. threaded brass nipples and locking nuts.
- The meter chamber cover should be round and manufactured of polymer concrete and should be hinged.
- Meter boxes must be able to take a 40 kN load vertically.
- Any metallic parts in contact with the water must be manufactured from dezincification resistant brass.

- The inlet and outlet connections must be threaded internally or externally.
- In case of repairs or replacements, below-ground meter chambers should allow for straightforward removal and installation of meters and associated components, considering the larger size and weight of these meters.
- Safety features should be integrated into the chamber design to prevent accidents or injuries during maintenance or meter-related activities.
- Chambers for larger diameter meters must adhere to all relevant industry standards and regulatory requirements, ensuring their safety, performance, and durability.

5. HES, VPC & MDMS

Standards

Shall comply to the following standards.

- IEC 61968 – part 9 and part 11 Common Information Model (CIM). This document is Part 9 of the IEC 61968 standard and specifies the information content of a set of message types that can be used to support many of the business functions related to Meter Reading and Control. Typical uses of the message types include meter reading, controls, events, customer data synchronization and customer switching. Although intended primarily for electrical distribution networks, IEC 61968-9 can be used for other metering applications, including non-electrical metered quantities necessary to support gas and water networks (**Through self-declaration and confirmation during implementation**). The purpose of this document is to define a standard for the integration of Metering Systems (MS), which includes traditional manual systems, and (one or two-way) Automated Meter Reading (AMR) Systems, Meter Data Management (MDM) systems with other enterprise systems and business functions within the scope of IEC 61968. IEC 61968-11:2013 specifies the distribution extensions of the common information model (CIM) specified in IEC 61970-301. It defines a standard set of extensions of common information model (CIM), which support message definitions in IEC 61968-3 to IEC 61968-9, IEC 61968-13 and IEC 61968-14. The scope of this standard is the information model that extends the base CIM for the needs of distribution networks, as well as for integration with enterprise-wide information systems typically used within utilities.
- NRS 049:2016 - ADVANCED METERING INFRASTRUCTURE REQUIREMENT FOR SMART METERING SYSTEM. NRS 049 presents an "open standard" reference architecture which means that each entity within the metering system presents a standard interface and a standard semantic and Utilities are thus able to specify any part of the system optionally and selectively, or an integration of selected parts into sub-systems, while still adhering to the standard interfaces. NRS 049 covers the entire smart metering system from the enterprise level down to the end device. For the purposes of this tender references to the end device should be ignored given as it applies to electricity metering. Service providers are to comply to these standards as best as possible (**through self-declaration and confirmation during implementation**)
- POPIA: POPIA stands for the Protection of Personal Information Act, which is a data protection and privacy law enacted in South Africa. HES systems must comply with POPIA requirements to protect the privacy of individuals and ensure the responsible use of personal information.
- IEC-62443-1-1:2009: This standard defines the terminology, concepts and models for Industrial Automation and Control Systems (IACS) security. IEC 62443 is a series of international standards that provide guidelines for securing industrial control systems (ICS) and operational technology (OT) networks. A key framework for Industry 4.0, it covers a range of security topics, including risk assessment, security policies, network security, access control, and incident management.
- AES-128-bit: This is a standard for encrypting sensitive data using session key that is 128 bit long.
- OAuth2: This is a standard designed to allow a website or application to access resources hosted by other web apps on behalf of a user.
- IEEE 802.11: This standard defines wireless local area network (WLAN) communication protocols. The HES should support IEEE 802.11 to enable wireless communication with the smart meter system equipment.

- ANSI C12.22 - This standard specifies the physical and data link layer requirements for communication between the metering devices and the HES in an AMI system.
- ISO 4064-1:2014: This standard specifies the general requirements and test methods for water meters used for billing purposes. The HES should comply with this standard to ensure accurate billing of water consumption.

Security:

- IEC-62443-3-3:2013: This standard defines the terminology, concepts and models for Industrial Automation and Control Systems (IACS) security.
- FIPS 140-2: System that is in compliance with FIPS 140-2 certifies that cryptographic systems meet strict security requirements, providing assurance of robust encryption and data protection.
- AES-128-bit: This is a standard for encrypting sensitive data using session key that is 128 bit long.
- OAuth2: This is a standard designed to allow a website or application to access resources hosted by other web apps on behalf of a user.
- ISO/IEC 27001: An international standard for information security management systems (ISMS). It provides a systematic approach for managing sensitive company information, ensuring its confidentiality, integrity, and availability. This standard is crucial for securing data and communication networks in the project.
- ISO/IEC 27032: This standard focuses on cybersecurity, providing guidelines for improving the state of cybersecurity globally. It covers topics such as cybersecurity policies, strategies, and incident response.
- ISO/IEC 27002: This standard provides a comprehensive set of guidelines and best practices for information security management systems. It covers various aspects of information security, including risk assessment, access control, cryptography, and incident management.
- ISO 22301: This standard specifies requirements for a business continuity management system (BCMS). It ensures that organisations can maintain critical business functions during and after disruptions, including cyberattacks.
- ISO/IEC 15408: An international standard for evaluating and certifying the security of information technology (IT) products and systems. It provides a structured framework for assessing security features, using protection profiles tailored to specific IT components. The standard defines evaluation assurance levels (EALs) to indicate the rigor of evaluation, and it includes security functional and assurance requirements.

Functional Requirements

HES

The HES plays a pivotal role in our Smart Water Meter program. It encompasses essential hardware, software, and firmware components necessary for the efficient commissioning, querying, operation, management, optimization, and interaction with both the Advanced AMI network components and smart meters. The HES must consist of a software-based solution designed for deployment within an on premise or cloud-based IT environment. The HES must be engineered to function on widely accepted industry-standard operating systems, offering flexibility and compatibility. These operating systems encompass a range of options, ensuring compatibility with various hardware configurations and technical requirements. To facilitate operational tasks, the HES must provide an operator console. This console serves as an internet browser-based application interface for operators to efficiently perform their tasks. The HES acts as the data interface from the meter to the MDMS and business process. The HES must be capable of reading multiple meter types when required through a meter and network protocol integration based on open standards. Moreover, the HES should have the ability to send flat files & integrate with existing IT platforms.

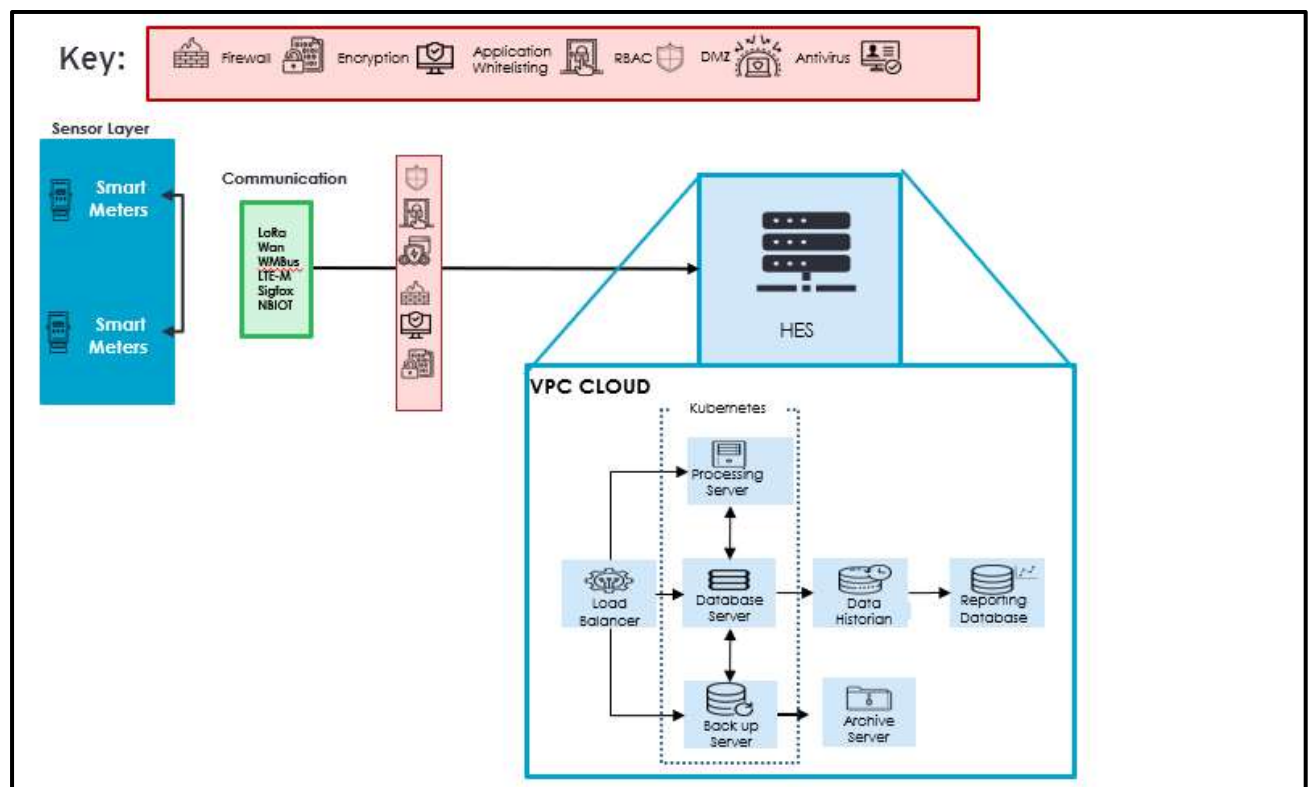
The procurement requirement is for a Head End System (HES). The successful service provider will

collaborate closely with the CCT to ensure a smooth implementation process, meet the required design specifications, and adhere to security and disaster recovery requirements. Additionally, the service provider should demonstrate their ability to develop and integrate data interfaces, reporting tools, and archiving components tailored to the Municipality's specific needs.

The service provider will not only be responsible for the design, configuration, installation, and deployment of the Universal HES and MDMS but will also provide maintenance and support services. This includes ensuring the ongoing functionality and performance of the Universal HES and MDMS, addressing any issues or technical challenges that may arise, and providing timely resolutions to minimize downtime.

The service provider will offer regular maintenance activities such as software updates, bug fixes, and patches to keep the HES up to date and secure. They will also provide technical support to address any user inquiries, troubleshoot problems, and offer guidance on system usage. These services will enable the CCT to have access to prompt assistance and expertise whenever required, allowing for seamless operations of the smart water meter solution.

It is a critical requirement that the services providers HES has the ability to easily integrate with other water meter manufacture types of meters where such meters utilize open standards and protocols of integration, the MDMS and both the SAP ECC6 on premise environment and SAP S4 HANA cloud environment in particular the SAP ISU and Plant Maintenance application modules. The envisaged high level solution architecture is depicted below:



- Initial Implementation (2 months):
 - Purchase and installation of the HES.
 - Configuration of data interfaces, implementation fit components, reporting tools, and data take-on/archiving components.
 - Migration of historical data.
 - Training of solution administrators, users, and support and maintenance personnel.
- Support and Maintenance of HES (3 years):

- Provide continuous support and maintenance for the Head-End System (HES) to ensure optimal performance and reliability.
- Offer timely resolution of system issues and technical support to minimize downtime and ensure uninterrupted operation of the HES.
- Conduct regular system updates, including patches and upgrades, to maintain the security and functionality of the HES.
- Monitor the performance of the HES and implement optimization strategies to ensure system efficiency and reliability.
- Handle troubleshooting and incident management to address any unexpected issues promptly and effectively.
- Perform proactive maintenance activities to prevent potential issues and ensure system stability.
- Assist with system enhancements and customizations as required to meet evolving needs and improve functionality.
- The service provider will be responsible for the design, configuration, installation, and deployment of the Universal HES. Additionally, they will provide ongoing maintenance and support services to ensure the continuous functionality and performance of the HES.
- Ensure the HES is operating efficiently, with all meters online and reporting accurately. Address any technical challenges that may arise and provide timely resolutions to minimize downtime.
- Oversee the day-to-day operations of the HES to ensure all meters are online and communicating effectively. Ensure data integrity and system reliability.
- Provide user support and guidance to CCT personnel on operating the HES, including system navigation, data management, and reporting.
- Continuously monitor the HES for any operational issues, ensuring prompt detection and resolution to maintain optimal system performance.
- Regularly review and analyse performance metrics to ensure the system is operating at peak efficiency. Implement improvements as necessary.
- Perform regular software updates, bug fixes, and patches to keep the HES up to date and secure.
- Offer technical support to address user inquiries, troubleshoot problems, and provide guidance on system usage. Ensure prompt resolution of any issues to maintain system integrity.
- Continuously monitor the HES to detect and address any performance issues. Optimize system operations to ensure all meters are online and functioning correctly.
- Provide dedicated support services during the initial implementation phase, including comprehensive training sessions for CCT personnel.
- Conduct training sessions focusing on equipping CCT personnel with the necessary skills and knowledge to effectively utilize the HES technology. Ensure staff are capable of managing the system and maintaining meter connectivity.
- Provide comprehensive support services for the first year to ensure a smooth transition and enable CCT personnel to confidently utilize the HES technology for efficient operations.
- Offer ongoing expert assistance to address any technical issues, provide updates, and support system enhancements. Ensure the HES remains operationally efficient, and all meters are consistently online.

The HES must:

- Be capable of handling a minimum of 130,000 meters (and up to 700,000 meters) for the CCT.
- Ensure that the smart meters connect to the system through device self-registration. Device self-registration is a process that allows smart meters to automatically connect to the system without manual intervention. When a smart meter is installed, it initiates a connection to the network and registers itself with the HES. Upon installation, meters power up, discover the network, authenticate themselves, send their unique data to the HES and become fully operational. This process ensures efficient deployment and reduces installation time.
- Collect data from various sources, including smart meters, data concentrators, and other connected devices. This data may encompass water usage data, network status, and device health data.

- Provide tools for analysing and reporting on the collected data from the smart water meter system.
- Have the ability to run initial simple meter data validations.
- Provide tools for controlling and monitoring the smart water meter system, including device configuration, network status monitoring, and system function control.
- Integrate seamlessly with other systems and platforms and integration platforms.
- Integrate with the MDMS through APIs endpoints tailored for master data and measurement data.
- Define API endpoints, data formats, and authentication methods to enable secure communication. Authentication, typically involving keys or tokens, ensures authorized access. Data is transmitted via HTTPS (containing CIM request messages) or WebSocket connections, with middleware aiding in data transformation and routing. The data is also protected by the implementation of OAuth2.0 and DNP3. Structured JSON, XML, GraphQL, LwM2M, UDP, CoAP, and SOAP formats guarantee consistency.
- Enable Data collection as follows:
 - Collect meter data daily at hourly interval consumption.
 - Be able to handle all data package sizes.
 - Have the ability to configure, read schedules, process readings for single, grouped, and arbitrary sets of meters.
 - Implement data compression techniques to reduce the size of data packages during transmission, optimizing bandwidth usage.
 - Ensure that data collected from meters undergoes thorough validation checks to identify and rectify any inconsistencies or errors.
- Provide a range of meter data packages, on-demand, and scheduled readings, based on the measured flow over a period. Algorithms use the index and time to create a series of data packages, typically these are and should include:
 - Index (count)
 - Fixed date read (allocated date and time that the billing read is to be used – usually end of month 23,30 on last day)
 - Date and time.
 - Usage
 - Continuous flow alarm (CFA) that indicates leaks.
 - Burst
 - Tamper (physical interaction with meter plus disconnection – also can include magnetic interference)
 - No flow
 - Meter status
 - Communication status
 - Reverse flow
 - Battery status
 - Temperature
 - Maximum consumption >Q4 and for what period
 - Self-diagnostic check

- Serial Number(s)
- Type(s)
- Firmware version
- A continuous flow alarm that needs to be set at a threshold level. Ideally at a level that measures genuine leaks and not continuous usage. Typically, this can be a minimum flow over a prolonged period. For example, CFA at 8 litres /hour over 48 hours. This resulted in around 7% of the meter asset stock providing alarms. The setting of CFA's requires a different approach for commercial users who require 24/7 water usage.
- Each meter-generated alert shall be accompanied by a duration the alert has been active that shall be stored in the HES and, as a User Interface configurable list, sent out by the HES to other applications or interfaces.
- HES should be able to specify the data packages that it needs to collect.
- Control and monitoring.
 - Processing Reads and Events
 - Event alarm notification configuration
 - Remote connect/disconnect of smart meters.
 - Remote valve control of smart meters
 - Network (communications equipment, smart meters, etc.) diagnostics.
 - Remote meter/DCU/Gateway configuration
 - Remote meter/DCU/Gateway synchronization
 - Reception of meter/DCU/Gateway events and alarms
 - Remote firmware upgrades/downgrades/management for individual or groups of meter/DCU/Gateways
 - Security of communications and information - provide a security, encrypted route to store the data.
 - Ability to manage several communications channels for each smart meter/DCU.
 - Designed to balance between different scenarios of P2P/P2MP communications.
 - Role-based access control
 - Grading storage capability to tolerate network exceptions.
 - Embedded retry mechanism to guarantee collection.
 - Device auto-registration, routing management
 - Meter Add Transactions
 - Meter Delete Transactions
 - Meter Update Transaction
 - Device clock synchronization
 - Send Text Message
- Analysis and reporting:
 - Required to provide robust Data Analysis and Reporting capabilities to the extent to enable the service provider to meet their Service Level Agreements (SLAs) and Key Performance Indicators (KPIs), ensuring the seamless operation of the online system.

- The HES should facilitate near real-time monitoring of KPIs to ensure that contractual commitments are consistently met. It should enable the service provider to track system performance, identify deviations, and take proactive measures when necessary.
- The HES collected data shall be available for display via an easy-to-use, web browser-based graphical interface.
- Be accessible by the meter asset team and potentially other stakeholders (depending on the MDMS selected)
- The HES Software shall be able to generate reports. Reports shall be able to include any of the SLAs recorded by the HES. The HES shall be able to monitor the following KPIs (and to include them in its reports),
 - Project rollout KPIs (schedule, general status, pending issues, scheduled actions).
 - Registered devices KPIs
 - Communications and communications topology KPIs
 - Data collection KPIs, for each type of collected data (e.g., interval data, registers, events, etc.) and for different time ranges (e.g., 1-day, 3-days, weekly, monthly, etc.)
 - Command KPIs, for each type of command (e.g., clock synchronization, meter configuration, valve connection/disconnection, firmware update, etc.)
 - Application and infrastructure KPIs (e.g., CPU usage, memory usage, etc.)
 - Collection data success and failure statistics and report
 - Real time event monitoring
 - Event notification
 - Data collection task monitoring
 - Device power status and communication monitoring
 - Status and fault monitoring
 - The reports shall be available in graphical and tabular views for reading and consumption for various intervals.
- Interoperability:
 - The HES should be able to connect and communicate with various manufacture types of water meters that use open meter, communication and data protocols that are used in the AMI grid related to smart water meters.
 - This ensures that the system is interoperable with all kinds of smart water meters and can provide accurate data for the water utility.
 - The HES should support various open communication protocols.
 - The HES should support various data exchange formats like XML and JSON to ensure that data can be exchanged seamlessly between different systems and devices.
 - The HES should be able to integrate with third-party applications, such as analytics and reporting tools, to provide valuable insights to the water utility and improve operational efficiency.
 - The HES should support cloud-based infrastructure like to ensure that the system can scale seamlessly as per the changing needs of the CCT.

VPC

- The service provider must set up the infrastructure to host the HES and ensure the optimal performance of the HES according to the services providers specifications. This infrastructure must be a private cloud that is created in the CCTs name. For the VPC setup the service provider must:
 - Create separate environments for development and production within the cloud. This allows for testing and deploying the AMI system without affecting live operations.
 - Establish a secure gateway into the cloud network. This ensures that authorized personnel can access the system remotely for management purposes.
 - Set up a cloud-based database to store and manage water consumption data securely. This database will be the backbone of the AMI system, ensuring reliable data storage and retrieval.
 - Deploy a Kubernetes cluster, which is like a virtual environment for running and managing applications. This will help in organizing and scaling the components of the AMI system efficiently.
 - Implement monitoring and logging tools to keep track of the performance and security of the AMI system. This allows for timely identification and resolution of any issues that may arise.
 - Define access controls to ensure that only authorized personnel have access to sensitive data and system resources. This helps in maintaining security and compliance with regulations.
 - As part of the proposal, the service provider is to provide the cloud infrastructure required to run the software but to ensure that such cloud tenancy is in the name of the CCT.
 - The provider will need to advise\recommend, as part of their proposal, on any specific requirements, taking into consideration factors such as capacity, scalability, High Available solution architecture, resiliency, Disaster Recovery, and any compatibility with the chosen software components.
 - The service provider must ensure that the cloud infrastructure required to support the HES and accommodate the scale of the program for the 3 years. The service providers responsibility is to assess the scale of the program, which includes the estimated number of meters (130 000 new smart meters to be installed over a 3-year period), data volume, and performance requirements.
 - Based on this assessment, they should recommend the appropriate hardware components that can handle the expected workload and provide scalability for future growth.
 - For the cloud deployment, the bidder is to recommend suggested virtual machines configurations and topologies that will be required for software to run optimally.
 - All software prerequisites required for the vendor solution to run should also be specified as part of your proposal.
 - The service provider should consider factors such as processing power, memory, storage capacity, data access speed, network bandwidth, and redundancy options when recommending. They should also ensure that the hardware is reliable, secure, and meets industry standards for performance and compatibility. By recommendation the correct components, the service provider can ensure that the HES operates efficiently, handles the anticipated data volume, and supports the anticipated data volume and supports the overall objectives of the AMI program The cloud service provider needs to provision the necessary infrastructure to run the software components of the HES. This includes specifying virtual machine configurations, topologies, and any additional resources required for optimal performance.
 - The cloud infrastructure should be reliable, secure, and compliant with industry standards for data protection and security. Redundancy options and disaster recovery mechanisms should be implemented to ensure high availability and data integrity.
 - Availability, Scalability, and KPIs:

- Define service level objectives (SLOs) and key performance indicators (KPIs) for availability, scalability, and reliability metrics such as uptime, response time, and error rates.
 - Implement automated scaling policies based on predefined thresholds and performance benchmarks to ensure optimal resource utilization and cost efficiency.
 - Monitor system performance and health using proactive alerting and anomaly detection mechanisms to identify and address potential issues before they impact service availability and performance.
- Data Historian Requirements:
 - Implement a tiered storage architecture with hot, warm, and cold storage tiers to optimize cost and performance based on data access patterns.
 - Utilize data compression and deduplication techniques to minimize storage footprint and reduce storage costs.
- Load Balancer Requirements:
 - Deploy a global load balancing solution to distribute traffic across multiple geographic regions for improved performance and availability.
 - Implement advanced traffic management features such as weighted routing, content-based routing, and health-based routing for granular control over traffic distribution.
 - Integrate with monitoring and logging services to capture and analyse traffic patterns for optimization and troubleshooting.
- Staging Server Requirements:
 - Utilize serverless computing platforms for cost-effective and scalable data processing.
 - Integrate with data governance and metadata management tools to catalogue and govern data assets across the staging environment.
- Data Storage Requirements:
 - Implement object storage services with versioning and object locking capabilities to prevent accidental deletion or modification of critical data.
 - Utilize data replication and backup features to ensure data durability and availability in the event of hardware failures or disasters.
 - Implement data encryption in transit and at rest using industry-standard encryption algorithms to protect data confidentiality and integrity.
- Reporting Server Requirements:
 - Implement data caching and precomputation techniques to optimize query performance and reduce latency for interactive reporting.
 - Integrate with identity and access management services for fine-grained access control and authentication of report consumers.
 - Implement data anonymization and masking techniques to protect sensitive information while preserving data utility for reporting and analysis purposes.
- Integration:
 - Develop APIs and SDKs for seamless integration with third-party systems and applications, adhering to industry-standard protocols and data formats.
 - Utilize batch processing and stream processing techniques for efficient and real-time data transfer, depending on the latency requirements of integration scenarios.
- Cloud service provider
 - From the above requirements it should be evident that reputable cloud providers will be required and to this effect the following principles should be applied when subcontracting these services.
 - Extensive Experience and Global Presence: Providers should demonstrate a longstanding and robust global presence in cloud services, underpinned by a minimum of 10 years' experience in large-scale and complex cloud deployments, particularly for government or large enterprise clients.

- Local Data Centre Requirement =: Specifically require the presence of in-country data centres to ensure local data retention and compliance with national data sovereignty laws.
- Industry Certification: Should possess current industry certifications relevant to cloud security, privacy, and service management (e.g., ISO 27001, ISO 27017) alongside compliance with international and local data protection laws.
- Proven Track Record in Innovation and Excellence: Evidence of a strong track record in delivering innovative cloud solutions, supported by case studies, industry awards, and recognitions in cloud computing and related technologies.
- Advanced Technical Capabilities: The ability to offer advanced and scalable cloud features, including artificial intelligence, machine learning, data analytics, and IoT integration, with strict adherence to security and regulatory compliance.
- Superior Support and Customizable SLAs: Mandatory 24/7 expert support with proven responsiveness, alongside customizable Service Level Agreements to meet the specific needs of large-scale, mission-critical services.
- Commitment to Research and Development: A significant ongoing investment in research and development, ensuring the provider remains at the forefront of cloud computing technologies and practices.
- Strategic Partnership Ecosystem: A well-established ecosystem of partners and third-party solutions, enabling a comprehensive, integrated service offering.

MDMS

The procurement entails acquiring a MDMS product through a SaaS model. Given its direct impact on customers, the MDMS should possess high availability and resilience. It should align with the specified functional and non-functional requirements outlined in section 5. The chosen service provider will closely collaborate with the CCT to ensure a seamless implementation process, adherence to required design specifications, and compliance with security and disaster recovery protocols. Furthermore, the service provider should demonstrate proficiency in developing and integrating tailored data interfaces, reporting tools, and archiving components to meet the Municipality's specific needs.

The service provider will not only be responsible for the design, configuration, installation, and deployment of the MDMS but will also provide maintenance and support services. This includes ensuring the ongoing functionality and performance of the MDMS, addressing any issues or technical challenges that may arise, and providing timely resolutions to minimize downtime.

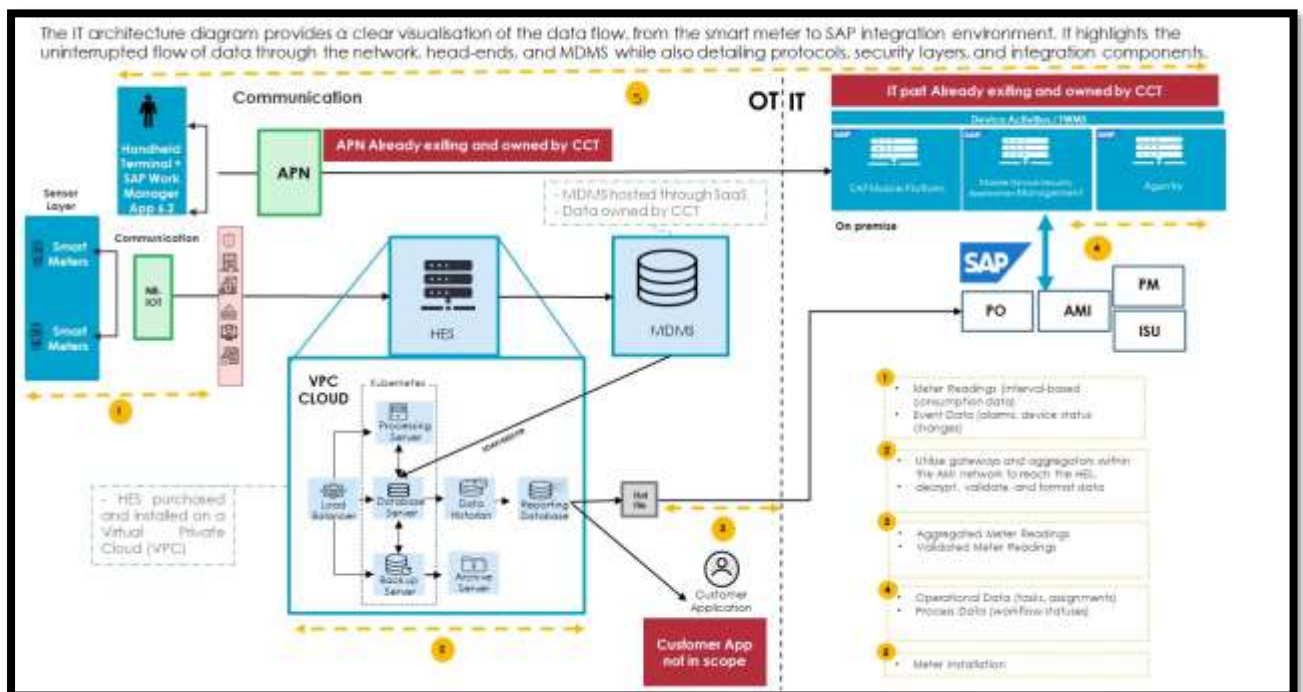
The service provider will offer regular maintenance activities such as software updates, bug fixes, and patches to keep the MDMS up to date and secure. They will also provide technical support to address any user inquiries, troubleshoot problems, and offer guidance on system usage. These services will enable the CCT to have access to prompt assistance and expertise whenever required, allowing for seamless operations of the smart water meter solution.

It is a critical requirement that the services providers MDMS has the ability to easily integrate with multiple HESs where such HESs utilize open standards and protocols of integration the SAP ECC6 on premise environment and SAP S4 HANA cloud environment in particular the SAP ISU and Plant Maintenance application modules. Proof of similar integrations will be requested, and the service provider is to ensure that key personnel include SAP ABAP developers as well as having experience in working with the SAP on premise and cloud options through the SAP AMI module. The HES must be integrated into the MDMS using IEC 61968 – part 9 and part 11 Common Information Model (CIM). The purpose of this document is to define a standard for the integration of Metering Systems, which includes traditional manual systems, and (one or two-way) Automated Meter Reading (AMR) Systems, Meter MDM systems with other enterprise systems and business functions within the scope of IEC 61968. IEC 61968-11:2013 specifies the distribution extensions of the common information model (CIM) specified in IEC 61970-301. It defines a standard set of extensions of common information model (CIM), which support message definitions in IEC 61968-3 to IEC 61968-9, IEC 61968-13 and IEC 61968-14. The scope of this standard is the information model that extends the base CIM for the needs of distribution networks, as well as for integration with enterprise-wide information systems typically used within utilities.

The hosted MDMS, through SaaS price offering should be inclusive of:

- Integration Support with HES, SAP IS-U, Plant Maintenance, and AMI modules, ensuring seamless connectivity and data flow.
- Ensures system uptime with failover, data redundancy, and disaster recovery, backed by SLAs.
- Covers all necessary security measures and regulatory compliance, including data encryption and regular security assessments.
- Comprehensive support, software updates, and maintenance services included, ensuring ongoing system efficiency.
- Includes services from experienced developers for setup, customization, and optimization of the MDMS.
- Tools for near real-time performance monitoring, reporting, and decision-making support are included.
- Includes updates and enhancements to keep the MDMS current with technological and operational advancements.
- All cloud hosting fees, ensuring robust, scalable, and secure cloud infrastructure for the MDMS.
- Advanced data analytics tools for insights into consumption patterns, operational efficiency, and customer behaviour.
- Features anomaly detection capabilities for identifying and alerting on unusual patterns or potential issues in metering data.

The MDMS serves as a central data repository system, responsible for long-term storage and management of the vast quantities of data generated by metering systems. It handles usage data and events imported from head-end servers managing data collection in the AMI systems. The MDMS acts as an invisible layer, abstracting the complexity of different head-ends and acquisition technologies for enterprise applications. In addition to data storage, the MDMS provides a range of services, including calculations, Validation, Editing and Estimation (VEE), and analytics. The MDMS offers data analytics capabilities to derive insights from the meter data. It enables the analysis of consumption patterns, identification of abnormal usage, and detection of potential leaks or irregularities. The system generates various reports, charts, and dashboards to provide stakeholders with actionable information for informed decision-making. **These dashboards and reports must include consumption analysis reports, anomaly detection reports, leak detection reports, billing reports, and customizable dashboards to visualize and interpret the meter data.**



In implementing the MDMS, it is essential to acknowledge that the CCT retains ownership of the data. Therefore, provisions should be made to ensure the safety and accessibility of this data throughout the transition and beyond. Planning should encompass strategies for backing up data and migrating existing data

seamlessly to the new MDMS platform. The service provider should offer comprehensive options for backing up materials, particularly in the transition from Software-as-a-Service (SaaS) to a Virtual Private Cloud (VPC) environment, ensuring continuity and data integrity. Additionally, the SaaS model itself should incorporate robust backup mechanisms, alongside reporting and analysis functionalities, to facilitate efficient management and utilization of data resources.

The MDMS plays a critical role in the overall project. It efficiently manages and processes meter data collected from installed meters, serving as a central repository for all meter-related information. It enables data analysis, reporting, and decision-making. The MDMS acts as a key component in the end-to-end AMI system, facilitating data exchange between meters, communication devices, and other relevant systems. Whilst this 3-year tender is for 130 000 smart water meters it is estimated the number of meters to be connected to the MDMS over the next 12 years is 680 000. The MDMS should be scalable to handle this significant volume of meter data, ensuring efficient processing, storage, and management of the information collected from each meter. The scope of the contract encompasses the following:

- Initial Implementation (2 months):
 - Installation of the MDMS
 - Configuration of data interfaces, implementation fit components, reporting tools, and data take-on/archiving components.
 - Migration of historical data.
 - Training of solution administrators, users, and support and maintenance personnel.
- Support and Maintenance of MDMS (3 years):
 - The service provider will be responsible for the design, configuration, installation, and deployment of the Universal MDMS. Additionally, they will provide ongoing maintenance and support services to ensure the continuous functionality and performance of the MDMS.
 - Provide continuous support and maintenance for the MDMS to ensure optimal performance and reliability.
 - Offer timely resolution of system issues and technical support to minimize downtime and ensure uninterrupted operation of the MDMS.
 - Conduct regular system updates, including patches and upgrades, to maintain the security and functionality of the MDMS.
 - Monitor the performance of the MDMS and implement optimization strategies to ensure system efficiency and reliability.
 - Handle troubleshooting and incident management to address any unexpected issues promptly and effectively.
 - Perform proactive maintenance activities to prevent potential issues and ensure system stability.
 - Assist with system enhancements and customizations as required to meet evolving needs and improve functionality.
 - Ensure the MDMS is operating efficiently, with all meters online and reporting accurately. Address any technical challenges that may arise and provide timely resolutions to minimize downtime.
 - Oversee the day-to-day operations of the MDMS to ensure all meters are online and communicating effectively. Ensure data integrity and system reliability.
 - Provide user support and guidance to CCT personnel on operating the MDMS, including system navigation, data management, and reporting.
 - Continuously monitor the MDMS for any operational issues, ensuring prompt detection and resolution to maintain optimal system performance.
 - Regularly review and analyse performance metrics to ensure the system is operating at peak efficiency. Implement improvements as necessary.
 - Oversee the handling, storing, analysing, and validating of meter-related data within the MDMS. Ensure efficient data flow, processing, and integration.
 - Produce a secure flat file of all meter readings each month, complete with error codes if applicable, for CCT's upload into the SAP system to ensure accurate billing.
 - Ensure the smart metering system can identify and report faults, events, and alerts such as offline meters or leak detections. Report these issues daily to CCT for the timely creation of service orders.
 - Maintain detailed records, aging, and tracking of all reported issues.
 - Perform regular software updates, bug fixes, and patches to keep the MDMS up to date and secure.

- Offer technical support to address user inquiries, troubleshoot problems, and provide guidance on system usage. Ensure prompt resolution of any issues to maintain system integrity.
- Continuously monitor the MDMS to detect and address any performance issues. Optimize system operations to ensure all meters are online and functioning correctly.
- Provide dedicated support services during the initial implementation phase, including comprehensive training sessions for CCT personnel.
- Conduct training sessions focusing on equipping CCT personnel with the necessary skills and knowledge to effectively utilize the MDMS technology. Ensure staff are capable of managing the system and maintaining meter connectivity.
- Provide comprehensive support services for the first year to ensure a smooth transition and enable CCT personnel to confidently utilize the MDMS technology for efficient operations.
- Offer ongoing expert assistance to address any technical issues, provide updates, and support system enhancements. Ensure the MDMS remains operationally efficient, and all meters are consistently online.
- Set up and provision of cloud services:
 - As part of the proposal, the service provider is to provide the cloud infrastructure required to run the software.
 - The service provider must ensure that the cloud infrastructure required to support the MDMS and accommodate the scale of the program for the 3 years. The service providers responsibility is to assess the scale of the program, which includes the estimated number of meters (130 000 new smart meters to be installed over a 3-year period), data volume, and performance requirements. Based on this assessment, they should recommend the appropriate hardware components that can handle the expected workload and provide scalability for future growth.
 - This cloud infrastructure needs to be specified for 130 000 meters as per the data requirements of the meter installation strategy outlined in section 3.2 Timelines and Installation Strategy.
 - For the cloud deployment, the bidder is to recommend suggested virtual machines configurations and topologies that will be required for software to run optimally.
 - All software prerequisites required for the vendor solution to run should also be specified as part of your proposal.
 - The service provider should consider factors such as processing power, memory, storage capacity, data access speed, network bandwidth, and redundancy options when recommending. They should also ensure that the hardware is reliable, secure, and meets industry standards for performance and compatibility. The cloud service provider needs to provision the necessary infrastructure to run the software components of the HES. This includes specifying virtual machine configurations, topologies, and any additional resources required for optimal performance.
 - The cloud infrastructure should be reliable, secure, and compliant with industry standards for data protection and security. Redundancy options and disaster recovery mechanisms should be implemented to ensure high availability and data integrity.

The MDMS serves as the core platform for managing the vast amount of meter data generated by the Advanced Metering Infrastructure (AMI) system. The MDMS receives meter data from various types of meters, such as ultrasonic and mechanical meters, via the communication network. Its role is to ensure the accurate and timely collection of consumption data from each meter. The MDMS performs validation checks on the received meter data to ensure its accuracy, completeness, and consistency. It identifies and flags potential errors or anomalies in the data, allowing for prompt remedial actions. These VEE rules help maintain the accuracy, completeness, and consistency of meter data within the MDMS. By applying these rules, the system can identify and flag any errors, anomalies, or missing data, facilitating prompt remedial actions.

- General
 - The CCT is seeking an MDMS that is built on a modern, flexible data framework designed to accommodate future technological evolutions, ensuring that the system remains at the forefront of smart meter data management and analysis.

- Prospective service providers must demonstrate that their MDMS solutions are architected with advanced data processing capabilities, capable of handling large-scale datasets with efficiency and agility, to support real-time analytics and decision-making.
- We require an MDMS that offers robust integration capabilities, seamlessly interfacing with a wide range of IoT devices, cloud services, and enterprise systems, facilitating a unified and interoperable smart metering ecosystem.
- Bidders are expected to provide evidence of their MDMS's capability to incorporate cutting-edge data analytics and machine learning technologies, enabling predictive analytics, trend analysis, and the identification of consumption patterns for proactive water management.
- The tendered MDMS must be designed with a forward-looking approach, ensuring compatibility with next-generation network protocols and data formats, to future-proof our investment and support continuous innovation in smart water metering.
- It is critical that the proposed MDMS solution offers extensive customization and configuration options, allowing CCT to adapt the system to emerging needs and opportunities in smart utility management without requiring extensive redevelopment.
- The service provider's MDMS should facilitate not just current analytical and reporting requirements but also demonstrate scalability and adaptability to incorporate advanced data science methodologies for deeper insights into water usage trends and efficiencies.
- We emphasize the importance of a user-centric design in the MDMS, ensuring that the system offers intuitive, accessible interfaces for data visualization and interaction, empowering CCT staff to leverage data for operational excellence and enhanced service deliver.
- The MDMS shall support automated rule-based validation and estimation (VEE) of raw metered data.
- The MDMS system shall trigger the validation process automatically, once it was physically confirmed that the applicable rule can be applied (rule-based codes as required)
- The limits and trigger points of the pre-defined validation rules shall be configurable and the MDMS shall have ability to define new rules.
- Validation rules shall be approved by the City.
- The MDMS shall allow configurable validation rules that may be selectively applied to an individual metering node or groups of metering nodes or to channels common to different metering nodes.
- Validation failures shall be logged for audit purposes.
- Raw data shall not be changed by the validation process for audit purposes.
- The MDMS shall have a meter data estimation routine that may optionally be triggered on occurrence of validation failures.
- The system shall also have facility to define, add and revise estimation methods.
- It shall be possible to selectively enable or disable data estimation for any given metering point or group of metering points.
- The MDMS shall support manual editing of metering data with audit trail.
- The MDMS shall support multiple data states for metered data through its transition from acquisition to analysis e.g., invalid, estimated, edited, verified, validated etc.
- All data state transitions shall be logged for audit trail.
- Validation:
 - Zero consumption: This rule checks if a meter has recorded zero consumption for a given interval. It helps identify cases where there might be a meter malfunction or a data transmission issue.

- Negative Value Check: This rule verifies if there are any negative values in the meter data, as negative values are typically considered invalid and may indicate a data entry error or meter malfunction.
- Missing Interval Count: This rule checks for missing intervals in the meter data, ensuring that data is collected at regular intervals and helping to identify any gaps or inconsistencies in the data stream.
- Consecutive Zero Consumption: This rule detects patterns of consecutive zero consumption readings, helping to identify instances where a meter is not recording any consumption over an extended period, which may indicate a malfunction or a meter reading issue.
- Non-negative incremental reads: This rule verifies that the incremental readings between consecutive intervals are non-negative, helping to identify cases where there is an unexpected decrease in consumption or irregularities in meter data.
- Daily Consumption Check: This rule validates the daily consumption values against predefined thresholds or expected ranges, helping to identify abnormal usage patterns or deviations from expected consumption levels.
- Spike Value Check: This rule detects sudden spikes in consumption values, helping to identify anomalies caused by meter malfunctions, data transmission errors, or abnormal usage patterns.
- Sum Check: This rule verifies the sum of consumption values for a specific period, ensuring that the total consumption aligns with the individual interval readings, helping to identify any data inconsistencies or calculation errors.
- Consumption Check: This rule compares the consumption values with predefined thresholds or expected ranges, helping to identify excessive or unusually low consumption levels.
- Billing Cycle Verification: This rule checks if the meter data aligns with the defined billing cycle, ensuring that the readings correspond to the correct billing period and helping to identify any discrepancies in the data.
- Cycle Verification: This rule verifies if the meter data follows the expected cyclical patterns, helping to identify any irregularities or deviations from typical consumption patterns.
- Regulatory/Utility Specifics: This category includes rules specific to regulatory requirements or utility-specific guidelines, ensuring compliance with industry standards and addressing any additional validation criteria mandated by regulatory bodies or utility policies.
- Estimation:
 - Linear Interpolation: This method estimates missing or invalid data points by interpolating values linearly between known data points. It assumes a linear relationship between the known data points to estimate the missing values.
 - Spline Estimation: This method uses mathematical splines to estimate missing or invalid data points. Splines create a smooth curve that passes through the known data points, allowing for more accurate estimation.
 - Estimation based on Standards/Consumption: These rules estimate missing or invalid data points based on historical consumption patterns, predefined standards, or statistical models.
 - Estimation based on Historical Period: This method estimates missing or invalid data points by considering data from the same period in previous years. It leverages historical patterns to fill in the gaps in the data.
 - Regulatory/Utility Specifics: This category includes estimation rules specific to regulatory requirements or utility-specific guidelines, which may define additional criteria or methods for estimating missing or invalid data points.

- **Data Storage and Management:**
 - The MDMS securely stores the meter data in a centralized database or storage system. It organizes and manages the data in a structured manner for efficient retrieval and archival. The storage and management component of the MDMS ensures the data's integrity, availability, and compliance with regulatory requirements and operational needs.
- **Events and Alarms:**
 - The MDMS plays a crucial role in monitoring and detecting specific conditions or situations related to meters in the AMI system. It tracks events and alarms that may indicate meter malfunctions, irregularities, or abnormal conditions. Some common events and alarms include valve faults, clock drift, leakage detection, reverse flow detection, n days without any data, unregistered meter detection, abnormal consumption detection, and various other alarms related to metering failure, discharge and disassembly, low battery, horizontal installation, reverse over threshold, RTC (Real-Time Clock) fault, E2 fault, same frequency interference, zero consumption, and magnetic interference.
- **Data Analytics and Reporting:**
 - The MDMS offers data analytics capabilities to derive insights from the meter data. It enables the analysis of consumption patterns, identification of abnormal usage, and detection of potential leaks or irregularities. The system generates various reports, charts, and dashboards to provide stakeholders with actionable information for informed decision-making. These reports may include consumption analysis reports, anomaly detection reports, leak detection reports, billing reports, and customizable dashboards to visualize and interpret the meter data.
- **Integration with Other Systems:**
 - The MDMS interfaces with other components of the AMI system, such as the HES and billing systems. It facilitates seamless data exchange and synchronization between these systems, ensuring accurate billing, customer management, and operational coordination. The MDMS integrates with the HES to receive meter data and share relevant information for efficient data processing. It also interfaces with the billing systems to provide accurate consumption data for billing calculations and customer invoicing.
- **Network topology management:**
 - The MDMS shall be able to capture and maintain associations between various metering nodes (both system and consumer meters) in hierarchical relationships.
 - It shall be possible to define any arbitrary hierarchical relationship as required by CCT, but as a minimum the following relationships shall be maintained: Geographic, Administrative or regional, Network topology and Tariff.
 - The MDMS shall have the capability to aggregate hour meter interval data in near real time of large groups of metering points within a network hierarchy.
- **Tariff and Billing Engine Component:**
 - The MDMS includes a tariff and billing engine that supports the rating of data so that provisional and published billing can be affected along with configurable tariffs, Time of Use (TOU) support, and TOU calendars.
 - Note: The integration of payment gateways, vending channels, online portals, mobile apps, and other related aspects are not part of the MDMS scope and require separate development or integration efforts.
- **User Roles:**
 - The MDMS should provide the capability to assign different roles to various users. This allows for dynamic role assignment based on the user's responsibilities and permissions.

- Administrators should be able to assign a role to one or more users, allowing them to manage access and permissions effectively.
- Users can also be assigned to multiple roles, granting them access to different functionalities based on their responsibilities.
- Access to specific functionalities within the MDMS can be authorized based on user roles, ensuring that users only have access to the relevant features required for their tasks.
- The system should support the creation of new roles based on existing roles, enabling the customization of access rights and permissions as needed.
- Transition and Training:
 - Post the 3-year contract, the MDMS operation should be transferable to the CCT. This transition should include all relevant configurations, data, and setups.
 - Comprehensive training modules must be provided, ensuring that the CCT team can efficiently manage and operate the MDMS post-transition.

Cyber Security

A secure solution is critical for the CCT, and the service provider must provide a secure solution with the requirements outlined in this section. The Security method and hardware shall be described in detail by the Service Provider.

The Service Provider must comply to the following items:

- **System Access and Segregation:**
 - Employ an intermediary system for remote access to Smart Meter systems from non-operational zones to prevent direct access from business applications.
 - Use one or more Demilitarized Zones (DMZ) between Smart Meter systems and both enterprise/business systems and non-utility-owned network infrastructure.
 - Ensure centralized monitoring, management, and configuration management across all Smart Meter systems, devices, and networks.
 - All systems, including the HES, must adhere to the security zones and conduits concepts of IEC-62443-1-1:2009.
- **Authentication and Authorization:**
 - Implement multi-factor user authentication.
 - Enforce server authentication, e.g., via HTTPS.
 - Adopt Role-Based Access Control (RBAC) employing the principle of least privilege.
 - Access controls should be granular, allowing administrators to define fine-grained permissions and restrict access to sensitive operations or data.
 - Key Management Requirements:
 - Ensure that cryptographic keys are generated in a secure and random manner, utilizing approved random number generators.
 - Protect and store keys securely, ensuring they're inaccessible to unauthorized parties. Use secure, tamper-proof storage modules, like Hardware Security Modules (HSMs), for this purpose.
 - Implement secure methods for key exchange/distribution, ensuring that keys are not exposed during transmission.
 - Ensure that keys are backed up securely in case of key loss. Backup procedures must also be safeguarded against unauthorized access.
 - Retain older keys securely if they might be needed for decrypting historical information.

- Have a mechanism to revoke keys if compromised or if their lifecycle has ended. Ensure timely communication of key revocations to all relevant entities.
 - Ensure secure methods to destroy keys that are no longer required or have been compromised, ensuring they cannot be reconstructed.
 - Restrict access to cryptographic keys to only authorized personnel, using role-based access control and multi-factor authentication.
 - Maintain detailed and secure logs for all key management activities. Regularly review and audit these logs for anomalies.
- **Data Protection:**
 - Ensure encrypted data transmission using protocols like SFTP.
 - Protect data at rest using approved cryptographic methods, especially for sensitive information.
 - Sensitive data, such as customer information, meter readings, and billing data, should be encrypted both at rest (stored in databases or storage systems) and in transit (during communication).
 - Encryption algorithms and strong encryption keys should be used to ensure the confidentiality and integrity of the data.
- **Network Security:**
 - Deploy firewalls, Intrusion Prevention Systems (IPS), VPNs, and Intelligent Threat Detection (ITD) at security zone boundaries.
 - Restrict, filter, and monitor all traffic entering or leaving security zones.
 - Monitor network activity, detect packet anomalies, and integrate with SIEM systems.
 - The MDMS should use secure communication protocols, such as HTTPS, to encrypt data transmitted between the system components, including web portals, APIs, and communication channels.
 - Secure Sockets Layer/Transport Layer Security (SSL/TLS) certificates should be implemented to establish secure connections and prevent unauthorized access or interception of data.
- **Server and Database Protections:**
 - Secure databases by restricting data modification/viewing to those with admin roles.
 - Authenticate servers using digital certificates.
 - Use secure VPNs for data on public networks and ensure web interfaces use HTTPS.
- **Protection from Malware and Unauthorized Software:**
 - Equip systems with anti-virus/malware protection and provide updating guidelines.
 - Use application whitelisting, supporting the Default Deny principle.
 - Control removable media usage on ICS systems, prevent malware introduction, and restrict data export.
- **Monitoring and Patch Management:**
 - Centralized monitoring of all cyber (including user activity) and physical security activities.
 - Implement security patch management.
 - Offer a test environment for system patches and firmware upgrades.
 - Employ tools like File Integrity Monitor, Log Inspection, Exploit Prevention, and API Protection.
- **Specific HES Security Requirements:**
 - Ensure secure communication and user authentication.
 - Implement secure remote access with multi-factor authentication.

- Adhere to encryption standards such as ECC192.
- Document physical security measures for communication channels.
- Implement mutual authentication during the initial attach procedure of devices.
- Prioritize encryption techniques like DTLS, BEST, or OSCORE and ciphers like SNOW 3G or AES-128-CTR.
- Utilize programmable SDN for enhanced network security, integrating central controllers for anomaly detection and traffic analysis.
- **Passwords:**
 - The MDMS should offer configuration options to enforce specific password requirements, such as length and complexity. This helps ensure that users create strong and secure passwords.
 - Password changes can be periodically enforced by the system to enhance security. Additionally, administrators have the capability to force password changes for users at any time, such as after the first logging.
- **Regular Security Updates and Patch Management:**
 - The MDMS should have a well-defined process for applying security updates, patches, and bug fixes to the system components, including the underlying operating system, databases, and third-party software.
 - Regular security assessments and vulnerability scans should be conducted to identify and address any potential security weaknesses.
- **Intrusion Detection and Prevention:**
 - Intrusion detection and prevention systems (IDPS) should be implemented to monitor the MDMS for any suspicious activities, such as unauthorized access attempts, network anomalies, or abnormal system behaviour.
 - Alerts and notifications should be generated when potential security incidents are detected, allowing for immediate investigation and response.
- **Data Backup and Disaster Recovery:**
 - The MDMS should have robust data backup mechanisms in place to regularly create backups of critical data.
 - A comprehensive disaster recovery plan should be established to ensure the availability and integrity of data in case of system failures, natural disasters, or other catastrophic events.
- **Anti-Malware:**
 - Two or more methods to detect and remove malicious files/content.
 - Two or more methods to update the solution and signatures.
 - Optionally, interact with inventories to report assets that are not protected.
 - Rich reporting.
 - Centrally managed.
 - Signature-based detection, heuristic detection.
 - Real-time scanning, scheduled scanning, on-demand scanning.
 - Single file, folder, and full disk scanning.
 - Scan Session Throttling (reduces the amount of traffic or data from one source).

- File exclusions lists.
- Prevention and detection operation modes of antivirus client.
- Trigger alerts for policy violations, exceptions, failed updates, failed scheduled scans and malware detection (with status codes).
- Multiple methods to repair or eradicate malicious code. Examples include safe boot, bootable disk, etc.
- Manual and automatic engine and signature updates.
- Full and incremental signature updates.
- Provide hash of signature updates to allow validate the integrity of update files before updating hosts and servers.
- Centrally managed.
- Secure communications to the management console.
- Client software shall be deployable by the management console and local install.
- Restrict end-users from disabling and tampering with client configurations.
- Produce pre-defined and customizable reports to provide metrics as deemed necessary.
- Rich reporting.
- Support Active & Monitoring Modes.
- **Removable Media Management:**
 - Restrict use of removable media on ICS systems and assets.
 - Prevent introduction of malware using removable media.
 - Restrict export of sensitive information.
 - Work based on the Default Deny principle.
 - Define authorization rules for writing data to removable media.
 - Ability to identify approved removable media. Approved removable media may be identified using the following:
 - Memory card type
 - USB model
 - Specific formatting
 - Identify and restrict the use of removable media not approved prior to use.
 - Automatically scan removable media.
 - Support Active & Monitoring Modes.
- **Firewall Management:**
 - No independent network traffic filtering, but it allows to manage Windows Firewall through graphical interface.
 - Takes over management of the settings and policies of the operation system's firewall and blocks any possibility of external firewall configuration.
 - Enforces blocking of all incoming and outgoing connections not allowed by specified rules.

- Polls the Windows Firewall regularly and monitors its status, if detects a mismatch between the Windows Firewall settings and the Firewall Management task settings, the application forcibly applies the task settings on the operating system firewall.
- Polling time of the Windows Firewall is less than 1 min.
- **File Integrity Monitor:**
 - Track actions performed with the specified files and folders in the monitoring scopes specified in the task settings.
 - Detect file changes that may indicate a security breach on the protected computer.
 - Configure file changes to be tracked during periods in which monitoring is interrupted.
 - Support excluded monitoring scopes.
 - Support file operation monitoring rules.
- **Log Inspection:**
 - Monitors the integrity of the protected environment based on the results of an inspection of Windows Event Logs.
 - Notifies the administrator upon detecting abnormal behaviour in the system, which may be an indication of attempted cyberattacks.
 - Considers the Windows event logs and identifies breaches based on the rules specified by a user or by the settings of the heuristic analyser.
 - Support predefined rules and heuristic analysis.
 - Support custom rules for the Log Inspection task.

6. Data Collection & Communication

Standards

NB-IOT

- 3GPP Release 13 or higher.
- IEEE 802.15.4: This is a technical standard which defines the operation of a low-rate wireless personal area network (LR-WPAN).
- ISO/IEC 27001:2013: This is a standard for information security management.
- Standards for the NB-IOT communication /device/modem:
 - IEC61000-4-2 (Level-2): This is a standard for Electrostatic Discharge.
 - IEC61000-4-4: This is a standard for Fast Transient Burst.
 - IEC61000-4-5: This is a standard for Surges Immunity.
 - IEC61000-4-6: This is a standard for Radio Interface Measurement (CS).
 - IEC61000-3-2/CISPR22: This is a standard for Conducted Emission.
 - CISPR 22 (Class B): This is a standard for Radiated Emissions.

Functional Requirements

This section deals with the network that connects the meters and associated equipment to the central system. An IoT network, and specifically NB-IoT, is a preferred solution for the bulk of the CCT area, due to its technological advantages of ground penetration into meter chambers and in dense built-up areas. The onus is on service providers to ensure optimal smart meter performance. They should rigorously ensure network

coverage, signal robustness, and data reliability to target meter online rates of 99% at month end. CCT emphasizes the responsibility of service providers in managing the communication solution for our smart water meter initiative. Protocols represent a set of rules governing the transfer of data between electronic devices. These rules dictate information structure and the methodology for sending and receiving data on both ends. Correspondingly, IoT protocols encompass standards that facilitate the exchange and transmission of data between devices at the edge and the broader Internet. IoT protocols can be categorized into two primary groups:

- IoT network protocols
- IoT data protocols.

While data protocols concentrate on information interchange, network protocols establish the means of linking IoT edge devices with other similar devices or the Internet. Both categories encompass numerous protocols, each distinguished by its unique characteristics.

With this smart water meter program there are a few primary requirements:

- **Low Power Consumption:** Many water meters are in places where power may be limited, so the data protocol should consume minimal power.
- **Deep Penetration:** It's essential that the protocol offers excellent indoor and underground coverage, considering the diverse placements of our meters. Majority of the CCT meters are ground or underground mounted and hence deep penetration is a key requirement.
- **Scalability:** With an estimated 130,000 smart meters, the system must be able to manage data from many devices.
- **Low Bandwidth:** The system should be efficient in terms of the data sent, given that only hourly data intervals are required which are transmitted once a day.
- **Reliability:** The data is essential for billing and other services; thus, it is critical that data delivery is reliable.
- **Optimized Data Transfer:** The solution should cater to small, intermittent blocks of data, given our need for hourly data intervals which are transmitted once a day, without the overhead of frequent handshakes or unnecessary data overhead.
- **Enterprise -Grade Reliability:** Given the criticality of data for billing, the chosen protocol should boast high reliability, leveraging established infrastructure.
- **Globally Recognized Standards:** The communication solution should conform to widely accepted specifications ratified by international telecommunications groups. This ensures compatibility and scalability on a global scale.
- **Seamless Integration with Existing Mobile Networks:** The chosen protocol should utilize established cellular and communication infrastructure, leveraging its inherent reliability and coverage.
- **Future-Proof:** As technology evolves, it's crucial our chosen solution is forward-compatible, allowing for easy transition to newer standards and technologies as they emerge.
- **Broad Interoperability:** The solution should be compatible with a wide range of devices and systems, ensuring flexibility and adaptability.
- **Resilience:** Given the critical nature of water infrastructure, the communication system should guarantee high uptime and rapid recovery from potential disruptions.
- **Security:** Protecting data integrity and privacy is paramount. As such, the chosen solution should have robust encryption and security measures to safeguard against breaches and unauthorized access and spoofing.

- Integration: The solution should seamlessly integrate with existing systems and infrastructure while being flexible enough to accommodate future upgrades and expansions.
- Open Protocols & Vendor Neutrality: Embracing open standards and protocols ensures that the technology remains versatile and can interface with various systems. Avoiding vendor-specific solutions ensures we are not tethered to a single technology or vendor, promoting flexibility and adaptability in the long run.
- Service providers should provide:
 - An In-depth explanation of the chosen communication option and the rationale.
 - An explanation of how the communication solution will ensure that the key primary KPIs are achieved and applied.
 - A comprehensive technical methodology and implementation plan. This documentation should:
 - Detail the step-by-step deployment process, including network setup, device installation, data validation, and user acceptance testing.
 - Highlight strategic considerations such as compatibility with existing systems, scalability, and security measures.
 - Delineate timelines, responsibilities, and roles throughout the implementation phase.
 - Outline geographical prioritization for meter deployment, with a detailed analysis as to how the prioritization rating. This should be informed by and aligned to the Macro Deployment Strategy provided as an annexure to this tender document.
- Consistent Networking Implementation:
 - CCT requires a standardized network infrastructure to ensure reliable, consistent communication across all devices, from meters to data concentrators.
 - This uniform approach streamlines data management, optimizes operational efficiency, and minimizes the need for custom integrations.
 - Standardized networks bolster security with set protocols, protecting against vulnerabilities often found in custom setups.
 - Cost-efficiencies arise from a standardized approach, simplifying long-term maintenance and technology upgrades.

Adherence to Open Standards:

- CCT requires the utilization of standard IoT Network Protocols as well as adherence to IoT Data Protocols.
- Proprietary lock in software or protocols are strictly prohibited.

The service provider will be responsible for the following:

- Designing and deploying the network in our target area, which involves installing the necessary infrastructure, equipment, and software.
- Configuring and managing the network to ensure optimal performance and availability. This includes monitoring and maintaining the network on an ongoing basis.
- Managing the Mobile APN (Access Point Name) platform. The APN platform is responsible for establishing data connections between mobile devices and the network.
- Ensuring compliance with all relevant regulations and standards, including those set by the South African regulator.
- Providing fallback services in case the primary technology is unavailable or experiences issues.

- Ensuring connectivity between Smart Meters and the HES based on agreed service level agreements.
- Designing the entire system to comply with regulatory and security guidelines.

Key considerations for the network are as follows:

- Network Coverage:
 - o The network must effectively cover the required geographical areas.
 - o The signal strength and link budget requirements must ensure reliable connectivity.
- Scalability and Capacity:
 - o The network must support a minimum of 130 000 devices for this tender and 680,000 devices in the future, considering the projected growth of the IoT deployment.
 - o The service provider should be capable of handling high device density in specific areas, such as crowded urban environments or concentrated industrial zones.
 - o Network capacity plans must be provided to accommodate future expansion and increasing device numbers.
- Security:
 - o End-to-end data encryption should be used to protect sensitive information transmitted over the network.
 - o Authentication mechanisms for device onboarding should be implemented to ensure secure and authorized access.
 - o Measures to prevent unauthorized access, tampering, or eavesdropping on the network should be in place.
 - o The service provider should be compliant with relevant security standards and protocols.
- Network Management:
 - o Monitoring and management tools must be employed for efficient network operation and troubleshooting.
 - o Remote management and configuration of network gateways and devices should be possible for seamless maintenance and updates.
 - o Fault detection and reporting mechanisms should be implemented for prompt issue resolution.
 - o Network performance monitoring and reporting capabilities should ensure adherence to SLAs.
- Quality of Service (QoS):
 - o KPIs for network availability, uptime, and performance must be provided to guarantee reliability.
 - o Latency for data transmission and acknowledgment must ensure timely and responsive communication.
 - o Reliable packet delivery guarantees should be offered, especially for critical or time-sensitive applications.
- Integration:
 - o The network should provide easy integration with analytics platforms or other downstream systems.
- Infrastructure
 - o The preferred communication option and solution must have wide coverage, reliable cellular network infrastructure, strong security measures, sufficient data throughput, roaming capability, and integration

with existing infrastructure. It offers advantages in terms of network coverage, reliability, and data security, making it well-suited for smart metering and IoT applications.

- o Where necessary, communication towers may need to be installed to aid connectivity in areas that have signal challenges. This could require an environmental impact study, radiation emittance power requirements as well as backup power requirements. The residential areas would have to be contacted to approve the installation. This will also add to the risk profile of the scope of work, which would involve construction activities, included but not limited to:
 1. Geotechnical surveys
 2. Traffic management
 3. Excavation
 4. Concrete works
 5. Lifting operations
 6. Working at heights
 7. Electrical installation
 8. Safeguarding of the area to prevent unauthorised access.
 9. Appropriate signage
 10. Safe access and maintenance of the facility for future use.

The CCT will not pay for the erection of new communication towers given that the model of data communication is service based.

7. Field Services

Strategy

The Field Services specification sets out the principles that will be adopted during the value-driven delivery of the AMI Programme. It describes the overall approach to the governance and management structure; together with the processes that service providers will have to follow to meet the Programme, cost, safety, community involvement, and interface management objectives of AMI.

Scope & Process

This section is dedicated to field services and describe the subsequent areas, namely site audit (where necessary), replacement of mechanical water meters with smart water meters, smart water meter installations, repair and maintenance of both smart water meters and the AMI infrastructure.

General services to be provided include:

- General
 - o Creation of yearly and monthly meter installation plan based on work order packages defined in this technical specification.
 - o Weekly deployment scheduling – 7-day lookahead to be submitted on a Friday.
 - o Identifying risks, including but not limited to, geographic regions (safety/resistance), adverse weather, production, and production/resourcing.
 - o Management of in field exceptions encountered during site audits (where applicable) or replacement/installation.
 - o Analyse, monitor, report on, and optimise deployment performance.
- Site audits (where necessary) – as defined below.
- Meter replacements
 - o Old meter and meter box removal, scrap collection and retirement/condemnation, including the cleaning of debris from meter chamber and its disposal (where applicable) according to standard disposal/condemnation operating procedures.
 - o Old meter and meter box bagging and tagging and delivered to the CCT Facilities.

- If stolen at facility or in transit the service provider to supply a SAPS number. All applicable insurance of removed assets to apply.
- Install new meter and meter box.
- Repair meter chamber according to approved design, subject to wayleave approval, and in coordination with hydrant lines for fire suppression (where applicable).
- Redesign meter installation (because of a problematic existing installation depth) according to approved design, subject to wayleave approval, and in coordination with hydrant lines for fire suppression (where applicable).
- Redesign meter box security considerations due to consistent vandalism according to approved design, subject to wayleave approval, and in coordination with hydrant lines for fire suppression (where applicable).
- Remedied incorrectly fitted stop valves.
- Completion of meter installation digital job card and commissioning sheet
- Meter commissioning and communications testing in accordance with approved commissioning sheet format.
- New meter installation according to approved design, subject to wayleave approval, and in coordination with hydrant lines for fire suppression (where applicable).
- Replace and construct new meter chamber according to approved design, subject to wayleave approval, and in coordination with hydrant lines for fire suppression (where applicable).
- Repair and Maintenance according to approved RAMS statements.
- Quality assurance/management and control

Site Audits (Where Necessary):

- Site audits (survey) will be required in unique scenarios and exceptions to the norm, as most meters should be easily accessible. The purpose is to ensure the correct data and meter point condition is fully understood prior to replacement. The site audit should assess all existing meters and immediate surrounds and context to ensure all replacements meters within a specific timeframe – prior to work commencing. The sites can be distinguished into categories, which include but are not limited to:
 - Single residential
 - Body corporate
 - Commercial
 - Where fire hydrant lines, frail care or medical facilities will be affected.
 - This may require more and different notification to the owner of the property and or Fire Department. Where commercial properties will be affected due to interruption of water to the fire suppression the CCT will have to notify its insurance brokers. Ablution and drinking water to a building could also be a problem.
- The primary objective is to validate the in-field variables captured on the CCT master data set, specifically the linkage between meter unit and the property. Further, any missing or erroneous information shall be rectified as necessary – which includes an audit of the right sizing of the meters. The appointed service provider will commence works with a pre-site audit, which consists of engagement with CCT to obtain existing consumer data related to the existing 130 000 accounts.
- The site audits be categorised into identifiers of simple and complex as outlined below.
 - A simple site audit refers to assessing sites where the installation conditions are straightforward and requires minimal additional considerations or modifications. These sites may have clear access, standard plumbing connections, and adequate space for meter installation. Simple site audits typically involve a quick evaluation of the site to ensure compatibility with the replacement water meters.
 - A complex site audit involves evaluating sites that present challenges or require additional considerations due to specific circumstances. These sites may have limited access, non-standard plumbing connections, space constraints for installation works, inability to locate the meter, or

other complexities that need to be addressed before meter installation. Complex site audits require a more detailed assessment, including potentially identifying and resolving issues related to infrastructure, plumbing modifications, or logistical constraints.

- Data will be captured on the Field Workforce Management System (FWMS) tool via text and photo input content to note the simple audit validation point, or to provide context for the complex audit validation point for approval/verification.
- The CCT's existing data will guide pre-set lists to be generated on the platform for ease of input, while variable description and photo-input fields will allow for any in-field discrepancies to be captured. Pre-set inputs shall be implemented as a measure to control the quality of the data capture. All implications of the POPI Act to be considered.
- The successful completion/acknowledgement during the site audit is intended to ensure that data is accurate, complete, and in a usable format for further use in planning, scheduling, and risk management of installation procedures.

Replacements and Installations:

The scope of work involves replacing existing meters and installing new smart water meters, estimated at 130 000, within a specified timeframe broken into relevant works orders.

- Work orders encompass site audits and replacement/new installation services.
- Deployment strategy, macro plan, and quality plan will be defined with clear objectives and milestones.
- Internal approval and continuous monitoring of plans are necessary to address potential issues.
- Project management includes timely execution, compliance with timelines, and resource allocation.
- Detailed deployment and installation plans are required, considering logistics, scheduling, and customer access.
- Service Providers must comply with routine meetings and governance frameworks for compliance and engagement, established by the CCT.

The replacement typologies can be explained as follows:

- Basic meter replacement refers to a straightforward process that involves the removal of the existing meter and the replacement installation of a new meter within the existing box. Additionally, a basic installation could involve the removal of an existing meter and box, and the replacement installation of a new meter in the same position as the existing unit, including the supply and the installation of a new meter box. This level of replacement typically includes basic restoration activities, such as the removal and reinstatement of grass and lawns. It is generally applicable when there are no complex surfaces or extensive positional or condition modifications required.
- Moderate meter replacement involves a slightly more involved process than the basic level. In addition to the removal and installation of the meter and new meter box, moderate replacement may require the removal and reinstatement of surfaces such as clay paving, interlocking block paving, cement paving, cement slabs, concrete, or gravel asphalt OR include the relocation of the meter from within the customer's property to outside the property boundaries. More than 2 meters from current position but less than 5 meters from current position.
- Complex meter replacement represents the highest level of complexity and involves various intricate tasks. It includes all the activities of moderate replacement, such as the relocation of the meter and removal and reinstatement of surfaces like clay paving, interlocking block paving, cement paving, cement slabs, concrete, or gravel asphalt AND/OR include the relocation of the meter from within the customer's property to outside the property boundaries. More than 5 meters from current position but less than 12 meters from current position.

Repair & Maintenance (CCT – General):

Repair and Maintenance in the context of the meter point post installation involves a range of critical activities to ensure the smart meter and associated infrastructure continue to function optimally over time. It encompasses both preventive and corrective measures, addressing any issues that may arise. Placement of

meters should not be where vehicles can do off-street parking to avoid continual maintenance. This will not only reduce cost but also the risk of injury during the maintenance period.

Generally (unless otherwise defined, or specified below under service provider responsibilities), once the smart meter is fully commissioned and handed over to the CCT then the CCT will be responsible for the meter maintenance and typically include the activities listed below. The response time for repairs must be stipulated, especially during a drought if water leaks occur. The Quality Management system that requires photographs before, during and after completion will be in place to manage the record of works undertaken.

- Infrastructure Repairs: Any damage or issues with the existing infrastructure supplied and serviced by the CCT (Unrelated to specific works defined in this Technical Specification, or on the customer side), will need to be resolved promptly to protect the meter and maintain its functionality.
- Leak Detection (Unrelated to specific works defined in this Technical Specification, or on the customer side): Maintenance can be triggered by the detection of water leaks, either through data analysis or by meters equipped with leak detection capabilities.
- Tampering Alerts: When meters detect tampering attempts or unauthorized access, maintenance is needed to investigate and address the issue. The issue will be investigated by the CCT as first respondent, before resolving the responsibility between the CCT and service provider.
- Customer Complaints: Maintenance may be initiated in response to customer complaints or concerns about meter accuracy or functionality, where the issue will be investigated by the CCT as first respondent, before resolving the responsibility between the CCT and service provider.
- Remote Diagnostics: Advanced systems can remotely monitor the health and performance of meters. Maintenance is triggered when anomalies or issues are detected through remote diagnostics, where the issue will be investigated by the CCT as first respondent, before resolving the responsibility between the CCT and service provider.

Repair & Maintenance (Service Provider):

Repair and Maintenance by the Service Provider in the context of the meter point post installation involves a range of critical activities to ensure the smart meter and associated infrastructure continue to function optimally over time. It encompasses both preventive and corrective measures, addressing any issues that may arise. Placement of meters should not be where vehicles can do off-street parking to avoid continual maintenance. This will not only reduce cost but also the risk of injury during the maintenance period.

All activities are required to be undertaken to full specification, according to items stipulated in the Pricing Schedule, according to all protocol, standards, methodologies and regulations in this Technical Specification.

- Meter Malfunction: Smart meters can encounter issues with their internal components or data transmission. Service providers should diagnose the problem, repair, or replace the meter as needed, and recalibrate it for accuracy. In the event of meter malfunctions under warranty, service providers should promptly address and repair any issues to ensure accurate data collection.
- Meters, Parts, Accessories and Enclosure Theft, Damage, or Vandalism: Theft, Accidental or intentional damage or vandalism to meters and metering equipment, such as the chamber or enclosure and/or accessories and parts, necessitates immediate repairs or replacements promptly to protect the meter and maintain its functionality.
- Communication Troubleshooting: If communication disruptions occur, service providers should diagnose and rectify the problem promptly to avoid data loss.
- Communication Breakdown: Communication failures may result from signal interference or equipment malfunctions. Troubleshooting, equipment replacement, or signal boosting may be required to restore communication.
- Battery Health: Regular checks of battery health ensure backup power availability during outages; replacing depleted batteries is crucial to prevent data gaps. Note: If batteries are lithium, the associated risk to fire must be evaluated. From an environmental perspective, the batteries require safe disposal certificates from the service providers.
- Data Anomalies: Maintenance may be initiated when irregularities or anomalies are identified in the data collected by meters, such as sudden spikes or drops in consumption data.

- Data Quality Checks: Regular data quality checks and validation processes can trigger maintenance when data integrity issues are identified.

The CCT and the service provider will establish a robust monitoring system during contracting on how to track the health and performance of meters post-installation. This includes tracking consumption patterns, identifying anomalies, promptly addressing any deviations, and developing ongoing root-cause analyses of all maintenance requirements which should develop strategies to decrease the regularity of future occurrences.

Regular reporting to CCT is essential to keep stakeholders informed of maintenance activities, issues, and resolutions. Service providers should proactively address potential issues and promptly respond to any malfunctions or damage to ensure the longevity and effectiveness of the metering infrastructure.

Any meter maintenance, as it pertains to installation (meter, parts, accessories and enclosure) required needs to be performed in line with Installation requirements, specifications and standards, processes, controls, and reporting requirements, as outlined in this document.

Works Order details:

The entire CCT region constitutes the geographical boundaries of the deployment, and subsequently the 130 000 affected metered properties intended for replacement or new installation. The service provider is responsible for the strategy with which these site audits and installations will be addressed. The exact number and geographic location of each order will be defined at Contract Award Stage.

- Existing meter final reading, new meter reading setting, installation date, location of the new meter whether on property or on the footway, and any other additional information obtained on site must be recorded in the long text of the digital service order.
- Any missing information not provided shall render the service order invalid and only such time when its corrected shall the associated invoice be approved and processed for payment.

Quality Control (QC):

The documentation of all work and corresponding communications will be digital – workflows and processes will be workshopped at Contract Award Stage. The QC process will be undertaken through the digital documentation of various factors regarding the meter’s context in the field and its unique identity in relation to the customer and its capacity. This will take place in the form of a checklist to be populated with text and photo inputs, as mentioned in several sub-sections in the ‘Site Audit’ and ‘Replacements and Installations’ sections.

- Photographs to be time and date-stamped, linked to the relevant specified meter asset.
- The photo must show the exposed work, work-in-progress, and reinstated work.
- The frequency of delivery of service orders and feedback must be daily uploaded onto the predetermined software platform.
- Receipt of service order to be submitted to the platform.
- No-one-at-home and refusals must be uploaded on a weekly basis. A checklist for “Customer Refusals” will need to be completed which includes contract account number, the date the property was visited and the outcome if it was a refusal or no-one-at-home. Scheduled reports to be proposed and approved by the CCT.
- The checklist submission on the platform must be accompanied by an attachment of the refusal letter and the not-at-home letter.
- The CCT shall provide a standardized format of invoicing for the bidders to comply with. Should the bidders not comply with the standardized format, the invoice shall not be processed. The submission of Checklists linked to asset specifications, service orders and invoices shall be before a specified time. Should it be submitted later than the agreed time, processes will be subject to delays.

Field Workforce Management System (FWMS):

The service provider to note that the CCT has its own FWMS solution that is integrated with the existing SAP applications of the CCT. It's crucial to understand that the existing CCT FWMS is already comprehensively integrated with the SAP ECC 6 (or the current version during the project, should an update occur) environment to allow for an automate meter exchange in the CCT SAP system. The service provider will therefore also be asked to utilize the CCT FWMS in addition to the service providers FWMS as installations are replacements are being done. The CCT has implemented a mobility solution to enhance the operational efficiency of this process. For this purpose, Handheld Terminal Units are required for this contract to successfully undertake the function of mobility. The service provider will be required to provide his/her own Handheld Terminals (HHTs) (1 per team) compatible with the CCT's computerised meter reading system (SAP) together with a robust upload and download platform with appropriate operating and interfacing software.

A Hand-held Terminal (HHT) is an essential tool for hosting our specialized app and facilitating tasks through the prescribed digital platforms and systems. To ensure every meter installation maintains a digital record, service providers must comply with the following requirements for the Hand-held Terminals (HHTs) in conjunction with the software-based solution and integrated mobile app.

- Hardware Requirements:
 - Processor: Minimum 2.0 GHz, Octa-Core.
 - RAM: Minimum 3 GB.
 - Internal Storage: Minimum 32 GB.
 - Connectivity: 4G (LTE) enabled.
 - Display: Multi-touch, ranging from 5" to 8", with a resolution of 1280 x 720.
 - Camera: Rear camera with a minimum of 8 MP and front camera with a minimum of 5 MP. Higher resolution preferred for improved imaging functions.
 - Expandable Storage: SD slot.
 - Location Tracking: GPS enabled.
 - Ports: USB-C for faster charging and data transfer.
 - Durability: Compliance with IP68 standards for water and dust resistance, with an integrated ruggedized case or device for enhanced durability.
 - Environmental Compliance: RoHS standards.
 - Security: Knox standard and support for secure boot and hardware root of trust.
- Software Requirements: Operating System: Android 11 or higher.
- Battery Life and capacity: Minimum 4000mAh to ensure a full day's work without frequent recharging.
- Security:
 - Encryption and secure authentication methods to safeguard sensitive data transmitted and stored on the device.
 - Hardware-backed keystores and biometric authentication support for enhanced security
- User Interface: Intuitive design for ease of use and a quick learning curve for field personnel.
- Integration Capability: Compatibility with predefined platforms and systems, enabling seamless integration and data synchronization.
- Support and Maintenance: Service providers must provide technical support to address any issues or concerns with the HHTs.

The service provider will not commence with the contract without the HHTs as this is an integral part of the contract. All software installed on the HHTs by the CCT will remain the property of the CCT and will be relinquished at the end of the contract or as determined by the CCT. The service provider shall safeguard all software supplied and shall only use such software in the execution of the contract. Should it be found that the service provider or his staff has abused the software for personal gain the service provider shall be penalised the sum of R5 000 per incident and shall cover the cost of the illegal use of water consumed. NOTE THIS PROCESS WILL SUPERSEDE THE ADMINISTRATIVE PROCESS MENTIONED ABOVE, unless stated

otherwise by the project manager at award of the contract.

In principle, FWMS will have the following steps:

- Approve updated letter of good standing.
- The service provider will receive a Service Order through the Works Order Portal of CCT.
- Service provider to assign Service Orders to their teams for installation (and plumbing if required)
- Service provider to capture data on their devices as per CCT process (pre, during, after installation etc.)
- Once work in the field is completed, it will be placed in a verification lot, on which the CCT will do inspections.
- Once the samples have been quality checked and passed, the lot will be approved, and the service provider can invoice.
- Existing meter final reading new meter reading setting, installation date, location of the new meter whether on property or on the footway and any other additional information obtained on site should be recorded in the long text of the physical service order.
- Any missing information not provided shall be rejected and only such time when its corrected shall the invoice be approved and processed for payment.

Service providers may utilize the own FWMS (in addition to the CCT's FWMS) and appropriate Hand-held Terminals to manage their installations in an optimized and digital manner. The FWMS is a critical tool for managing field service personnel, digitizing the installation and QA process, and optimizing operational efficiency in the smart water meter replacement program.

The primary functionalities required are as follows:

- Streamline field operations for activities like meter installations, replacements, and repairs.
- Optimize technician scheduling, dispatching, and tracking. (The CCT FWMS does not do this)
- Provide real-time data analytics for monitoring field operations, technician performance, and asset health. (The CCT FWMS does not do this)
- Mobile capabilities for technicians to access, update, and manage work orders in the field.
- Efficient processes for meter installation, activation, maintenance, repairs, replacement, and removal.
- Real-time technician scheduling based on availability, skillset, and location. (The CCT FWMS does not do this)
- Comprehensive work order management, including real-time tracking and workflow management.
- Monitor technician performance metrics, with reporting and analytics tools. (The CCT FWMS does not do this)
- Real-time mapping and GPS tracking of field workers for efficient job scheduling. (The CCT FWMS does not do this)
- Integration possibilities using web services or APIs, particularly with systems like SAP and AMI MDM.
- GIS XY Data Capture of exact meter location

Approach & Strategy Guidelines:

The below sub-sections outline recommended guidelines to follow for a successful implementation of the programme and installation of the meters.

- Obtain existing consumer data.
- Conduct site audit using Handheld Units (Where necessary)

- Handheld Terminals will be required in field and should be linked to master data sets. The device should be equipped with a camera (for QA photographic evidence). Data to be inputted into the Handheld Unit
 - Accessibility to the meter (inside property/outside property/driveway/sidewalk),
 - Property accessibility (Within complex/stand-alone dwelling)
 - Meter box specification and conditions,
 - Surface conditions,
 - Meter material and specification,
 - Plumbing connection rating (Standard/Complex),
 - Serviceable area for works constraints (Standard/Complex),
 - Full Street Address (Number, Street Name, Suburb)
 - Replacement versus Installation verification (Parameters above to result in score to determine whether full installation is required considering modifications, or if simple replacement is possible)
 - Serial number
 - Installation number
 - Customer number
 - Meter size
 - Fitting size
 - ERF Number
 - Customer segmentation aligned to CCT classifications.
 - Signal strength.
 - Time-and-date stamped photographs at prescribed angles and quantities (Approx. 3 photos per site)
- Validate existing data:
 - Identify important stakeholders, such as National Key Points (NKPs), embassies, hospitals, and other critical establishments within the consumer data.
 - Prioritise engagement and communication with the above stakeholders to ensure their specific needs and concerns are addressed during the installation process.
- Understand bylaws and impact on planning:
 - Obtain knowledge and understanding of the relevant bylaws and regulations governing water meter installations.
 - Consider how these bylaws may impact the planning process, including any specific requirements or restrictions to be followed.
- Understand points of distribution:
 - Gain a comprehensive understanding of the points of distribution within CCT network, including the locations where water is supplied to consumers.
 - Consider the infrastructure and logistical aspects related to these points of distribution when developing the installation plan.
- Understand the rating scale on consumption and others to identify installation and site audit priorities:
 - Analyse the rating scale used to measure water consumption and other relevant factors.
 - Use this information to prioritize the installation and site audit activities based on consumer demand, consumption patterns, and other relevant considerations.

- Define Deployment Strategy and Macro Plan in alignment with CCT Deployment Strategy:
 - Develop a comprehensive strategy that outlines the overall approach for deploying smart water meters.
 - Create a macro plan that includes key milestones, timelines, and deliverables for the entire installation process.
- Workshop Deployment Strategy with CCT and obtain sign-off:
 - Share the proposed deployment strategy with CCT, ensuring clear communication of the objectives, methods, and expected outcomes.
 - Address any questions or concerns CCT may have and obtain their formal approval and sign-off on the strategy.
- Monitor & Update Macro Plan:
 - Continuously monitor the progress of the project against the macro plan.
 - Update the plan as necessary to reflect any changes or adjustments made during the implementation process.
- Define Workforce Qualifications and Standards:
 - Clearly define the required qualifications, skills, and standards for the workforce involved in the installation process.
 - Establish criteria for selecting, training, and certifying the personnel involved.
- Manage Training and Safety Approvals
 - Ensure that all personnel involved in the installation process receive proper training and adhere to safety protocols.
 - Review and approve: The CCT reserves the right to review and approve the training curriculum and documentation before final delivery to ensure that they meet the requisite standards of clarity, comprehensiveness, and usability.
- Collate Workforce Planning Information:
 - Gather information about the available workforce, including their availability, skills, and capacity.
 - Consider factors such as geographical coverage, work shifts, and any specific requirements for the installation activities.
- Plan Micro Workforce Capacity:
 - Determine the required workforce capacity at a micro level, considering factors such as the number of installations per day, location-specific requirements, and resource constraints.
- Approve Micro Workforce Capacity Plan:
 - Obtain approval for the detailed micro workforce capacity plan from the relevant stakeholders and management.
 - Ensure that the plan aligns with the overall deployment strategy and macro plan.
- Monitor and Update Micro Workforce Capacity Plan:
 - Continuously monitor the workforce capacity plan and make necessary adjustments based on the actual progress and challenges encountered during the installation process.
 - Update the plan accordingly to optimize resource allocation and ensure efficient execution.
- Monitor Workforce Performance:
 - Regularly assess the performance of the workforce involved in the installation activities.
 - Track key performance indicators such as installation speed, accuracy, adherence to safety protocols, and customer satisfaction.

- Access metering asset installation works order:
 - Retrieve the works order for the metering asset installation, which contains detailed instructions and specifications for the installation process.
 - Ensure that the works order is accessible to the installation team and any necessary equipment or materials are available.
- Populate metering asset installation template:
 - Utilise a metering asset installation checklist to document the details of the installation, including location, meter specifications, and any additional information required.
 - Fill out the checklist accurately and comprehensively to ensure proper tracking and documentation.
- Store and validate old meter last meter reading:
 - Safely store the old meter and record with photo evidence its last meter reading before removal.
 - Validate the accuracy of the recorded reading to ensure proper billing and data management.
- Remove old meter:
 - Perform the necessary steps to safely remove the old meter from the consumer's premises.
 - Adhere to proper procedures and safety guidelines during the removal process.
- Install new meter and/or communications:
 - Install the new meter and/or communications equipment according to the specified guidelines and standards.
 - Ensure proper connections, wiring, and functionality of the installed equipment.
- Provision meter (and DCU) on the HES:
 - Integrate the newly installed meter and/or data collection unit (DCU) with the HES.
 - Establish the necessary communication protocols and ensure that the meter is properly registered and monitored.
- Testing Communications:
 - Conduct testing to verify the communication between the installed meter and the HES.
 - Ensure that data transmission, remote reading, and other communication functions are functioning correctly.
- Bag, tag, and handover/store old meter:
 - Securely bag and tag the old meter and meter box to ensure proper identification and tracking.
 - Hand over the old meter to the designated storage location or follow the appropriate procedures for disposal or recycling.
- HHT data extract and photo collation:
 - Extract the data collected by the Handheld Terminal (HHT) during the installation process.
 - Collate any relevant photos or visual documentation captured during the installation for future reference and record-keeping.
- Verify meter installation for accuracy and compliance with the QA plan:
 - Perform a thorough verification of the meter installation to ensure accuracy and compliance with the Quality Assurance (QA) plan.
 - Check and report on any discrepancies, anomalies, or issues that may affect the proper functioning or billing accuracy of the meter.
- Track real-time metering asset installation progress:

- Implement a real-time tracking system to monitor the progress of metering asset installations.
- Use FWMS to capture and update installation status.
- Identify successful metering asset installations:
 - Identify and record the metering asset installations that have been successfully completed according to the plan.
 - Maintain a clear distinction between successful installations and those requiring further action.
- Identify unsuccessful metering asset installations and classify exceptions:
 - Identify installations that were not completed successfully or encountered exceptions or issues.
 - Classify these installations based on the type of exception or issue for further analysis and resolution.
- Track "unsuccessful" metering asset installation exception resolution progress:
 - Monitor the progress of resolving exceptions or issues related to unsuccessful installations.
 - Track the actions taken, responsible parties, and expected resolution timeframes for each exception.
- Inform work order status:
 - Keep stakeholders informed about the status of work orders, including updates on completed installations, exceptions, or delays.
 - Provide timely communication to ensure transparency and effective coordination.
- Meter exchange upload failure-Case creation:
 - Create a case or ticket to address situations where there is a failure in uploading meter exchange data.
 - Document the details of the failure and initiate the necessary steps for resolution.
- Meter exchange upload failure-Information Correction:
 - Correct any data inaccuracies or errors related to meter exchange uploads.
 - Validate and update the relevant information to ensure data accuracy and integrity.
- Update utility's legacy consumer data in the case of a resolved data inaccuracy exception:
 - Once data inaccuracies or exceptions are resolved, update the utility's legacy consumer data accordingly.
 - Ensure that accurate and updated information is reflected in the consumer database.
- Analyse Deployment Performance:
 - Conduct a comprehensive analysis of the overall deployment performance, including installation timelines, success rates, exceptions, and any other relevant metrics.
 - Identify areas of improvement and make data-driven decisions for future deployments.
- Receive, Sort, and Store Returned Assets:
 - Establish a process for receiving, sorting, and storing any returned assets, such as old meters or equipment.
 - Ensure proper documentation and organization to facilitate asset management and potential reuse.
- Manage Asset Returns if required:
 - If asset returns are required, follow the designated process for managing the return of assets to the appropriate inventory or storage location.
 - Ensure proper tracking and reconciliation of returned assets.
- Manage Scrap Collection & Retirement:

- Implement procedures for collecting and managing scrap or retired assets in accordance with relevant regulations and policies.
- Coordinate with authorized entities for proper disposal or recycling of scrapped assets.
- A monthly update shall be provided to the service provider of how much work was allocated and how much work was outstanding and still in possession of the service provider.
- Should any service provider not meet the required standards and prescribed targets then CCT reserves the right to take appropriate action in terms of the contract and CCT vendor dissatisfaction procedures will be followed.
- The service provider is required to keep a complete record of his quality documentation to verify that the works undertaken are fully compliant with the statutory regulations, contract requirements and agreed standards.
- This record should include:
 - Inspection and test records.
 - Any remedial actions addressed, which will be monitored by the Project Team until resolved.
 - Installation compliant to the specified requirements.
 - Communication to head-end testing records.
- The documentation of all work and corresponding communications will be digital, as defined by the QA Plan

Unique circumstances

Complexities arise around situations where multiple users are connected on a single meter, gated communities, and backyard dwellers, or when meters are located within the perimeter of the property boundary. Expected challenges during installation need to have correct procedures assigned to assist the service providers and project team in their resolution.

Exception Management

During installations, should any discrepancies arise - such as mismatched meter serial numbers or other site-specific issues - they are promptly reported. This procedure ensures that exceptions are documented, communicated, and timeously addressed, minimizing disruptions, and ensuring the project remains on track. Exception Management will be approved through a detailed QA process, with individual works orders issued where necessary.

The following items have been identified as potential challenges at this stage:

- Unique in-field typologies
- Vandalism
- Stolen meters
- Leakages discovered during installation.
- Abandoned or unoccupied properties
- Environmentally restricted areas
- Scheduling of Appointments
- Customer interactions – Obtaining proof of payment, instalment arrangements, disputes.
- Customer refusals
- Insufficient address information
- Different Meter number
- Meter size differs.
- No access to meter or property where meter is located.
- No leading pipe
- Customer not home

- Site/Installation requires repair and maintenance.
- Supply is disconnected.
- Twin box.
- Unable to locate meter.
- Unsafe area

Additional Considerations:

- Traffic Accommodation
 - The safety and convenience of the travelling public is to be considered of utmost importance and every effort must be made to ensure that in the event that they are required, all temporary road signs, cones, flags and speed controls are maintained and effective, and that courtesy is extended to the public at all times.
 - The service provider may not commence construction activities before adequate provision has been made to accommodate traffic in accordance with the requirements of Chapter 13 of Volume 2 of the South African Road Traffic Signs Manual (SARTSM).
 - The service provider shall submit proposals in connection with all signs and accommodation of traffic to the Council Representative for approval.

Features requiring special attention:

- Existing Services

Prior to commencing work, the service provider shall confirm with all Authorities and Departments concerned and obtain the necessary way leaves for both overhead and underground services affected by the Works and shall satisfy himself that he has obtained all the relevant information required to complete the service provider. The service provider shall carry out the works with the minimum interference to existing services. He shall co-operate with all Authorities and Departments concerned and he shall be solely responsible for carrying out the following operations and checks:

- He shall inform all Authorities and Departments in good time before the correct stage of the construction is reached for the laying and/or relaying of any particular services.
- He shall set out the lines and levels of kerbs, pipes, culverts and any other necessary features of the Contract in order that Authorities and Departments are able to lay and/or relay services correctly.
- It shall be clearly understood that obtaining the necessary way leaves and any extra work, such as the removal of any portion of the Works already executed either by the service provider or other Authority or Department and its subsequent re-execution, which is caused by the service provider's failure to observe and carry out his responsibilities as specified, will be at his own cost.
- If the service provider considers that the progress of the works is being retarded by the failure of any Authority or Department to lay, remove or divert pipes, ducts, services, cables or poles within a reasonable time, he shall immediately notify the Project Manager in writing, stating clearly the number of days of delay claimed. The Project Manager will then decide whether such a claim is justifiable.
- The cost of repairing any damage to services, due to miscalculations or negligence on the part of the service provider or his failure to carry out the duties set out in this Clause, shall be borne by the service provider.

(a) Protection of Overhead and Underground Services

Services and sub-surface obstructions likely to be affected by the work, based on available records and surveys, have been shown on the drawings. Although every care has been exercised in the presentation of the available data, the Employer cannot and does not vouch for the accuracy or completeness of the information shown. Whenever the service provider deems it necessary to determine the exact location of an existing service or obstruction, he shall, at his own expense, make any examination that he may consider desirable in advance of the work, and the Employer does not accept any liability for loss, damage or delay to the service provider as a result of the non-location or inaccurate location of services or obstructions.

Where no underground services are shown on the drawings or scheduled, but the possibility of their presence can be reasonably inferred, the service provider shall in collaboration with the Engineer, search for such services to establish their positions well in advance of the work. A full report shall then be submitted in good time to the Engineer, to enable the necessary arrangements for the protection, removal or diversion of the services before work is commenced in their vicinity.

In the event of damage to existing services, the service provider shall take such immediate action as is necessary to prevent further damage or danger to life or property and shall immediately notify the Engineer who will issue instructions as to the necessary repairs or protective measures to be taken. The cost thereof shall be borne by the service provider irrespective of whether the repairs or protective measures were carried out by him or by or on behalf of the service authority or department concerned.

As soon as an underground service not shown on the drawings is discovered, it shall be deemed to be a known service and the service provider will be held responsible for any subsequent damage to it. If such service is damaged during the course of its discovery, the service provider will be reimbursed for the cost of making good such damage, unless it is established by the Engineer that the service provider did not exercise reasonable diligence and care and that the damage was avoidable.

(b) 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.

(c) Condition of Existing Services

The service provider acknowledges that he has inspected and examined all known existing services and all existing services subsequently discovered, as contemplated in (a) above and is satisfied that all such services were in an acceptable and serviceable state at the commencement of the works, alternatively, upon discovery thereof as contemplated in (a) above.

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 service provider 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.

(d) Maintenance, Protection and Relocation of Existing Services

During the course of the works, all existing services including traffic signals, water mains, sewers and storm water 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 Engineer. The service provider shall bear all costs in this regard.

Where a bank of underground ducts, cables, etc are crossed over a distance of less than 1.0m they shall be regarded as a single crossing. Hydrants under pressure, water main valve covers and manholes shall be kept unobstructed and accessible at all times.

The covers and frames of service manholes, catchpits, water mains, valve boxes and sewers will have to be adjusted where they are affected by roadworks.

(e) Work in Close Proximity to Existing Services

The service provider 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 service provider's attention is drawn to the following with regard to work done in the 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 who without legal right (the proof of which shall be upon him) cuts or damages or interferes with any apparatus for generating, transmitting or distributing electricity, shall be guilty of an offence and liable on conviction to a fine not exceeding R1 000,00 or to imprisonment for a period not exceeding twelve months."

The service provider shall take the above into account in the drawing up of his construction programme and in the calculation of his tendered rates and shall note that no additional payment or compensation will be allowed for any additional costs or delays incurred as a result of compliance with these regulations, except as measured and paid under the Items listed in the Schedule of Quantities.

The service provider 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 Engineer, and for which no separate provision has been made in the Schedule of Quantities, will be paid for under day works if required.

- Security

The service provider shall take every precaution to ensure safety and to protect the Works from theft and vandalism. The Contractor shall be responsible for the safety and security of his personnel, materials on site and the Works in general at all times. The Contractor shall therefore acquaint himself with the current situation in the area with regard to safety and security (liaising with the local police as necessary) and shall provide all security measures, including the employment of accredited security services, as deemed necessary to comply with the requirements under this clause on the Contract.

- Standard of Materials, Workmanship, Testing and Performance

The attention of Tenderers is particularly drawn to the high standard of materials, workmanship, testing and performance applicable to his Contract as a whole and he shall convey this requirement to his proposed Sub-Contractors.

The service provider will carry out control testing of materials and workmanship as required in terms of the specifications. Where necessary, the Engineer may carry out acceptance control testing. The Employer will not pay claims or grant extension of time for delays to the works resulting from the awaiting of test results. Testing as required by the Engineer will be affected as promptly as possible but it is in the service providers own interest to submit material samples and other components of workmanship for testing in good time to assist in avoiding or minimizing delays.

- Weatherproof Protection for Workers

All staff required to continue working during rain shall be provided with oilskins and rubber knee boots, or other approved protective clothing and footwear.

- Night Work and Work on Public Holidays

Where the service provider requires staff to work overtime, he shall make the necessary arrangements with the Project Manager and obtain written approval from the Project Manager. Approved overtime work to be in terms of the Schedule of Rates.

- Construction in Confined Areas

It will be necessary for the service provider to work within confined and restricted areas. No additional payment will be made for work done in such areas, despite indications to the contrary in the Standard Specifications

- Health and Safety Plan

Prior to commencing work, the service provider shall submit a Health and Safety Plan, compiled in accordance with the Health and Safety Specifications in C5.3: Health & Safety Management Specification to the Engineer for approval.

Standards

Although not bound in nor issued with this document, the following standardized specifications shall form part of the contract document and shall apply:

- Occupational health and safety standards in CCT (The Occupational Health and Safety Act (OHS)) would apply to the installation and commissioning of smart water meters and related equipment. Compliance ensures the safety of workers and the public during deployment.
- All fittings and materials shall be approved in accordance with the requirements of SANS 10252-1. In the case where the contract requires a specific fitting or material where there is no such fitting available that is SABS approved, the Exception Management process may allow the use of such fitting or material provided. Proof that an application has been made to the SABS approval is also required.
- Wayleaves, permissions and permits to be obtained for work, as applicable, near existing services or other infrastructure on site.
- Employment of security personnel by the contractor, on behalf of the CCT or at any CCT property, to be registered with Private Security Industry Regulatory Authority (PSiRA)
- Specific SABS SANS installation works standards are also noted by **Section Edition Title:**
 - **SANS 1200 A 1986** General
 - **SANS 1200 AA 1986** General (Small works)
 - **SANS 1200 C 1980** Site Clearance
 - **SANS 1200 DB 1989** Earthworks (Pipe Trenches)
 - **SANS 1200 GA 1983** Concrete (Small works)
 - **SANS 1200 L 1983** Medium Pressure Pipelines
 - **SANS 1200 LB 1983** Bedding (Pipes)
 - **SANS 1200 LF 1982** Erf Connections (Water)
 - **SANS 1200 MJ 1984** Segmented Paving
 - **SANS 1200 MK 1983** Kerbing and channelling
 - **SANS 1052 – 1 2012** Water Supply Installation for buildings
 - **SANS 1529 – 1** Water meters for cold potable water Part 1: Metrological characteristics of mechanical water meters of nominal bore not exceeding 100 mm.
 - **SANS 1529-3** Water meters for cold potable water Part 3. Physical dimensions.
 - **SANS 1529-4** Water meters for cold potable water Part 4: Mechanical meters of nominal bore exceeding 100 mm but not exceeding 800 mm.

- **SANS 1529-9** Metering standard, which covers pre-payment water metering systems, was made compulsory under the Legal Metrology Act (Act 77 of 2014) by Government Notice R 1704 of 21 November 2003 and became binding on both manufacturers and users.
- **SANS 460 2011** Plain-ended solid drawn copper tubes for potable water
- **SANS 10252-1 2018** Water supply installations for buildings
- **SANS 17025 2018** General requirements for the competence of testing and calibration laboratories
- **Legal Metrology Act (2014)**
- **ISO 228-1;2000 ed.4 - id.33777 Publication PDF (en)** Pipe threads where pressure-tight joints are not made on the threads — Part 1: Dimensions, tolerances, and designation.
- **ISO 228-2;1987 ed.2 - id.4104 Publication PDF (Image based PDF 600dpi) (en)** Pipe threads where pressure-tight joints are not made on the threads - Part 2: Verification by means of limit gauges.
- **ISO 4064-1;2014 ed.4 - id.55371 Publication PDF (en)** Water meters for cold potable and hot water – Part 1: Metrological and technical requirements
- **ISO 4064-4;2014 ed.1 - id.55385 Publication PDF (en)** Water meters for cold potable water and hot water — Part 4: Non-metrological requirements not covered in ISO 4064-1
- **ISO 6509-1;2014 ed.1 - id.59999 Publication PDF (en)** Corrosion of metals and alloys – Determination of dezincification resistance of copper alloys with zinc – Part 1: Testing method
- **ISO 6509-2;2017 ed.1 - id.63079 Publication PDF (en)** Corrosion of metals and alloys — Determination of dezincification resistance of copper alloys with zinc – Part 2: Assessment criteria
- **ISO 9001:2015** Quality Management Systems

Specific sections contained in the above, relating to all works defined in the Technical Specifications, including Repair and Maintenance works:

GENERAL

1 MATERIALS (SANS 1200 A Clause 3)

1.1 Quality (SANS 1200 A Subclause 3.1)

- All pipes, fittings and other apparatus shall carry the SABS approval mark. The mark on a pipe shall be visible from above after the pipe is laid.
- In the case where the contract requires a specific fitting or material where there is no such fitting available that is SABS approved, the CCT may allow the use of such fitting or material if it meets the standardized specification. Proof that an application has been made to the SABS approval is also required.

2 CONSTRUCTION (SANS 1200 A Clause 5)

2.1 Watching, Temporary Barricading and Lighting (SANS 1200 A Subclause 5.2)

- The Contractor shall ensure that all roads adjacent to the site which may be affected by the works are kept in a safe condition for pedestrians and vehicular traffic.

2.3 SAFETY (SANS 1200 A Clause 5.7)

2.3.1 Health and Safety Act

- The Contractor is to observe the provisions of the relevant Health and Safety Act. Working on underground pipelines presents hazardous conditions.

2.3.2 HEALTH AND SAFETY OBLIGATIONS

- The Tenderer should allow for all costs and expenses in connection with the compliance with the Health and Safety Act.

2.4 Interruption of service (SABS 1200 A Clause 5.8)

- The maximum time permitted for consumers to be without water services is six hours. Notice should be given to affected residents 24 hours prior to any planned shutdown.

- The Service Provider shall provide a 24-hour standby service for the maintenance and repair of any section of work covered by the works contract. He shall provide the Council Representative with an effective means of contacting the standby staff on a 24-hour basis.
- All repairs necessary to maintain services to residents shall be carried out without delay.
- All costs incurred by The Service Provider in complying with this clause shall be deemed to be included in his rates and no separate payment shall be made in this regard.

3. TESTING (SANS 1200 A Clause 7)

3.1 Checking (SANS 1200A Subclause 7.1.1)

- Every completed layer or section of the Works shall be subject to check testing by The Service Provider, at his own cost. Once The Service Provider has satisfied himself with the standard of his works, he shall provide the CCT the results of his check testing indicating that the work is to specification. To minimise delays due to testing, The Service Provider shall give the CCT at least 24 hours' notice of when any portion of the works will be completed to his satisfaction so that the CCT can arrange for his acceptance control testing to be done.
- Failure by The Service Provider to notify the CCT or to provide the required information or, where specified, to perform the required test, will be grounds to exempt the Employer from payment for the associated work and for all subsequent work which would be affected by the failure of the work to be tested.
- The Project Manager will be under no obligation to The Service Provider to perform acceptance tests. If the Project Manager elects not to perform a particular test after notification by The Service Provider, he will issue The Service Provider with a written instruction to proceed with the relevant works without the acceptance test being performed.
- Nothing contained in this Clause will relieve The Service Provider of his responsibilities under the specification or in any way limit the tests which the Project Manager may call for or perform in terms of the specification.

RETURN OF MATERIALS (SANS 1200 A clause 5)

- Existing meters shall remain the property of the CCT and shall be returned by The Service Provider to CCT. Care taken of meters The Service Provider shall obtain the signatures of the appropriate CCT Official, acknowledging receipt. All the material must be itemised i.e., type, size, diameter, make, number, meter number, meter reading, stand number etc. from which the meter has been removed. The Service Provider shall allow in his rate for the return of such material to the Engineer's Depot

SITE CLEARANCE

1 SCOPE (SANS 1200 C clause 1)

- The site is situated in a developed urban environment. The contract will require the demolition and removal or storage of existing materials on the site prior to commencement of the works.

2 MATERIALS (SANS 1200 C Clause 3)

2.1 Disposal of Material (SANS 1200C Subclause 3.1)

- No material shall be spoiled on the site. The Service Provider shall make his own arrangements for the provision of a suitable spoil area off the site.
- The Service Provider will be held solely responsible for observing the by-laws and regulations of the relevant local authorities. The Service Provider shall indemnify the Employer against all claims for damages arising from this source.
- All costs incurred by The Service Provider in complying with this clause shall be deemed to be included in his rates and no separate payment shall be made in this regard.

3 CONSTRUCTION (SANS 1200C Clause 5)

3.1 Removal and storage of Kerbing, Channelling, and Edging, Paving and Grassing (SANS 1200C Subclause 5.1 to 5.7)

- Where indicated by the CCT Representative, The Service Provider shall remove existing kerbing, channelling, and edging, paving and grass sods and store all materials such kerbing, channelling, and edging for re-use and reinstatement on the site of the works.
- Where existing kerbs are to be removed and the existing channels are to remain, The Service Provider shall carefully remove the kerbs without disturbing the channels. Any channels which are disturbed or damaged during this operation shall be replaced at The Service Provider's expense.
- All costs incurred by The Service Provider in complying with this clause shall be deemed to be included in his rates and no separate payment shall be made in this regard.

EARTHWORKS (PIPE TRENCHES)

1 MATERIALS FOR REINSTATEMENT OF ROADS (SANS 1200DB Subclause 3.6)

1.1 Sub-base and Base (SANS 1200DB Subclause 3.6.1)

- Existing road layers shall be reinstated with 150mm Type G5 gravel sub-base (compacted to 97% modified AASHTO density) and Type G4 base (compacted to 98% Modified AASHTO density), in two layers each 150mm minimum thick after compaction.
- The base layer shall be benched so that the layer overlaps the underlying sub-base layer by at least 150 mm on either side of the trench excavation.

1.2 Asphalt Surfacing (SANS 1200DB Subclause 3.6.4)

- The surfacing shall consist of a medium continuously graded asphalt surfacing as specified in SABS 1200 MH Asphalt Base and Surfacing of the specifications. The edges of the surfacing / seal shall overlap the base by at least 150 mm on both sides of the trench excavation. A tack coat shall be applied to the finished surface of the base course layer.

2 CONSTRUCTION (SANS 1200DB Clause 5)

2.1 General (SANS 1200DB Subclause 5.1)

- Trench excavation for new pipelines will be generally by machine after existing services have been exposed by hand.
- The trench excavation shall be such that the base width includes sufficient working space.

2.2 Excavation (SANS 1200DB Subclause 5.4)

- All excavated material shall be placed in such a way and in such positions as not to endanger or interfere with the works, pedestrians, traffic or property and the CCT Representative may order The Service Provider to remove any material that is considered liable to endanger or interfere with the works, pedestrians, property, or traffic and to place such material in another position as indicated by the CCT Representative.

2.4 Trench Bottom (SANS 1200DB Subclause 5.5)

- Where waterlogged trench bottom conditions exist after The Service Provider has, in the CCT Representative's opinion, carried out all possible dewatering operations, the CCT Representative may order that unsuitable material be excavated and replaced with crushed stone. A layer of 19 mm crushed stone shall be placed over the full width of the trench bottom, in increments of 200 mm thick or such other thickness as may be ordered by the CCT Representative. The crushed stone shall be placed and rammed into the trench bottom to create a firm platform and shall be finished off to the required trench formation level.
- As an alternative, the CCT Representative may order that a suitable selected fill material, obtained from the site, be placed in the trench bottom to the same dimensions as specified for the crushed stone. The selected fill material shall be compacted to the specified density for trench bottoms.
- Where The Service Provider's method of working results in quagmire conditions in the trench bottom, The Service Provider shall excavate and stabilize the trench at his own cost.

3 DISPOSAL OF SURPLUS MATERIAL (SANS 1200DB Subclause 5.6.3 and 5.6.4)

3.1 Description

- Surplus excavated material shall be taken off the Site and disposed of at a site arranged by The Service Provider and approved by the CCT Representative.

4 COMPACTION (SANS 1200DB Subclause 5.7)

4.1 Areas Subject to Traffic Loads (SANS 1200DB Subclause 5.7.2)

- All trenches backfilled under this contract shall be backfilled with sand or cohesive material placed in layers a maximum of 200 mm thick and compacted to 100 percent Modified AASHTO maximum density.

5 REINSTATEMENT OF SURFACES

Roads:

- Asphalt surfacing (medium continuously graded) 40mm thick.
- Tack coat.
- G4 Base in 300 mm thick in two 150 mm thick layers, to roadways
- G5 Subbase 150mm thick, to roadways

Sidewalks:

- 20mm Thick premix to sidewalks
- G5 Subbase 100 mm thick, to sidewalks and footways
- Gravel material shall be a natural gravel G5 subbase especially for reinstatement of shoulders compacted to 95% Modified AASHTO density with CBR>45 and a maximum Plasticity Index (PI) of 10.

Concrete:

- 25 MPa strength

Brick Paving and Interlocking:

- To match existing or similar approved by the Engineer. Minimum compressive strength of 25MPa.

Grass and lawns:

- The affected areas shall be re-instated with sods of similar grass as approved by the Engineer.

Kerb and channel:

- Precast kerbs and channels shall comply with the requirements of SABS 927 for quality and shape, shall be of the same type and figure as the existing and shall be of nominal length not greater than 1 m.
- Short lengths that are required as closures shall be specially cast or saw-cut to the required length.

6 DETECTION, LOCATION AND EXPOSURE OF EXISTING SERVICES (SANS 1200DB clause 5.1.4)

- The Service Provider shall ascertain the presence and position of all services likely to be damaged or interfered with by his activities. For this purpose, he shall obtain from the CCT Representative up-to-date plans showing the position of services in the area where he intends to work.
- As the location of services can often not be reliably determined from such plans, he shall further determine the exact position of such services by means of suitable detecting equipment and afterwards by careful hand excavation, where necessary, to expose the service at the positions of possible interference by his activities. The latter procedure shall also be followed in respect of any service not shown on plans but believed to be present.
- All such services, the positions of which have been located at the critical points, shall be designated as "known" services and their positions shall be indicated on a separate set of Drawings by The Service Provider, a copy of which shall be furnished to the CCT Representative.
- While he is in occupation of the Site, The Service Provider shall be liable for all damage caused by him to known services as well as for consequential damage arising therefrom, whether caused directly by his operations or by lack of proper protection.

6.1 Protection of Existing Services (SANS 1200DB clause 5.1.4)

- The Service Provider shall exercise all the necessary care to prevent damage to known services during construction operations. Major excavating equipment and other plant shall not be operated in dangerously proximity to these services. Where necessary, excavation near these services shall be carefully carried out by means of suitable hand tools, excluding picks wherever their use could cause damage to the services. No additional payment will apply to such more difficult work.
- Services left exposed shall be suitably protected from damage and/or theft.

6.2 Liability for Damage and Insurance (SANS 1200DB clause 5.10)

- The Service Provider's attention is drawn to the relevant clauses of the General Conditions of Contract and Contract Specific Data regarding liability for damage to the Works, or property, or injury to persons arising from the construction of the Works. His attention is also drawn to the General Conditions of Contract regarding insurance to be affected by The Service Provider. Special attention is drawn to the exclusions in this insurance policy and particularly to the exclusions regarding consequential damage.

7 MEASUREMENT AND PAYMENT (SANS 1200DB Subclause 8.3.6)

7.1 Control of Water (SANS 1200A clause 8.4.2)

- No item other than pay item 8.4.2.2 SABS 1200 A, in terms of Subclause 5.5 SABS 1200 A, has been scheduled for dealing with water and The Service Provider must allow for it in his rates.

BEDDING (PIPES)

1 MATERIALS (SANS 1200 LB Clause 3)

1.1 SELECTED GRANULAR MATERIAL (SANS 1200LB Subclause 3.1)

- Selected granular material shall be of a granular, non-plastic nature and shall conform to the following grading:
- % Passing 4,750 mm sieve 95% min
- 0,425 mm sieve 50% min
- 0,075 mm sieve 10% max
- and shall have a compatibility factor (as determined by the test given in Section LB, Part 3 of SABS 0120) not exceeding 0,4.

2 CLASS OF BEDDING (SANS 1200LB Subclause 3.3)

- Water mains, storm water and sewer pipes shall all be laid on Class B bedding, unless otherwise shown on the Drawings, or instructed by the CCT Representative.

2.1 Bedding Materials (SANS 1200LB Subclause 3.4)

- Suitable selected bedding material will be available from the trench excavations along the route. Should additional selected granular material be required, it shall be obtained from other excavations on the site or imported from commercial source.

2.2 The Service Provider to Excavate Selectively for Bedding Materials (SANS 1200LB Subclause 3.4.1)

- Notwithstanding the requirements of Subclause 3.7 of SABS 1200 DB and Subclause 3.4.1 of SABS 1200 LB regarding the use of selective methods of excavating, The Service Provider shall use selective methods of excavating and shall provide and use plant that will enable him to avoid burying or contaminating material that is suitable and is required for bedding.

3 CONSTRUCTION (SANS 1200LB Clause 5)

3.1 Compacting (SANS 1200 LB Subclause 5.1.4)

- The degree of compaction of the bedding shall be 100% of Modified AASHTO in sand and not less than 93% in the case of non-sand materials.

MEDIUM-PRESSURE PIPELINES

1 The installation of Valves on operational major water pipelines (SANS 1200L clause 5)

- The Service Provider shall execute the work in existing valve chambers on existing operational bulk water pipelines or otherwise as requested by the Project Manager.
- The Service Provider shall arrange 2 days in advance with the Project Manager for isolating of the section of water pipeline on which the valve replacement is to be carried out to allow the Project Manager to inform the affected communities of the possible interruption of water supply.
- The Service Provider shall keep de-watering plant in operation to ensure the effective installation of the isolation valve, all other required equipment and steel pipe specials.
- The Service Provider shall provide and operate all de-watering plant to pump out all water from the valve chamber and the excess water remaining in the pipeline after the pipeline section has been isolated. The valve chamber shall remain completely free of water while the installation of the new isolation valve is in process.
- The Service Provider shall pump out the remaining water from the pipeline from the nearest scour valve or by loosening the flange bolts and the VJ Coupling bolts.
- The Service Provider shall provide lifting gear and fix strapping to the valve before the flange bolts and VJ coupling bolts are removed.
- The VJ coupling shall thereafter be moved away from the joint to expose the joint between the pipe and the flange adapter.
- The Service Provider will make available high pressure water jet blasters to jet blast rust sealing and caulking from the exposed joint.
- The valve and flange adapter shall thereafter be loosened with care ensuring that the remaining flange and pipe end in the valve chamber is not damaged under any circumstances. The Service Provider shall avoid risky or destructive working methods and ensure that only limited force is applied. The use of grinders or cutting torches on any joint or against any flange shall be always avoided.
- If The Service Provider still have trouble to remove a valve from its position in the valve chamber after the above actions. The Service Providers shall call the Project Manager for a site inspection and request a site instruction to cut the pipe section of the flange adapter with a cutting torch to enable him to remove the valve. The Service Provider shall deliver both portions of the cut flange adapter to a reputed steel pipe manufacturer to manufacture a new flange adapter to the same specification. The supply of the new flange adapter will be an extra over item and the payment will be dealt with separately to this tender.
- The Service Provider must then fit the replacement valve and flange adapter in the existing valve chamber.
- Before replacing and repairing the exterior of the valve chamber the interior shall be reinstated to a serviceable condition.
- The Service Provider must ensure whenever the site is not occupied by his personnel that the valve chamber is covered properly to avoid harm to children or pedestrians as well as to avoid rubble and refuse being dumped in the chamber.

ERF CONNECTIONS (WATER)

1 House Connections (SANS 1200LF clause 5.2)

House connections shall be installed as indicated by the agreed drawing indicated during contract negotiations.

2 Material (SANS 1200LF clause 3)

- All HDPE pipes shall be class 16, type 5 complying with SABS 533 using compression fittings and joints and will be measured and paid for in short lengths for different pipe sizes under SABS 1200 L: Pipe work in the Schedule of Quantities.

3 Remove below ground meter and box and set above ground (SANS 1200LF clause 3.5.3)

- The scheduled price for the removal of the below ground meter and meter box and set above ground must include the removal of the existing meter and meter box and the fittings of couplings to install the meter above ground. The site must be back filled, the surface must be reinstated, removal of scrap material, removal and disposal of spoil, the clearing of site and any incidentals necessary for the completion of the work.

4 Installation of new meter and meter box (SANS 1200LF clause 5.5.1)

- Installing a new meter box with meter, or the removal of the existing meter from the existing meter box and installing the meter into the new meter box, connecting the communication pipe, backfilling, reinstating the surface, removal of scrap material, removing and disposal of spoil, the clearing of site and any incidentals necessary for the completion of the work.
- The replacement length shall be 1.5 meters on either side of the meter. The total length of pipe to be removed and replaced including the meter box shall be 3 (three) meters measured from cut to cut. The type of pipe up to and including 75 mm will be of H.D.P.E.
- The replacement of the meter box shall be accordance with Drawing No: W3 on page 196.

5 RSV Gate Valves (SANS 1200LF clause 3.5)

- The valve shall comply with the requirements of SANS 664: 1989 (as amended Class 16 Type B, for working pressure up to 1.2 MPa and with requirements of SABS 191:1972 (as amended) Class 25 Type B, for working pressures up to 2.5 MPa together with the following additional requirements.
- Valves to comply with the below specifications:
 - All valves shall be SANS 664 and be approved by the Engineer.
 - Valves to be of the resilient seal type.
 - Valves shall be clockwise opening / left hand closing.
 - Direction of opening to be clearly marked on valve body or spindle cap.
 - Valves shall be heavy duty; class 16 minimum.
 - Valves shall be fitted with cast iron cap tops, secured with retaining bolts.
 - Only valves supplied with minimum thickness of 250-micron Copon KSIR 88 epoxy paint applied to all internal and external surfaces after it has been thoroughly cleaned by grit blasting to SA 2 ½ finish in compliance with the requirements of SIS 05 09 00 or valves with similar approved coatings will be accepted.
 - Valve bell tobies shall be ductile iron conforming to EN 124. The covers are to be secured to the frame with galvanized chain or cable.
 - Valve covers shall be blue and shall protrude about 25 mmm above ground level in non-paved area.

6 Resilient seal valves (SANS 1200LF clause 3.5)

k) The materials for construction shall be:

Body, bonnet, gate	Spheroidal graphite iron and gland to SABS 936 SG38
Spindle	Stainless steel to BS 970 Part 4: 410S21 or 302S25
Spindle nut	Aluminium bronze
Corrosion protection	Internal and external sintered powder epoxy coating in accordance with SABS 1217, Type

7 Strainers

Bulk in-strainers serve as a protective barrier for all bulk water meters and must be included in every installation. Y-strainers shall only be used in installations where it is not possible to use inline strainers, contractor(s) to seek approval from Project Manager or his representative before.

In-line strainers to be used shall comply with the following table:

Bore size	Material	End to end connection	Specification	Length
50mm	Cast iron	Flanged	Horizontal Axis. Includes Stainless Steel Mesh (with hole	270mm
80mm				350mm
100mm				350mm
150mm				450mm

200mm			diameter of no more than 3mm) Element and Stainless-Steel Bolts. Fusion bond coated, WPDF Multi Drilled Table D and Table 16. STANDARD: SABS Certified, SANS 1808-58 and bearing the SABS mark scheme where applicable.	350mm
250mm		450mm		
		500mm		

Y-strainers to be used shall comply with the following table:

Bore size	Material	End to end connection	Specification	Length
50mm	Cast iron	Flanged	Horizontal Axis. Includes Stainless Steel Mesh (with hole diameter of no more than 3mm) Element and Stainless-Steel Bolts. Fusion bond coated, WPDF Multi Drilled Table D and Table 16. STANDARD: SABS Certified, SANS 1808-58 and bearing the SABS mark scheme where applicable.	230mm
80mm				310mm
100mm				350mm
150mm				480mm
200mm				600mm
250mm				730mm
				850mm

8 Remove and replace section of asbestos pipe (SANS 1200LF clause 5.2.2)

- The scheduled price for the replacement of a length of asbestos cement pipe shall include the excavation, removal of pipe, fitting of new pipe, fixing of couplings, backfilling, reinstatement of the surface, removal of scrap, removal, and disposal of surplus spoil, clearing of site and any incidentals necessary for the completion of the work.

9 Installation of water mains: Open trench, excavation, laying, jointing, and connecting to existing pipe, including backfilling and compaction (SANS 1200LF clause 5)

- The lineal rate for excavations must include for a maximum depth, laying of pipe, jointing, connecting to existing pipeline will be to at least this depth for tie-ins, etc. including and making good the surrounding surface area, and any incidentals required to complete the work.

- Payment for the extension of water mains shall be the length measured, related to the nominal diameter of the pipe.

10 Corrosion protection (SANS 1200LF clause 3.1)

- The Contractor shall reinstate corrosion protection to the standard of new construction after the installation water meter, flanges and/or VJ Couplings.
- Steel and cast-iron specials shall be protected by covering in “Denso” grease, voids to be filled with “Denso” strip all wrapped in “Denso” tape and covered with SABS approved polyethylene sheeting, Type F, 250-micron thickness.
- All bolts, nuts and washers shall be new and heavy duty galvanised according to SABS 761

11 Removal and replacement of valves (AC pipeline) (SANS 1200LF clause 5.7.2)

- The Contractor will be required to cut-out and replace defective valves.
- The schedule price for the replacement of valves and shall cover the cost of breaking out the valve box, excavation to expose the valve, two pipe cuts, removal of valve, installation of a new valve, trim pipe ends and fit two couplings, construct valve box/chamber including backfill, reinstatement of surface, removal and disposal of surplus spoil and any incidentals required to complete the work.

12 Installation of new valve (Steel pipeline) (SANS 1200LF clause 5.5)

- The price for the installation of a valve in an existing pipeline must include the excavation, cutting into existing pipe, installation of the valve, welding of the joints, fitting of the couplings, building the chamber and making good the surrounding surface area and any incidentals required to complete the work.

13 Installation of new valve (AC pipeline) (SANS 1200LF clause 5.5)

- The price for the installation of a valve in an existing pipeline must include the excavation, cutting into existing pipe, installation of the valve, trimming of pipe ends and the fitting of couplings, building the box in accordance with Drawing Number W4, and making good the surrounding surface area, and any incidentals required to complete the work.

14 Construction of valve boxes (SANS1200LF clause 3.5)

- In addition to the existing clauses the following shall apply:
- On completion and testing of the work the lower part of each valve body must be surrounded by a properly consolidated granular fill.
- Each chamber is to be closed with the appropriate cast iron surface box or manhole cover as specified, set in cement mortar to the correct line and slope of the surrounding surface, except where otherwise indicated.

15 Cut – out section of steel pipe (SANS 1200LF clause 5)

- The rates must include the excavation, two pipe cuts, removing the section of pipe, replace the section with new pipe, weld the two joints, fit two couplings, backfilling, reinstating the surface, remove surplus soil, remove scrap material, the clearing of site and any incidentals necessary for the completion of the work.

16 Remove and replace section of asbestos pipe SANS 1200LF clause 5)

- The scheduled price for the replacement of a length of asbestos cement pipe shall include the excavation, removal of pipe, fitting of new pipe, fixing of couplings, backfilling, reinstatement of the surface, removal of scrap, removal, and disposal of surplus spoil, clearing of site and any incidentals necessary for the completion of the work.

KERBING AND CHANNELLING

1 MATERIAL (SANS 1200 MK Clause 3)

1.1 Bedding Material ((SANS 1200 MK Subclause 3.9)

- Replace Subclause 3.9 with the following:
- Bedding and backing for precast kerbs and channels shall be 15MPa / 13 mm concrete to SABS 1200 GA, to the dimensions indicated on the Drawings.

1.2 Cast-In-Situ Concrete ((SANS 1200 MK Subclause 3.3 and 5.11)

- Cast-in-situ concrete for curves less than 1 m and for transitions shall be 25 MPa / 19 mm.

1.3 Nominal Lengths of Precast Units (SANS 1200MK subclause 3.2.2)

- Units laid to a radius of 1,0 m or greater shall be precast and shall have the following nominal lengths:

Radius in Plan	Nominal Length
1,0 m to 4,0 m	0,3 m
4.0 m to 20.0 m	0.5m
Greater than 20 m and straight	1,0 m

1.4 Expansion Joints in Kerbs and Channels (SANS 1200 MK subclause 3.5)

- Provision shall be made in kerbs and channels for expansion joints of width at least 12 mm at intervals not exceeding 20 m. The concrete surfaces shall be primed, and the joints filled with an approved sealant. Sealant for expansion joints in kerbing shall comply with the relevant requirements of SABS 110. Sealant for expansion joints in channels shall comply with the relevant requirements of BS 2499.

2 CONSTRUCTION (SANS 1200 MK Clause 5)

3.4.4 WAYLEAVES, PERMISSIONS AND PERMITS

- The Contractor shall be responsible for obtaining all 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 Service Provider's name.
- The Contractor shall abide by any conditions imposed by such wayleaves, permissions or permits.

8. Key Personnel/Staff Requirements

Strategy

The personnel requirements to fulfil the AMI brief comprises of a variety of disciplines which, in coordination, need to undertake tasks required for the success of the project. These disciplines will inherently contain a variety of relationships and interdependencies, including reporting and supervision hierarchies. The number of staff per discipline will differ according to the demands of each, which needs to be considered in accordance with these technical specifications. The proposed disciplines/departments can be seen below:

- HES & MDMS
- Meter Data Validations, Operations, and maintenance
- Virtual Private Cloud Service
- Cyber Security
- Communications Network
- Digital Quality and Exception Management
- Field services and management, for all installation, replacement, repair and maintenance works
- Skills Transfer

Tenders are to provide a project organization chart, which is a visual reference of the proposed team's structure – including all participants required to fulfil the AMI requirements outlined in this technical specification. This chart shall demonstrate the variety of relationships, including reporting and supervision hierarchies, as well as interactions and responsibilities expected of various roles in the project framework. The number of members per role, are to be indicated for clarity on the size of the team proposed.

This chart shall demonstrate the variety of relationships, including reporting and supervision hierarchies, as well as interactions and responsibilities expected of various roles in the project framework. The number of members per role, are to be indicated for clarity on the size of the team proposed.

Additionally, key roles and responsibilities have been identified for further consideration of the staffing requirements to undertake this project.

8.1 Programme Manager/Programme Director

A University degree (Bachelors/B-Tech) in the Built Environment, Accounting, Economics, Business Administration, Information Technology (minimum NQF Level 7 is required).

* For professional accreditation other than SA local, note that a registration with a body who is a member of the International Engineering Alliance with its Standards and processes recognized by the Washington Accord, will also be recognised.

Benchmark Job Description:

Programme Manager/Programme Director appointed by the Contractor (relevant experience refers to experience in the Built Environment). Programme Manager/Programme Director to have a minimum of 15 years' experience (i.e., post-graduate experience) and a minimum Bachelors/B-Tech Degree in the Built Environment, Accounting, Economics, Business Administration, Information Technology.

It is expected that the Programme Manager/Programme Director will fulfil the following duties as part of their role:

- Managing the programme on behalf of the contractor, which includes project management, financial management and contractual related matters.
- Preparation and management of construction programmes, cash flows and budgets. The Programme Manager/Programme Director shall be responsible for the overall management of the contractor's staff completing the project and shall be the primary contact for the Employer's Agent and the Employer.
- The Programme Manager/Programme Director is expected to attend all contract site meetings and is responsible for Health and Safety and overall quality control for the project.
- Additionally:
 - The relevant experience refers to contract/project management role in any projects that included the installation and replacement of domestic and/or industrial water meters from 15mm-40mm or higher than 40mm.
 - Be able to provide strategic direction and forecast in the duration of work to be executed.
 - Develop and submit operational programme and update the programme where required.
 - Occupational health and safety of staff.
 - Quality Assurance.
 - Be duly authorised to make technical operational decisions.
 - Finance and Administration (Preparation of Invoices for Submission on time).
 - Management of HHT devices and replacements.
 - Attending weekly and monthly meetings with the Project Manager
 - Management of staff transport.
 - Management of field staff tools, equipment and protective clothing requirements.

8.2 ICT Specialist

A Qualification/Certification in Computer Science, Information Technology, or any other relevant field equivalent to minimum NQF Level 5 is required.

Benchmark Job Description:

The IT Specialist will be responsible for the Design, Build and support Network infrastructure, develop and build solution and integration architecture that spans across multiples offices, datacentres, and cloud networks.

It is expected that the IT Specialist will fulfil the following duties as part of their role:

- Work in collaboration with other teams to deliver projects or network related tasks.
- Integrate the HES and MDMS with the ERP system, ensuring seamless data flow and interoperability.
- Develop and maintain APIs and middleware for integration purposes.
- Monitor and manage the AMI system components, ensuring optimal performance and reliability.
- Perform routine maintenance, updates, and patches to the system components.
- Configure and deploy the system components and application adhering to accurate release management and develops processes for seamless integration of the latest version of the code.
- Support in integration and functional test for the patch upgrades or solutions to operational issues or bugs identified.
- Provide expert support during incident response.
- Adhere to IT Network and security compliance.
- Communicate with users, business heads or clients when needed.
- Create and maintain detailed documentation of network configurations, transition plans and post transition assessments.
- Work closely with Technology vendors and service providers to coordinate upgrades, migration, and support.
- Use and encourage automations wherever possible.
- Monitor Network performance and integrity.

In addition, at least one professional certification such as the following (or equivalent) is required:

- Cloud equivalent solution architecture certifications
- IT network proficient equivalent certifications

8.3 Network Communications Engineer

A Qualification/Certification in Electronics & Communication, Telecommunications as priority, Computer Science, Information Technology, or any other relevant field equivalent to minimum NQF Level 5 is required.

Benchmark Job Description:

The Network Specialist will be appointed to focus upon the provision of network operations advice and administration and provides monitoring, operation and management of efficient and effective networks services. The Network Specialist has a good understanding of established concepts and procedures in monitoring network nodes, executing event/incident management, configuration, escalation, release and deployment and 3rd party management activities, ensuring a high quality, reliable network service is available to customers.

It is expected that the Network Communication Engineer will fulfil the following duties as part of their role:

- Advises and executes administrative activities of network operations including project initiations, system requirements, incident management and cost base management.
- Operational excellence, solving problems through development of methods.
- Supports the team to deliver activities related to preventive maintenance, PW, and acceptance tests.
- Conducts activities according to the highest level of operations standards in line with KPIs, (e.g. making sure planned outages don't exceed the given time limit):
- Effectively interacts with colleagues to ensure the availability, performance, and scalability of the network systems and to support the achievement of the Network Operations strategy.
- Performs assigned tasks in line with process, updating internal patterns accordingly and ensures customer SLA delivery, service availability, quality and continuity assurance.
- Delivers tasks related to Customer Service assurance with focus on high availability, minimum restoration times and customer management.
- Provides support to maintain solid relations with vendors and partners.
- Uses administrative experience to plan, schedule, implement and test new services, new features, and network expansions.
- Supports and contributes to the consolidation of the Service Assurance function for IT and Networks, (incidents, problems and change management) for both fixed and mobile.
- Understands the needs and contributes to ensure actions and escalations are routed/highlighted as necessary, (both internally and/or externally), to achieve service restoration, in case of faults.

8.4 Administrative Staff

It is a requirement to have designated administrative staff on this contract to manage and distribute work to the field working team and thereafter collate completed works from the field working team in order to submit to the City's Administrative office. Additional roles and responsibilities are listed below:

- Quality Assurance of field work completed.
- Finance and Administration (Preparation of Invoices for Submission on time).
- Attachment of all documentation including but not limited to additional photographs, BOQ's and signed Certificates of Compliance.
- Attending weekly and monthly meetings with the Project Manager.
- Management of field staff tools, equipment and protective clothing requirements.

8.5 Plumbers

It is a requirement to have qualified Plumbers who have passed a trade test, with a minimum of one year experience in the repairs and maintenance of bulk water infrastructure in a residential/industrial area.

Additional roles and responsibilities are listed below:

- A minimum of 20 Plumbers would be required citywide, and this number may increase or decrease depending on the volume of work issued.
- Each plumber to be trade tested in plumbing with a minimum of 1 year experience in plumbing related works that included the installation and replacement of domestic and/or commercial water meters from 15mm-250mm.
- Occupational health and safety of staff.
- Quality Assurance.
- Be duly authorised to make technical decisions.
- Complete the Certificate of Compliance.

N.B.: Tenderers shall not change/replace their key personnel during the tender evaluation process.

9. Project Programme/Schedule

A comprehensive Programme / Schedule of sufficient detail that shows overall understanding of the project brief has been provided in both printed and digital format, addressing the following items, each of which should include itemized points indicated below:

- 1 A reputable industry-standard Project management/ scheduling software package should be used, enabling the definition of Phases, Tasks and Milestones allocation of resources and the establishment of a critical path, through predecessor- and successor-logical linkages. A Microsoft-Project™ -compatible project file (digital format) should be provided, in addition to a printed Gantt chart which includes linkages.
- 2 Five or more process levels should be reflected.
- 3 Activity sequences indicate reasonable milestones and durations, and dependencies between each should be logically reflected.
- 4 Schedule of activities is relating to all key AMI requirements above.
- 5 Interdependency and linkage between all key AMI requirements above should be shown.

- 6 A Project Startup / Mobilisation Phase should be reflected that includes the deployment plan preparation and the procurement of the necessary number of meters to begin smart meter installation in alignment with the deployment plan.
- 7 Geographical sequencing & prioritisation of areas, in alignment with the Technical Specifications, should be reflected.

10 TRADE NAMES OR PROPRIETARY PRODUCTS

Tenderers/Suppliers must note that wherever this document refers to any particular trademark, name, patent, design, type, specific origin or producer, such reference shall be deemed to be accompanied by the words “or equivalent”.

11 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 or its agent, upon request.

12 FORMS FOR CONTRACT ADMINISTRATION

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

- a) Monthly Project Labour Report (described below)

The Monthly Project Labour Report must include details of all labour (including that of sub-contractors) that are South African citizens earning less than **R220,64** 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 registers 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.

C.5.2 ENVIRONMENTAL MANAGEMENT SPECIFICATION

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E: ENVIRONMENTAL MANAGEMENT SPECIFICATION

E1 Scope

The Environmental Management Programme (EMP) for the project is comprised of this Environmental Management (EM) Specification and its Annexures, including the "Additional environmental issues deemed to form part of the Environmental Management Specification" attached as Annexure G hereto, which together cover the requirements for controlling the impact on the environment of construction activities.

E2 Interpretations

E2.1 Supporting specifications

The following standardised specification shall, *inter alia*, apply to this Contract:

- a) SANS 1200A, as may be varied or added to in the Scope of Work

E2.2 Application

This EM Specification contains clauses that are generally applicable to the undertaking of construction works in areas where it is necessary to impose pro-active controls on the extent to which the construction activities impact on the environment.

In the event of any difference or discrepancy between the provisions of the Standardised Specifications and the provisions of the EM Specification, the latter shall prevail.

E2.3 Definitions and abbreviations

For the purposes of this EM Specification the following definitions and abbreviations shall apply:

E2.3.1 Environment

The surroundings within which humans exist and that are made up of -

- a) the land, water, and atmosphere of the earth;
 - b) micro-organisms, plant and animal life;
 - c) any part or combination a & b and the interrelationships among and between them;
- and
- d) the physical, chemical, aesthetic, and cultural properties and conditions of the foregoing that influence human health and well-being.

E2.3.2 Potentially hazardous substance

A substance which, in the reasonable opinion of the Employer's Agent, can have a deleterious effect on the environment.

E2.3.3 Method Statement

A written submission by the Contractor to the Employer's Agent in response to the EM Specification or a request by the Employer's Agent, setting out the plant, materials, labour and method the Contractor proposes using to carry out an activity, in such detail that the Employer's Agent is enabled to assess whether the Contractor's proposal is in accordance with the Scope of Work and/or will produce results in accordance with the EM Specification.

E2.3.4 Reasonable

Unless the context indicates otherwise, means reasonable in the opinion of the Employer's Agent after he has consulted with a person suitably experienced in "environmental

implementation plans" and "environmental management plans" (both as defined in the National Environmental Management Act, 107 of 1998).

E2.3.5 Solid waste

All solid waste, including construction debris, chemical waste, excess cement/ concrete, wrapping materials, timber, tins and cans, drums, wire, nails, domestic waste, dead vegetation, asphalt products, etc.

E2.3.6 Contaminated water

Water contaminated by the Contractor's activities containing cements, concrete, lime, paint products, thinners, turpentine, chemicals, fuels, oils washing detergents, etc.

E2.3.7 Working area

Any area within the boundaries of the Sites where construction (meter installation/replacement of meters and related works defined in this tender document) is taking place.

E2.3.8 Contractor's camp or construction camp

The area designated for all temporary site offices (where applicable), storage areas, construction plant parking areas (where applicable), staff welfare facilities, etc.

E2.3.9 Employer's Agent

The person/firm so named in the Contract Data, whose function is to administer the Contract as agent of the Employer.

E2.3.10 Employer's Agent's Representative (ER)

The natural person appointed by the Employer's Agent in terms of the Contract, who shall observe the execution of the Works (meter installation/replacement of meters and related works defined in this tender document), examine and test materials and workmanship, and deliver and receive communications to/from the Contractor.

E2.3.11 Environmental Officer (EO)

Appointed by the Employer's Agent as his environmental representative on Site, with the mandate to enforce compliance with the EMP. The duties of the EO are stipulated in the CCT's guideline document for the EO and ER.

E2.3.12 Environmental Control Officer (ECO)

An independent appointment to objectively monitor implementation of relevant environmental legislation, conditions of Environmental Authorizations (EAs), and the EMP for the project.

E2.3.13 Environmental Site Officer (ESO)

Employed by the Contractor as his environmental representative to monitor, review and verify compliance with the EMP by the Contractor. The ESO must ensure that he/she is involved at all phases of the construction (from site clearance to rehabilitation).

E2.3.14 Abbreviations

The following abbreviations occur in this EM Specification:

EMP - Environmental Management Programme
EM Specification – Environmental Management Specification
EO - Environmental Officer
ECO – Environmental Control Officer
ESO – Environmental Site Officer

E2.4 Employer’s Agent’s authority to delegate

In terms of Clause 3.2.4 of the General Conditions of Contract, Third Edition, 2015 (GCC 2015), the Employer’s Agent has the authority to appoint a representative. Other than the Employer’s Agent’s Representative (ER) in terms of Clause 3.2, this can be in the form of an Environmental Officer (EO), who shall be responsible for monitoring compliance with the EMP. All instructions given by the EO shall go through the ER, who will then convey these to the Contractor, except in the case of an environmental emergency, in which case the EO can issue an instruction directly to the Contractor. An environmental emergency is one which, in the opinion of the EO, would cause serious environmental harm if not addressed immediately.

Depending on the nature/environmental sensitivity of the Contract the following variations in the organisational structure are possible:

- a) The ER may work together with an EO; or
- b) There may be an ER only (for construction projects with low potential for causing significant environmental impacts). In this case the ER has responsibility for the EO’s functions.
- c) There may be an independently appointed Environmental Control Officer (ECO) who will fulfil essentially the same functions as the EO. The ECO may work with just the ER (if there is no EO) or may work with both the ER and EO.

The term “Employer’s Agent” in this EM Specification refers to the Employer’s Agent as defined in Clause E2.3.9 acting through the ER/EO/ECO as delegated.

E3 Materials

E3.1 Materials handling, use and storage.

The Contractor shall ensure that any delivery drivers are informed of all procedures and restrictions (including "no go" areas) required to comply with the EM Specification. The Contractor shall ensure that these delivery drivers are supervised during off-loading by someone with an adequate understanding of the requirements of the EM Specification.

Materials shall be appropriately secured to ensure safe passage between destinations. Loads, including but not limited to, sand, stone chip, fine vegetation, refuse, paper, and cement, shall have appropriate cover to prevent them spilling from the vehicle during transit. The Contractor shall be responsible for any clean-up resulting from the failure by his employees or suppliers to properly secure transported materials.

All manufactured and or imported materials shall, where reasonably possible, be stored within the Contractor’s camp (where applicable) and, if so, required by the Employer’s Agent, out of the rain. The location and method of protection of such materials stored outside of the Contractor’s camp and the method of rehabilitation of these areas, shall be subject to the Employer’s Agent’s approval.

Stockpile areas (where applicable) shall be approved by the Employer’s Agent before any stockpiling commences.

E3.2 Hazardous Substances

Hazardous chemical substances (as defined in the Regulations for Hazardous Chemical Substances in GN 1179 (25 August 1995)) stored on Site(s) for use during construction (meter installation/replacement of meters and related works defined in this tender document) shall be stored in secondary containers which are clearly and appropriately marked/signed.

The relevant Material Safety Data (MSD) shall be available on Site. Procedures detailed in the MSD shall be followed in the event of an emergency.

If potentially hazardous substances are to be stored on Site, the Contractor shall inform the Employer's Agent of such substances and provide a Method Statement detailing the substances/ materials to be used, together with the storage, handling, and disposal procedures of the materials. Hazardous substances shall be stored out of flood risk areas and disposal of these substances shall be at a licensed waste disposal facility. **PLANT (referring to "Construction Equipment" as defined in GCC 2015, and the Contractor's facilities as used in SANS 1200A)**

E4 Plant

E4.1 Fuel (petrol and diesel) and oil

E4.1.1 Storage

If fuel and oil is to be stored on Site(s), then the Contractor shall submit a Method Statement covering the procedures for dealing with accidental hydrocarbon spillage and leaks, and detailing how these liquids will be stored, handled, and disposed of.

The Employer's Agent shall approve the location of all fuel storage areas. All necessary approvals with respect to fuel storage and dispensing shall be obtained from the appropriate authorities. Symbolic safety signs depicting "**No Smoking**", "**No Naked Lights**" and "**Danger**" conforming to the requirement of SANS 1186 are to be prominently displayed in and around the fuel storage area. There shall be adequate fire-fighting equipment at the fuel storage area.

The Contractor shall ensure that all liquid fuels and oils are stored in tanks with lids, which are kept firmly shut and adequately secured. The capacity of the tank shall be clearly displayed, and the product contained within the tank clearly identified using the emergency information system detailed in SANS 0232 part 1. Fuel storage tanks shall have a capacity not exceeding 9000 litres and shall be kept on site only for as long as fuel is needed for construction activities, on completion of which they shall be removed. If a 1000 L is exceeded, then Fire Department approval is required.

The tanks shall be situated on a smooth impermeable base with an earth bund. The volume inside the bund shall be 110% of the total capacity of the storage tank. The base may be constructed of concrete, or of plastic sheeting with impermeable joints, covered by a layer of compacted earth to protect the sheeting. The impermeable lining shall extend to the crest of the bund. The floor of the storage area shall be sloped to enable any spilled fuel and/or fuel-contaminated water to be removed easily.

If any rainwater collects in the bunded areas, it shall be promptly removed and taken off Site to a disposal site approved by the Employer's Agent.

Only empty and externally clean tanks may be stored on the bare ground. Empty and externally dirty tanks shall be sealed and stored on an area where the ground has been protected.

E4.1.2 Refuelling

Plant shall be refuelled at a designated refuelling area approved by the Employer's Agent. The surface under the temporary refuelling area shall be protected against pollution to the reasonable satisfaction of the Employer's Agent prior to any refuelling activities. The Contractor shall ensure that there is always a supply of absorbent material (e.g. Spill Sorb or Enretech #1 powder or equivalent) readily available that is designed to absorb, break down and encapsulate minor hydrocarbon spillage. The quantity of such material shall be able to handle a minimum of 200 litres of hydrocarbon liquid spill. Required signage of flammable liquid, no smoking to be placed. Vehicles must be switched off during decanting/ refuelling. Adequate fire extinguishers to be available. Decanting into containers for transport such as

“Jerry Cans” or equivalent must be suitable to hold the fuel and the container must be placed on the ground to stop static electricity.

Adequate precautions shall be provided to prevent spillage during the filling of any tank and during the dispensing of the contents. If fuel is dispensed from 200 litre drums, the proper dispensing equipment shall be used, and the drum shall not be tipped in order to dispense fuel. The dispensing mechanism for the fuel storage tanks shall be stored in a waterproof container when not in use.

E4.1.3 Treatment and remediation

Treatment and remediation of hydrocarbon spill and leak areas shall be undertaken to the satisfaction of the Employer’s Agent. In the event of a hydrocarbon spill the source of the spillage shall be isolated and the spillage contained.

E4.2 Ablution and toilet facilities

Washing, whether of the person or of personal effects, defecating and urinating are strictly prohibited other than at the facilities provided.

The Contractor shall provide ablution facilities for all personnel employed on the Site, including shelter, toilets and washing facilities. The Contractor’s personnel will not be permitted to use the CCT’s ablution facilities.

Toilet facilities provided by the Contractor shall occur in a ratio of not less than 1 toilet per 30 workers (1:15 is preferred) of each sex. Toilet facilities shall be located within the Contractor’s camp, but also at work areas remote from the camp, all to the satisfaction of the Employer’s Agent. All portable toilets shall be adequately secured to the ground to prevent them toppling over as a result of wind or any other cause.

The Contractor shall ensure that the entrances to these toilets are adequately screened from view, that they are maintained in a hygienic state, serviced regularly, that no spillage occurs when they are cleaned and that contents are removed from Site. Toilets shall also be emptied before any temporary site closure for a period exceeding one week. Discharge of waste from toilets into the environment and burial of waste is strictly prohibited. The Contractor shall provide toilet paper at all times. Hand wash facilities with soap to be available or hand cleanser supplied by the Contractor. Contractors must retain the disposal slips of the removal company.

No ablution facilities shall be located closer than 50m to any water body

A Method Statement shall be provided by the Contractor detailing the provision, location, and maintenance of ablution facilities.

E4.3 Eating areas

The Contractor shall designate eating areas within the approved Contractor’s camp (where applicable). The feeding of, or leaving of food for, animals is strictly prohibited. Sufficient bins, as specified in Clause E4.4 below, shall be present in these areas. Pest control to be provided by the contractor with verification certificates readily available at all times.

E4.4 Solid waste management

E4.4.1 Litter and refuse

The sites (where applicable) shall be always kept neat and clean, littering is prohibited.

E4.4.2 Construction waste

Where possible all construction waste or spoil material shall be recycled, either on designated Sites or elsewhere. As a last resort all construction waste shall be disposed of off Site at an approved landfill site. The Contractor shall supply the Employer’s Agent with a

certificate of disposal.

E4.5 Contaminated water management

Potential pollutants of any kind and in any form shall be kept, stored, and used in such a manner that any spill or escape can be contained and the water table and/or any adjacent water courses or bodies are not endangered. Spill kits which can be used to contain and/or mop up spills shall be available. Water containing such pollutants as cements, concrete, lime, chemicals, oils and fuels shall be discharged into a conservancy tank for removal from the Site to a licensed disposal facility. This particularly applies to water emanating from concrete batching plants and to runoff from fuel storage, refuelling or construction equipment washing areas. Wash down areas shall be placed and constructed in such a manner so as to ensure that the surrounding areas are not polluted.

No paint products, chemical additives and cleaners, such as thinners and turpentine, may be disposed of into the stormwater system or elsewhere on Site. Brush/roller wash facilities shall be established to the satisfaction of the Employer's Agent.

A Method Statement shall be provided by the Contractor detailing the management of contaminated water.

Should contaminated water be released into the environment, specifically into a water course, monitoring thereof shall commence in accordance with the National Water Act, 36 of 1998, Section 21(f) – refer to GN 399 (26 March 2004). Contaminated water must not be released into the environment without authorisation from the relevant authority.

The Contractor shall notify the Employer's Agent immediately of any pollution incidents on Site and, at his own cost, take all reasonable measures to contain and minimise the effects of the pollution.

Any rehabilitation of the environment required as a result of such pollution shall be carried out by the Contractor at his own cost in accordance with a Method Statement approved by the Employer's Agent.

E4.6 Site structures

The type and colour of roofing and cladding materials to the Contractor's temporary structures shall be selected to reduce the visual impact (where applicable).

E4.7 Lights

The Contractor shall ensure that any lighting installed on the Site for his activities does not cause a reasonably avoidable disturbance to other users of the surrounding area (where applicable).

Lighting installed shall, as far as practically possible, be energy efficient. Lighting utilised on Site shall be turned off when not in use.

E4.8 Workshop, equipment maintenance and storage

No workshops or plant maintenance facilities shall be constructed on Site for performing major or routine maintenance of equipment and vehicles.

The Contractor shall ensure that in those areas where, after obtaining the Employer's Agent's approval, the Contractor carries out emergency or minor routine plant maintenance, there is no contamination of the soil, water sources or vegetation. Drip trays to collect waste oil and other lubricants shall be provided in any areas of the Site where such maintenance takes place. Drip trays must be emptied regularly and after rain, and the contents disposed of at a licensed disposal facility.

All vehicles and plant shall be kept in good working order. Leaking vehicles and plant shall be repaired immediately or removed from the Site.

The washing of vehicles and plant on Site shall be restricted to emergency or minor routine maintenance requirements only. Washing may only be undertaken in areas designated by the Employer's Agent.

E4.9 Noise

The Contractor shall limit noise levels (for example, by installing and maintaining silencers on plant). The provisions of SANS 1200A Clause 4.1 regarding "built-up areas" shall apply.

Appropriate directional and intensity settings are to be maintained on all hooters and sirens.

No amplified music shall be allowed on Site(s). The use of audio equipment shall not be permitted, unless the volume is kept sufficiently low so as to be unobtrusive. The Contractor shall not use sound amplification equipment on Site, unless in emergency situations.

Construction activities generating output levels of 85 dB(A) or more in residential areas, shall be confined to the hours 08h00 to 17h00 Mondays to Fridays. Should the Contractor need to do this work outside of the above times, he shall do so only with the approval of the Employer's Agent, and the surrounding communities shall be informed prior to the work taking place.

E5 Construction

E5.1 Method Statements

The Contractor shall submit the environmental method statements required within such reasonable time as the Employer's Agent shall specify or as required by the EM Specification. The Contractor shall not commence any activity until the Method Statement in respect thereof has been approved and shall, except in the case of emergency activities, allow a period of two weeks for consideration of the Method Statement by the Employer's Agent.

The Employer's Agent may require changes to a Method Statement if the proposal does not comply with the specification or if, in the reasonable opinion of the Employer's Agent, the proposal may result in, or carries a greater than reasonable risk of, damage to the environment in excess of that permitted by the EM Specification.

Approved Method Statements shall be readily available on the Site and shall be communicated to all relevant personnel. The Contractor shall carry out the Works in accordance with the approved Method Statement. Approval of the Method Statement shall not absolve the Contractor from any of his obligations or responsibilities in terms of the Contract.

Changes to the way the Works are to be carried out must be reflected by amendments to the original approved Method Statements, and these amendments require the signature of both the Contractor and the Employer's Agent.

Method Statements shall consider all environmental hazards and risks identified by the Contractor and/or Employer's Agent and shall contain sufficient information and detail to enable the Employer's Agent to assess the potential negative environmental impacts associated with the proposed activity and shall cover applicable details with regard to:

- a) Construction (and related installation/replacement/other activities related to the defined scope) procedures,
- b) materials and equipment to be used,
- c) getting the equipment to and from Site(s),
- d) how the equipment/material will be moved while on Site(s),
- e) how and where material will be stored,
- f) the containment (or action to be taken if containment is not possible) of leaks or spills of any liquid or material that may occur,
- g) the control of fire (in the unlikely event),
- h) timing and location of activities,
- i) compliance/non-compliance with the EM Specification,

- j) any other information deemed necessary by the Employer's Agent.
- k) Signage on construction vehicles transporting chemicals (where applicable)

The format to be used for the required method statements is bound in Annexure A of this EM Specification. The Contractor (and, where relevant, any sub-contractors) must also sign the Method Statement, thereby indicating that the work will be carried out according to the methodology contained in the approved Method Statement.

E5.1.1 Method Statements to be provided within 14 days from the Commencement Date

- a) Layout and Preparation of Contractor's Camp (E5.4) – where applicable.
- b) Ablution Facilities: number of, location, cleaning, method of securing to the ground, etc. of portable toilets (E4.2).
- c) Solid Waste Management: number of, type, location, cleaning, method of securing to the ground, etc. of bins (E4.4).
- d) Environmental Awareness Training: logistics for the environmental awareness courses for all the Contractor's management staff, as well as other employees (E5.2).
- e) Emergency Procedures for Accidental Hydrocarbon Leaks and Spillages (E4.1 and E5.8).
- f) Asphalt and Bitumen: details of all methods and logistics associated with the use of bitumen and asphalt (E5.11).

E5.2 Environmental Awareness Training

It is a requirement of this Contract that environmental awareness training courses are run for all personnel on Site. Two types of courses shall be run: one for the Contractor's and subcontractors' management, and one for all site staff and labourers. Courses shall be run during normal working hours at a suitable venue provided by the Contractor. All attendees shall remain for the duration of the course and sign an attendance register that clearly indicates participants' names on completion, a copy of which shall be handed to the Employer's Agent. The Contractor shall allow for sufficient sessions to train all personnel. Subsequent sessions shall be run for any new personnel coming onto Site. A Method Statement with respect to the organisation of these courses shall be submitted.

Notwithstanding the specific provisions of this clause, it is incumbent upon the Contractor to convey the spirit of the EM Specification to all personnel involved with the Works.

E5.2.1 Training Course for Management and Foremen

The environmental awareness training course for management shall include all management and foremen. The course, which shall be presented by the Employer's Agent or his designated representative, shall be of approximately one hour duration. The course shall be undertaken prior to the commencement of work on Site.

E5.2.2 Training Course for Site Staff and Labour

The environmental awareness training course for site staff and labour shall be presented by the Contractor from material provided by the Employer's Agent. The course shall be approximately one hour long. The course shall be undertaken not later than 3 working days after the commencement of work on Site, with sufficient sessions to accommodate all available personnel.

All the Contractor's employees, sub-contractors' employees and any suppliers' employees that spend more than 1 day a week or four days in a month on Site shall attend the Environmental Awareness Training Course for Site Staff and Labour

E5.3 Contractor's Environmental Representative (ESO)

The Contractor shall appoint an environmental representative, also called an Environmental Site Officer (ESO), who shall be responsible for undertaking a daily site inspection to monitor compliance with this EM Specification. The Contractor shall forward the name of the environmental representative (ESO) to the Employer's Agent for his approval. The environmental representative (ESO) shall complete Environmental Site Inspection Checklists (Annexure B attached hereto), and these shall be submitted to the Employer's Agent once a week.

E5.4 Site division, demarcation and "no go" areas

The Contractor shall restrict all his activities, materials, plant, and personnel to within the Site or any particular working areas specified or indicated on the drawings.

The Contractor shall erect and maintain permanent and/or temporary fences of the type and in the locations specified elsewhere in the Scope of Work or on the drawings. Such fences shall, if so specified, be erected before undertaking any construction activities.

Where environmentally sensitive areas are specified as "no go" areas, the Contractor shall ensure that, insofar as he has the authority, no person, plant or material shall enter the "no go" areas at any time.

A Method Statement detailing the layout and method of establishment of the Contractor's camp (including all offices, shelters, eating areas, storage areas, ablution facilities and other infrastructure required for the running of the project) shall be provided.

E5.5 Access routes/ haul roads

On the Site(s) and, if so required, within such distance of the Site as may be stated by the Employer's Agent, the Contractor shall control the movement of all vehicles and construction equipment, including that of his suppliers, so that they remain on designated routes, are distributed so as not to cause an undue concentration of traffic, and that all relevant laws are complied with. In addition, the movement of such vehicles and construction equipment shall be planned and operated so as to minimise disruption to regular users of the routes. As far as possible the Contractor shall use existing access and haul routes. Damage to existing access roads as a result of construction activities shall be repaired to the satisfaction of the Employer's Agent, using material similar to that originally used. The cost of the repairs shall be borne by the Contractor. New temporary access or haul routes may only be established with the prior approval of the Employer's Agent. The rehabilitation of such routes shall be to the Contractor's own cost and to the approval of the Employer's Agent.

Any directional signage required by the Contractor for the purposes of directing the movement of his own vehicles and construction equipment (or that of his subcontractors or suppliers) must be of a design and in a location approved by the Employer's Agent. Directional signage may not be erected in such a manner that it interferes with sight lines or pedestrian movement.

E5.6 Construction personnel information posters

The Contractor shall erect and maintain information posters for the information of his employees, depicting actions to be taken to ensure compliance with aspects of the EM Specification. A2 information posters, printed on white vinyl, shall be erected at the eating areas and any other locations specified by the Employer's Agent.

The specification for the poster is presented in Annexure C of this EM Specification. The symbols shall be black, and the circles shall be red lines. The Contractor shall ensure that the construction personnel information posters are not damaged in any way and shall replace a poster if any part of it becomes illegible.

E5.7 Fire control

Other than for cooking purposes as specified in Clause E4.3, no fires may be lit on designated/holding Site(s). Any fires which occur shall be reported to the Employer's Agent

immediately.

Smoking shall not be permitted in those areas where it is a fire hazard. Such areas shall include fuel storage and refuelling areas, and any other areas where the vegetation or other materials are susceptible to the start and rapid spread of fire.

In terms of the National Environment Management: Air Quality Act, 39 of 2004 and Community Fire Safety By-law, burning is not permitted as a disposal method.

The Contractor shall appoint a Fire Officer (who may be the ESO) who shall be responsible for ensuring immediate and appropriate actions in the event of a fire and shall ensure that employees are aware of the procedure to be followed. The Contractor shall advise the relevant authority of a fire as soon as one starts and shall not wait until he can no longer control it. The Contractor shall forward the name of the Fire Officer to the Employer's Agent for his approval.

The Contractor shall comply with Clause 29 of the Construction Regulations 2014 where applicable and shall ensure that there is suitable and sufficient always fire-fighting equipment available on Site.

The Contractor shall be liable for any costs relating to the rehabilitation of burnt areas, should the fire be the result of the Contractor's activities on Site

The Contractor shall submit a Method Statement to the Employer's Agent covering the procedure to be followed in the event of a fire.

E5.8 Emergency procedures

The Contractor's attention is drawn to the Method Statements required in terms of Clauses E4.1 and E5.7 above. Such Method Statements shall include procedures to be followed by the Contractor in the event of an emergency.

Furthermore, in the event of an emergency the Contractor shall contact the CCT 's Emergency Call Centre by telephoning 107 or 021 480 7700 (from a cell phone). Telephone numbers of emergency services, including the local firefighting service, shall be posted conspicuously in the Contractor's office near the telephone.

E5.9 Health and safety

The Contractor shall comply with requirements of the Occupational Health and Safety Act, 85 of 1993 and Construction Regulations, 2014, the Health and Safety Specification and relevant clauses of GCC 2015, insofar as health and safety is concerned. The CCT reserves the right to amend the specification if legislation changes or if risks change.

E5.10 Community relations

If so required, the Contractor shall erect and maintain information boards in the position, quantity, design, and dimensions specified in the Scope of Work or as directed by the Employer's Agent. Such boards shall include contact details for complaints by members of the public in accordance with details provided by the Employer's Agent.

The Contractor shall keep a "Complaints Register" on Site. The Register shall contain all contact details of the person who made the complaint, and information regarding the complaint. The complaint must be reported to the Employers Agent within 24 hours from receiving the complaint.

E5.11 General protections in terms of the National Heritage Resources Act, 25 of 1999

The Contractor shall take cognisance of the provisions of the National Heritage Resources Act, 25 of 1999 in respect of, *inter alia*, structures older than 60 years; archaeology, palaeontology, and meteorites; burial grounds and graves; and public monuments and memorials. These areas must be identified during the initial survey, since heritage approval might be required.

E5.12 Protection of natural features

The Contractor shall not deface, paint, damage or mark any natural features (e.g. rock formations) situated in or around the Site for survey or other purposes, unless agreed beforehand with the Employer's Agent. Any features affected by the Contractor in contravention of this clause shall be restored/ rehabilitated to the satisfaction of the Employer's Agent. The cost of restoration/rehabilitation shall be borne by the Contractor.

The Contractor shall not permit his employees to make use of any natural water sources (e.g. springs, streams, open water bodies) for the purposes of swimming, personal washing and the washing of machinery or clothes.

E5.13 Protection of flora and fauna

Except to the extent necessary for the carrying out of the Works, as specified by the Employer's Agent, no vegetation shall be removed, damaged or disturbed.

The presence of any wild animals found on Site shall be reported to the Employer's Agent, who shall issue an instruction regarding their removal or relocation. If a wild animal needs removal from the Site, the Cape Nature (Metro Region) Conservation Services Manager may be contacted for assistance (tel 021 955 9132/9121/3122/9130). Trapping poisoning, injuring, or shooting animals is strictly forbidden. No domestic pets or livestock are permitted on Site, except for controlled watchdogs approved by the Employer's Agent.

Where the use of herbicides, pesticides and other poisonous substances has been specified, the Contractor shall submit a Method Statement to the Employer's Agent for approval.

E5.14 Erosion and sedimentation control

The Contractor shall take all reasonable measures to limit erosion and sedimentation due to the construction activities and shall, in addition, comply with such detailed measures as may be required by the Scope of Work. Where erosion and/or sedimentation, whether on or off the Site, occurs, rectification shall be carried out in accordance with details specified by the Employer's Agent. Where erosion and/or sedimentation occur due to the fault of the Contractor, rectification shall be carried out to the reasonable requirements of the Employer's Agent, at the Contractor's cost. In particular, the Contractor shall ensure that the CCT's stormwater system is kept free from sediment arising from the Works.

Any runnels or erosion channels developed during the construction period or during the vegetation establishment period shall be backfilled and compacted, and the areas restored to a proper condition. Stabilisation of cleared areas to prevent and control erosion shall be pro-actively managed by the Contractor. The method of stabilisation shall be determined in consultation with the Employer's Agent.

E5.15 Aesthetics

The Contractor shall take any requisite measures to ensure that construction activities do not have an undue negative impact on the aesthetics of the area.

E5.16 Temporary site closure

In the event of temporary site closure (for a period exceeding one week), the Contractor's ESO shall carry out checks and ensure that, amongst others, the following conditions pertain and report on compliance with this clause:

- a) Fire extinguishers are serviced and accessible.
- b) There is adequate ventilation in enclosed spaces.
- c) All hazardous substance stores are securely locked.
- d) Fencing and barriers are in place.
- e) Emergency and management contact details are prominently displayed and available.
- f) Wind and dust mitigation measures, e.g. straw, brush packs, irrigation, etc. are in place.
- g) Excavated and filled slopes and stockpiles are at a stable angle and capable of accommodating normal expected water flows.

- h) There are sufficient detention ponds or channels in place.
- i) Cement and materials stores are secured.
- j) Toilets are empty and secured.
- k) Central waste area and all refuse bins are empty and secured.
- l) Contaminated water conservancy tank empty.
- m) Any bunded areas are clean and treated with an approved product where applicable (e.g. Spill Sorb or Enretech #1 powder or equivalent).
- n) Drip trays are empty and secure.

E5.17 Asphalt and bitumen

Bitumen drums/products, if stored on Site, shall be stored in an area approved by the Employer's Agent. This area shall be indicated on the Method Statement for the Layout and Preparation of the Contractor's Camp. The storage area shall be constructed with an appropriate base, bunding and sump to the satisfaction of the Employer's Agent. A Method Statement shall be provided in this regard.

When heating bitumen products, the Contractor shall take cognisance of appropriate fire risk controls. Heating shall only be undertaken using LPG or similar zero emission fuels. Appropriate firefighting equipment shall be readily available on Site.

E5.18 Dust

The Contractors shall be solely responsible, at his cost, for the control of dust arising from his activities on Site, and for any costs involved in damages resulting from the dust. The Contractor shall take all reasonable measures to minimise the generation of dust

E5.19 Contractor's advertising signage

Any advertising on the Site or any part of the Works shall remain at the sole discretion of the Employer, who reserves the right to order, via the Employer's Agent, its removal, covering or re-sizing, wherever placed, at no cost to the Employer.

Apart from at the Contractor's camp, no signage advertising the Contractor, or any of its subcontractors, manufacturers, suppliers or service providers shall be placed, fixed or erected anywhere on the Site or on the Works without the prior approval of the Employer's Agent. No advertising signage will be permitted on any designated scenic route. Notwithstanding any prior approval given, the Employer's Agent may instruct the Contractor to remove, cover or re-size any advertising signage at any time at no cost to the Employer.

Advertising signage at the Contractor's camp shall be appropriately designed and sized with due consideration to the surrounding environment, views and sight lines.

Branding or identification markings on the Contractor's and subcontractor's vehicles and equipment is generally permitted, although the Employer reserves the right to instruct, via the Employer's Agent, the removal, covering or re-sizing of any branding, markings or signage, on any equipment (scaffolding, for example), which it considers inappropriate in the environment in which it is placed.

No third party advertising (that is, in respect of any person, business or product that is not associated with the Works) shall be permitted anywhere on the Site or Works.

E5.20 Clearance of Site on completion

On completion of the Works, and at final completion when all defects have been remedied or corrected, the Contractor shall, in addition to the requirements for clearance of the Site in terms of the Contract, ensure that he has complied with the following requirements in terms of this EM Specification:

E5.20.1 Clause E3.1

Clean-up of improperly secured transported materials, and rehabilitation of storage areas.

E5.20.2 Clause E4.1.3

Remediation of hydrocarbon spill and leak areas.

E5.20.3 Clause E4.4

Disposal of litter, refuse and Contractor's waste.

E5.20.4 Clause E5.4

Removal of temporary fences and Contractor's camp.

E5.20.5 Clause E5.5

Repair of access roads damaged by the Contractor, and rehabilitation of temporary access routes.

E5.20.6 Clause E5.7

Rehabilitation of burnt areas should a fire be the result of Contractor's activities on Site.

E5.20.7 Clauses E5.11 to 5.13

Rehabilitation of heritage and natural features, including vegetation, which is damaged or disturbed, which required protection in terms of these clauses.

E5.20.8 Clause E5.14

Rectification where erosion and/or sedimentation has occurred due to the fault of the Contractor.

E5.20.9 Clause E5.19

Removal of Contractor's advertising signage.

E6 Tolerances

E6.1 Fines

Environmental management is concerned not only with the final results of the Contractor's operations, but also with the control of how these operations are carried out. Tolerance with respect to environmental matters applies not only to the finished product, but also to the standard of the day-to-day operations required to complete the Works.

It is thus required that the Contractor shall comply with the EM Specification on an on-going basis and any failure on his part to do so will entitle the Employer's Agent to certify the imposition of a fine. Fines may be issued per incident at the discretion of the Employer's Agent. Such fines will be issued in addition to any remedial costs incurred because of non-compliance with the environmental specifications. The Employer's Agent will inform the Contractor of the contravention and the amount of the fine and will deduct the amount from monies due in payment certificates issued under the Contract.

Maximum fines for the following transgressions by either the Contractor and/or his sub-contractors may be imposed by the Employer's Agent, as follows:

	Maximum fine per incident
a) Vehicles, plant or materials related to the Contractor's operations, parked or stored outside the demarcated boundaries of the Site.	000
b) Persons, vehicles, plant or materials related to the Contractor's operations, found within the designated boundaries of a "no go" area.	000

c) Persistent and unrepaired oil leaks from machinery/not using a drip tray to collect waste oil and other lubricants/not using specified absorbent material to encapsulate hydrocarbon spillage/using inappropriate methods of refuelling (the use of a funnel rather than a pump).	000
d) Refuelling in areas not approved by the Employer's Agent.	000
e) Litter on Site.	000
f) Deliberate lighting of fires on Site.	000
g) Individual not making use of the Site ablution facilities.	000
h) Damage to trees not specified to be removed.	000
i) Dust or excessive noise emanating from the site	000
j) Not containing water contaminated with pollutants such as cement, concrete, fuel, etc.	000

For each subsequent similar offence, the fine shall be doubled in value to a maximum value of R50 000.

E7 Testing

Not applicable to this tender.

E8 Measurement & Payment

E8.1 Basic principles

All costs in respect of complying with the EM Specification are deemed to be included in the unit rates.

C.5.3 HEALTH & SAFETY MANAGEMENT SPECIFICATION

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H: HEALTH AND SAFETY SPECIFICATION

H1 Definitions

For the purposes of this Specification, the definitions given in the Occupational Health and Safety Act, 85 of 1993 and the Construction Regulations, 2014, and the following definitions, shall apply:

- a) "Construction Regulations, 2014" means the Construction Regulations (GNR. 84 of 7 February 2014) published in terms of the OHS Act.
- b) "Contractor" means the Principal Contractor as defined in the Construction Regulations, 2014.
- c) "Employer" means the CCT, or his agent as defined in the Construction Regulations, 2014.
- d) "Employer's Agent" means the person/firm so named in the Contract Data whose function is to administer the Contract as agent of the Employer, acting through, if appointed, a Health and Safety Agent.
- e) "OHS Act" means the Occupational Health and Safety Act, 85 of 1993.
- f) "subcontractor" means any contractor employed by the Contractor to perform construction work.

H2 Scope

In terms of the OHS Act and the Construction Regulations, 2014 the Employer must provide the Contractor with a Health and Safety Specification, to which the Contractor must respond with a Health and Safety Plan for approval by the Employer.

The purpose of this Specification is to ensure that a contractor entering into a contract with the Employer maintains an acceptable level of compliance with regard to health and safety issues during the performance of the Contract. In this regard the Health and Safety Specification forms an integral part of the Contract, and the Contractor shall ensure that his subcontractors and/or suppliers comply with the requirements of this Specification.

H3 Interpretation

The OHS Act and its associated regulations shall have precedence in the interpretation of any ambiguity or inconsistency between it and this Specification. If the specification places a higher degree of compliance than required by the said Act and Regulations, then the Contractor will be bound by the specification.

Responsibility for health and safety relating to the Works lies with the Contractor as described in this Specification. Nothing stated in or omitted from this Specification shall in any way limit the Contractor's obligations and liabilities in terms of the OHS Act.

H4 General Requirements

The Contractor shall:

- a) create and maintain a safe and healthy work environment.
- b) execute the Works in a manner that complies with all the requirements of the OHS Act and all its associated regulations, and in so doing, minimize the risk of incidents occurring; and
- c) respond to the instructions issued by the Employer's Agent through the Employer's Agent's Representative, except in the case of a health and safety issue which requires the Contractor's immediate attention, in which case the Employer's Health and Safety Agent can issue an instruction directly to the Contractor.

H5 Administration

H5.1 Application for construction work permit

Not applicable until 7 August 2018, or unless otherwise confirmed by the CCT.

H5.2 Notification of intention to commence construction work

The Contractor shall notify the Provincial Director of the Department of Employment and Labour in writing using the pro forma contained in Annexure 2 of the Construction Regulations, 2014 before construction work commences, and retain a copy of such notification in the health and safety file, if such work will:

- a) include excavation work.
- b) include the demolition of a structure.
- c) Working at height

H5.3 Occupational Health and Safety Agreement

The Contractor shall enter into a Section 37(2) Agreement, in terms of OHS Act 1993, with the Employer before the commencement of the Works on Site. The Employer may further require the Contractor to sign an indemnity and supply proof of adequate public liability insurance.

H5.4 Good standing with the Compensation Fund or a licensed compensation insurer

The Contractor shall provide the Employer's Agent with a letter of good standing from the Compensation Commissioner or a licensed compensation insurer before the commencement of the Works on Site.

H5.5 Emergency procedures

The Contractor shall submit for acceptance to the Employer's Agent a health and safety emergency procedure, which includes but is not limited to fire, spills, accidents, and exposure to hazardous substances, which:

- a) identifies the key personnel who are to be notified of any emergency.
- b) sets out details of available emergency services, including contact particulars; and
- c) the actions or steps which are to be taken during an emergency.

The Contractor shall within 24 hours of an emergency taking place notify the Employer's Agent in writing of the emergency and briefly outline what happened and how it was dealt with. The Contractor shall supply a copy of their emergency contact details and keep the list updated.

H5.6 Health and safety file

The Contractor shall ensure that a Health and Safety file, which shall include all documentation required in terms of the provisions of the OHS Act, the Construction Regulations, 2014 and this Health and Safety Specification, is open and kept on Site at all times.

The Health and Safety file shall be made available for inspection by any inspector, subcontractor, the Employer, the Employer's Agent, the Employer's Health and Safety Agent, or employee of the Contractor, upon the request of such persons.

The Contractor shall hand over the Health and Safety file to the Employer's Agent upon Works completion of the Contract and, if applicable, a certificate of compliance accompanied by a test report for the electrical installation in accordance with the provisions of the Electrical Installation Regulations, 1992. The Employer reserves the right to require the Contractor to bring the safety files to a central point for auditing and thereafter collection of the safety files.

H5.7 Health and safety committee

Where applicable, the Contractor shall establish a health and safety committee, and shall convene health and safety meetings as provided for in the OHS Act.

The Employer's Agent or the Employer's Health and Safety Agent shall be invited to attend such meetings as an observer.

The Contractor shall ensure that minutes of the health and safety committee meetings are kept.

H5.8 Inspections, formal enquires and incidents

The Contractor shall inform the Employer's Agent:

- a) beforehand of inspections, investigations, or formal inquiries of which he has been notified by an inspector; and
- b) as soon as reasonably practicable of the occurrence of an incident (as defined in the OHS Act) on the Site.

The Contractor shall record all incidents and notify the Employer's Agent of any incident, except in the case of a traffic accident on a public road, as soon as possible after it has occurred and report such incident to an inspector as designated in terms of the OHS Act.

The Contractor shall investigate all incidents and issue the Employer's Agent with copies of such investigations.

H5.9 Personal protective equipment and uniform attire

The Contractor shall ensure that all workers are issued with the necessary personal protective clothing. Additionally, identification tags and a letter of undertaking for proposed works (signed letter with CCT letterhead) will be required as identification. The Contractor will be responsible to enforce the use of the required PPE.

H6 Appointments

H6.1 Appointment of construction manager

The Contractor shall, prior to commencing the Works on Site, appoint a full-time competent person as the construction manager, with the duty of managing all construction work on a single site, including the duty of ensuring occupational health and safety compliance. In the absence of the construction manager an alternative must be appointed by the Contractor.

The Contractor may, having considered the size of the project, appoint, in writing, one or more assistant construction managers for different sections thereof.

No construction manager may manage any construction work on or in any construction site other than the Site in respect of which he or she has been appointed.

H6.2 Appointment of construction supervisor, and health and safety officers

The construction manager shall appoint a competent employee(s) in writing as the construction supervisor(s) for the Site, who will be responsible for construction activities and ensuring occupational health and safety compliance on the construction site. The Contractor may, having considered the size of the project, appoint, in writing, one or more competent employees to assist the appointed construction supervisor(s).

The Contractor may, having considered the size of the project, the degree of danger likely to be encountered or the accumulation of hazards or risks on the Site, appoint a full-time or part-time construction health and safety officer in writing, who has in the Contractor's opinion the necessary competencies and resources, to assist the Contractor in the control of all health and safety related aspects on the Site.

The Contractor shall compile and maintain an organogram which outlines the roles and responsibilities of the construction supervisor's assistants, and health and safety officers. Appointed safety officers must be registered with SACPCMP. The safety officer must do monthly internal audits and supply the Employers Agent and or the Employers appointed Safety Agent with the audit results. This will also pertain to sub-contractors.

H6.3 Other competent persons

The Contractor shall appoint in writing competent persons as required by the OHS Act and Regulations.

H6 Health and safety representative(s)

The Contractor shall appoint in writing, if necessary, in terms of the OHS Act, a health and safety employee representative(s), whose duties shall be as described in the OHS Act.

H7 Employer's Health and Safety Agent

The Employer's Health and Safety Agent shall:

- a) audit the Contractor's compliance with the requirements of this Specification prior to the commencement of any physical construction activities on the Site.
- b) accept or reject all safety plans, giving reasons for rejecting such plans.
- c) monitor the effective implementation of all safety plans.
- d) conduct monthly audits on the health and safety file to establish compliance with the requirements of this Specification and the Contractor's health and safety plan; and
- e) visit the site at regular intervals to conduct site inspections, and based upon such visits issue, wherever necessary, any notices and/or instructions to the Contractor or any of the Contractor's subcontractors with a copy to the Employer's Agent and, where relevant, to the Contractor.
- f) Will have the right to request that the Contractor changes the appointment of a safety officer, if the safety officer does not comply with the safety audit submittals.

H8 Creating and Maintaining a Safe and Healthy Work Environment**H8.1 General**

The Contractor shall with respect to the Site and the building/civil works that are contemplated:

- a) cause a preliminary hazard identification to be performed by a competent person before commencing any physical construction activity.
- b) evaluate the risks associated with such work constituting a hazard to the health and safety of such employees and the steps that need to be taken to comply with the OHS Act; and
- c) as far as is reasonably practicable, prevent the exposure of such employees to the hazards concerned or, where prevention is not reasonably practicable, minimize such exposure.

The Contractor shall ensure that:

- d) all reasonably practicable steps are taken to prevent the uncontrolled collapse of any new or existing structure or any part thereof, which may become unstable or is in a temporary state of weakness or instability due to the carrying out of construction work.
- e) no structure or part of a structure is loaded in a manner which would render it unsafe.
- f) relevant information, if any, provided by the designer of the structure is taken into account in the risk assessment; and
- g) the designer of any temporary works complies with the requirements of regulation 6(2) of Construction Regulations, 2014.

The Contractor shall carry out regular inspections and audits to ensure that the Works are being performed in accordance with the requirements of this Specification and the Contractor's health and safety plan

H8.2 Risk assessment

The Contractor shall before the commencement of any installation/replacement work on the Sites and during such works, cause risk assessment(s) to be performed by a competent person appointed in writing. Such assessment(s) shall as a minimum:

- a) identify the risks and hazards to which persons may be exposed to, including but not limited to dangerous/hotspot areas that contractor staff may be exposed to (in collaboration with the CCT who would be able to provide insights into the development of crime in CCT regions).

- b) analyse and evaluate the identified risks and hazards based on a documented method.
- c) document a plan of safe work procedures, including the use of any personal protective equipment or clothing and the undertaking of periodic “toolbox talks” or inductions before undertaking hazardous work, in order to mitigate, reduce or control the risks and hazards that have been identified.
- d) provide a monitoring plan; and
- e) provide a review plan.

The Contractor shall ensure that as far as is reasonably practicable, ergonomic related hazards are analysed, evaluated and addressed in the risk assessment.

The Contractor must review the relevant risk assessment -

- f) where changes are affected to the design and or construction that result in a change to the risk profile; or
- g) when an incident has occurred.

H8.3 Health and safety plan

The Contractor shall prior to commencing the Works to which this Specification applies, submit to the Employer’s Health and Safety Agent for approval a suitable and sufficiently documented health and safety plan, based on this Specification (only the specification is issued)

The health and safety plan shall include, but not be limited to, the following:

- a) A detailed scope of works of the Contractor.
- b) The safety management structure, including the names of all designated persons such as the construction supervisor and any other competent persons.
- c) Safety method statements and procedures to be adopted to ensure compliance with the OHS Act; Construction Regulations, 2014 and this Health and Safety Specification.
- d) the auditing procedure of sub-contractors
- e) Personal protective equipment, devices and clothing required.
- f) Emergency procedures.
- g) Provision of workers’ welfare facilities.
- h) Induction and training.
- i) Arrangements for monitoring and control to ensure compliance with the safety plan; and
- j) Provision and maintenance of the health and safety file and all other relevant documentation.
- k) Measures to be taken to protect the health and safety of staff members in the event of crime across different regions.
- l) The approval letter from the Employers Safety Agent and notification to the DOEL.

The Contractor shall provide each subcontractor with the sections of this Health and Safety Specification pertaining to the construction work to be performed by that subcontractor. The subcontractor shall provide the Contractor with a health and safety plan pertaining to his work, for incorporation into the Contractor’s health and safety plan.

The Contractor shall discuss the submitted health and safety plan with the Employer’s Health and Safety Agent, modify such plan in the light of the discussions and resubmit the modified plan for approval.

The Contractor shall apply the approved health and safety plan from the date of its approval and for the duration of the Works to which this Specification applies.

The Contractor shall conduct periodic audits for compliance with the approved health and safety plan at intervals agreed upon with the Employer’s Health and Safety Agent, but at least once every month.

The Contractor shall update the health and safety plan whenever changes to the Works are brought about.

H8.4 Responsibilities towards employees and visitors

The Contractor shall, as far as is reasonably practicable, cause every employee to be made conversant with the hazards to his health and safety attached to any work which he has to perform,

any article or substance which he has to produce, process, use, handle, store or transport and any plant or machinery which he is required or permitted to use, as well as with the precautionary measures which should be taken and observed with respect to those hazards or safe work procedures.

The Contractor shall ensure that all employees under his control are informed, instructed and trained by a competent person regarding any hazard and the related work procedures before any work commences, and thereafter at such times as may be determined in the risk assessment.

The Contractor shall cause a record of all induction training to be kept, which indicates the names, identity numbers and job description of all those who attended such training.

The Contractor shall not allow or permit any employee to undertake works on the Sites, unless such person has undergone health and safety induction training pertaining to the hazards prevalent on the Site at the time of entry.

The Contractor shall ensure that all of his employees have a valid medical certificate of fitness specific to the construction work to be performed and issued by an occupational health practitioner on the prescribed form.

The Contractor shall ensure that each visitor to the Site, save where such visitor only visits the site office and is not in direct contact with the construction work activities:

- a) undergoes health and safety instruction pertaining to the hazards prevalent on the Site; and
- b) is in possession of and using the necessary personal protective equipment.

The Contractor shall cause a record of all induction training to be kept in the Health and Safety file.

The Contractor shall provide suitable on-site signage to alert workers and visitors to health and safety hazards and requirements. Such signage shall include but not be limited to:

- c) prohibited unauthorized entrance.
- d) signage to indicate what personal protective equipment is to be worn; and
- e) activity related signs.

The Contractor shall not permit any person who is or who appears to be under the influence of intoxicating liquor or drugs, to enter or remain at a workplace.

H8.5 Subcontractors

The Contractor may only subcontract work in terms of a written subcontract and shall only appoint a subcontractor should he be reasonably satisfied that such a subcontractor has the necessary competencies and resources to safely perform the work falling within the scope of the subcontract.

The Contractor shall ensure that all his obligations in respect of subcontractors in terms of the Construction Regulations, 2014 are adhered to.

H8.6 Work permits and wayleaves

The Contractor shall be responsible for obtaining all the wayleaves, permissions or permits applicable to working near any existing services or other infrastructure on Sites and shall abide by the safety conditions imposed by such wayleaves, permissions or permits.

H8.7 Access to the Site(s)

The Contractor shall ensure that access to the replacement/installation Sites are strictly controlled and that, where possible, only authorised persons are permitted onto the Sites.

The Contractor shall control the access to Sites of his own personnel and equipment, and that of his subcontractors and suppliers, in such a way so as to ensure that the safety of all public pedestrian and vehicular traffic is not compromised.

H8.8 First aid and emergency procedures

Irrespective of the minimum requirements of the OHS Act, it will be required that construction

vehicles have a fully stocked first aid kit. This requirement is imposed due to the various remote sites. A monthly first aid treatment report must be submitted by the appointed safety officer to the Employer appointed Safety Agent.

H8.9 Housekeeping

This will be of utmost importance when working in public access areas and would be deemed “a site”. Especially preventing tripping hazards and avoiding littering.

The Contractor shall ensure, inter alia, that suitable housekeeping is continuously implemented on the Site, including provision for the:

- a) removal of scrap, waste and debris, and materials which are no longer required for use, at appropriate intervals (in accordance with Construction Regulation 27); and
- b) proper stacking and storage of materials and equipment (in accordance with Construction Regulations 27 and 28).

H8.10 Fire precautions

The Contractor shall ensure that all appropriate measures are taken to minimize the risk of fire and that appropriate procedures and equipment are in place to deal with the event of a fire, all in accordance with Construction Regulation 29 and the Environmental Management Specification in Part C3.5 of the Scope of Work.

H8.11 Facilities for workers

The Contractor shall provide ablution facilities and eating areas all as specified in the Environmental Management Specification.

H9 GENERAL HAZARDS AND RISKS APPLICABLE TO WORK REQUIRED IN TERMS OF THIS TERM TENDER

H9.1 Existing Site conditions

H9.2 Environmental hazards

H9.3 Traffic hazards

H9.4 Construction materials (hazardous substances)

H9.5 pedestrian traffic

H9.6 fauna and flora

H9.7 Excavation and trenching work

H9.8 Demolition work

H9.9 Tunneling

H9.10 Construction vehicles

H9.11 Flammable liquids

H9.12 Water environments

H9.13 Confined spaces

H9.14 Other hazards specific to the Contractors operations.

C.6 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 agreement.

1. Definitions

Insert new clause 1.1A with the following:

- 1.1A “Commencement Date” means the date the Supplier confirms receipt from the Purchaser of 1 (one) complete, signed copy of the Contract, the *Schedule of Deviations* (if any).
- 1.1B “Conditions of Contract” means the general conditions of contract and special conditions of contract including all other contract data incorporated by reference.

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 agreement. 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 (chosen domicilium citandi et executandi).

Add the following after Clause 1.25:

- 1.26 ‘Supplier’ means the provider of Goods and / or Services with whom the Contract is concluded also referred to as “contractor” in the GCC.
- 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
- 1.28 “Working Day” means Monday to Friday excluding weekends and Public Holidays (in the Republic of South Africa).

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 If the Supplier is a joint venture, all parties in a joint venture or consortium shall be jointly and severally liable to the Purchaser in terms of the 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/or Services 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 as amended from time to time. If the Purchaser 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 the 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 termination of the Contract, restriction of the Supplier, and/or the exercise by the CCT of any other remedies available to it as described in the SCM Policy or in law.
- 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 Purchase Order by the Purchaser and no later than the periods as set out in the Contract:
- 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, and
 - d) Other requirements as detailed in the Contract.
- 3.5.2 Only when notified of the acceptance of the bid on the Date of Commencement of Contract, the Supplier shall commence with and carry out the Delivery of the Goods and/or Services 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 and/or Services 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 and/or Services 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 due 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 Purchaser Orders for the Goods and/or Services required under this Contract. No liability for payment will ensue for arising out of the Delivery of the Goods and/or Services, unless a Purchase Order has been issued to the Supplier.

- 3.6.2 Make payment to the Supplier for the Goods and/or Services as set out herein.
- 3.6.3 Take possession of the Goods and /or Services 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.
- 3.6.6 Grant or refuse any extension of time requested by the Supplier of the period stated in clause 10.
- 3.6.7 Inspect the Goods and/or Services 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 the 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 agreement and need not obtain the Supplier's permission to copy it 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 in terms of the agreement and the Purchaser hereby indemnifies the Supplier against any claim which may be made against it by any person / entity, 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 agreement within two (2) years of Delivery of the Goods, 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 agreement, 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 Purchaser.
 - 5.8.2 The Supplier hereby assigns to the Purchaser, all Intellectual Property created, developed or otherwise brought into existence by it for the purposes of the agreement, 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 Purchaser's Intellectual Property for any purpose other than as contemplated in the agreement;
 - 5.8.3.2 not modify, add to, change or alter the Purchaser'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 Purchaser;

- 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 Purchaser;
- 5.8.3.4 Comply with all reasonable directions or instructions given to it by the Purchaser in relation to the form and manner of use of the CCT Intellectual Property, including without limitation, any brand guidelines which the Purchaser may provide to the Supplier from time to time;
- 5.8.3.5 Ensure that its employees, directors, members and contractors comply strictly with the provisions of this Clause 5.5.8.4 above unless the Purchaser expressly agrees to the contrary, in writing and only after obtaining due internal authority for such agreement.
- 5.8.4 The Supplier represents and warrants to the Purchaser that, in providing Goods and/or Services for the duration of the agreement it will not infringe or make unauthorised use of the Intellectual Property rights of any third party and hereby indemnifies the Purchaser 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 Upon expiry of the contract period and in the event that the Contract is terminated, ended or is declared void, any and all of the Purchaser's Intellectual Property, and any and all information and data related thereto, shall be immediately handed over to the Purchaser by the Supplier and no copies thereof shall be retained by the Supplier unless the Purchaser expressly and in writing, after obtaining due internal authority, agrees otherwise.

Add the following after clause 5.8:

5.9 Protection of Personal Information Act of 2013

By submitting a tender to the Purchaser, (and by concluding any ensuing related agreement with the City of Cape Town, if applicable), the Tenderer thereby acknowledges and unconditionally agrees:

- 5.9.1 that the tenderer has been informed of the purpose of the collection and processing of its personal information as defined in the Protection of Personal Information Act of 2013 ("POPIA"), which, for the avoidance of doubt is for, and in relation to, the tender process and the negotiation, conclusion, performance and enforcement of the ensuing agreement, if applicable, as well as for the City of Cape Town's reporting purposes;
- 5.9.2 to the collection and processing of the tenderer's personal information by the City of Cape Town and agrees to make available to the City of Cape Town, all information reasonably required by the City of Cape Town for the above purposes;
- 5.9.3 that the personal information the City of Cape Town collects from the tenderer or about the tenderer may be further processed for other activities and/or purposes which are lawful, reasonable, relevant and not excessive in relation to the purposes set out above, for which it was originally collected;
- 5.9.4 that, the tenderer indemnifies the City of Cape Town and its officials, employees, and directors and undertakes to keep the City of Cape Town and its officials, employees, and directors indemnified in respect of any claim, loss, demands, liability, costs and expenses of whatsoever nature which may be made against the City of Cape Town (including the costs incurred in defending or contesting any such claim) in relation to the tenderer or the tenderer's employees', representatives' and/or sub-Suppliers' non-compliance with POPIA and/or the City of Cape Town's failure to obtain the tenderer's consent or to notify the tenderer of the reason for the processing of the tenderer's personal information;
- 5.9.5 to the disclosure of the tenderer's personal information by the City of Cape Town to any third party, where the City of Cape Town has a legal or contractual obligation to disclose such personal information to the third party (or a legitimate interest exists therein);
- 5.9.6 that, under POPIA, the tenderer may request to access, confirm, request the correction, destruction, or deletion of, or request a description of, personal information held by the City of Cape Town in relation to you, subject to applicable law; and

that under POPIA, subject to applicable law, the tenderer also has the right to be notified of a personal information breach and the right to object to, or restrict, the City of Cape Town's processing of its

personal information.

5.10 **PERFORMANCE MONITORING**

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

7. Performance Security

Delete clause 7.1 and replace with the following:

7.1 Within 14 (fourteen) days of Commencement Date the Supplier shall furnish to the Purchaser the performance security:

7.1.1 For the Guarantee Sum equal to **R 8 400 000.00 (Eight Million, Four Hundred Thousand Rand.**

7.1.2 The Performance Security/Guarantee furnished shall be issued by an Approved Financial Institution listed in the Pro Forma Performance Security/Guarantee as at [insert date] (being institutions approved for issue of contract guarantees by the Purchaser).

Delete clause 7.3 and replace with the following:

7.3 The performance security shall be furnished strictly in accordance with the terms and conditions set out in Form of Performance Security/ Guarantee.

Delete clause 7.4 and replace with the following:

7.4 The performance security will be discharged by the Purchaser and returned to the Supplier strictly in accordance with the terms and conditions set out in the Performance Security/ Guarantee.

8. Inspections, tests and analyses

Delete Clause 8.2 and substitute with the following:

8.2 If it is a bid condition that Goods and/or Services 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 Supplier 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 Purchase Order. In the case of agreements for Delivery of goods in terms of framework or panel agreements, Purchase Orders for the supply and delivery of goods may be raised up until the expiry of a framework or panel agreement, provided that the goods can be delivered within 30 (thirty) days of expiry of the framework or panel agreement. In this context, the "goods" does not include services and carries its ordinary meaning. All Purchase Orders other than for the supply and Delivery of goods (i.e. supply of services, professional services or constructions works), must be completed prior to the expiry of the contract period.

10.2 The Purchaser shall determine, in its sole discretion, whether the Goods and/or Services 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 and/or Services 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 such written 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:
- 11.2.1 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;
- 11.2.2 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;
- 11.2.3 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 Supplier's broker or the insurance company itself (see the Pro Forma Insurance Broker's Warranty).
- 11.2.4 In the case of Contracts for delivery of professional services, 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.
- 11.2.5 In the event of under insurance or the insurer's repudiation of any claim for whatever reason, the Purchaser will retain its right of recourse against the Supplier.
- 11.3 The Supplier shall be obliged to furnish the Purchaser with proof of such insurance as the Purchaser 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 Pro forma Insurance Broker's Warranty or copies of the insurance policies.

15. Warranty

Add to Clause 15.2:

- 15.2 This warranty for this contract shall remain valid for **the periods and items indicated in the table in Section 3.7 of the Technical Specifications** after the goods and services contemplated in an Order, have been certified as complete.

16. Payment

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

- 16.1 Payment of invoices will be made:
- 16.1.1 Within 30 (thirty) days of receiving the relevant invoice or statement from the Supplier, unless otherwise prescribed for certain categories of expenditure or specific contractual requirements in accordance with any other applicable policies of the Purchaser.
- 16.1.2 Notwithstanding anything contained above, the Purchaser shall not be liable for payment of any invoice that pre-dates the date of delivery of any Goods and/or Services.

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 Payments due in relation to any order shall be valued at monthly intervals and shall be a verification of

the installed cost components contained in the Pricing schedule, multiplied by the verified and accepted quantity and including any adjustments as it may be subject to for CPA and ROE.

Progressive monthly Interim payment certificates for work done shall only be valued at the milestones indicated in Section 3.9.6 of the specification.

Add the following after clause 16.4

16.5 Notwithstanding any amount stated on the Purchase Order, the Supplier shall only be entitled to payment for Goods and/or Services actually delivered in terms of the Specification and Drawings, or any variations thereof made in accordance with clause 18. Any contingency sum included shall be for the sole use, and at the discretion, of the Purchaser.

16.6 The Purchaser will only make advanced payments to the Supplier in strict compliance with the terms and conditions as contained in the Pro forma Advanced Payment Guarantee and only once the authenticity of such guarantee has been verified by the Purchaser's Treasury Department.

16.6.1 The Advance Payment Schedule applicable to this Contract is set out below. The items of plant and materials which have been identified by the Purchaser as being suitable for advance payment in terms of this Contract are listed in the table below, and for which the Purchaser is prepared to make advance payment to the Supplier, subject to the conditions below. Should an item or items be added to the list at tender stage by a tenderer, no obligation to advance payment shall be incurred by the Purchaser, for such items added by the tenderer except as provided for herein.

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:
N/A	N/A
N/A	N/A
N/A	N/A
N/A	N/A

16.6.2 The Supplier can only rely on advance payment being permitted by the Purchaser in respect of the plant and materials listed in the table above. The Purchaser 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.

16.6.3 Advance payment for the purposes of deposits will only be provided up to a limit of **N/A** of the value of any one item being claimed.

16.6.4 The Supplier shall provide the Purchaser 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.

16.6.5 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 Purchaser upon request, for the whole value of the item.

Add the following after clause 16.6

16.7 The Purchaser will not certify or make payments for Materials Off Site

17. Prices

Add the following after clause 17.1

- 1.2 The prices for the goods delivered and services performed shall be subject to contract price adjustment. (refer to Schedule F.1: Contract Price Adjustment and/or Rate of Exchange Variation)
- 1.3 If price adjustment for variations in the cost of plant and materials imported from outside of South Africa is provided for in the contract, such adjustment shall be based on the information contained on the schedule titled "F.1. (F) GOODS AND/OR COMPONENTS IMPORTED FROM OUTSIDE OF SOUTH AFRICA – RATE OF EXCHANGE PRICE VARIATIONS"

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 and/or Services, extension of the contract period or increases in the value of the Contract as a result of written instructions issued by the Purchaser to the Supplier. Such changes are 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, the Purchaser's liability for payment shall not arise until such time as the change has been duly approved and such approval communicated to 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 Purchaser and the subcontractor, or a responsibility or liability on the part of the Purchaser 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 obligations contained in the Contract the Supplier or its subcontractors should encounter conditions beyond their reasonable control which impede the timely delivery of the Goods and/or Services, the Supplier shall notify the Purchaser in writing, within 7 (seven) 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 this Contract shall be deemed to prohibit the obtaining of Goods and/or Services 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 the Goods and/or Services within the period(s) specified in the Contract, the Purchaser shall, without prejudice to its other remedies under the Contract, deduct from amounts payable, as a penalty, a sum as stated in Section 3.8 of the Specifications for each day of the delay until actual Delivery or performance.

22.2 The Purchaser shall, without prejudice to its other remedies under the contract, deduct from amounts payable, financial penalties as contained on the Preference Schedule for breaches of the conditions upon which preference points were awarded.

Add the following section to clause 22.2:

If the supplier fails to achieve Key Performance Indicators as defined in the Specification, the purchaser shall, without prejudice to its other remedies under the contract, deduct from the specific or future order price, as a penalty, a sum as calculated in in Section 3.8 of the Specifications for such failure.

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 If the Parties, by mutual agreement, terminate the Contract.

23.8.3 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 the Contract may be terminated by the Purchaser (upon conclusion of applicable processes by the City Manager as described in the Purchaser's SCM Policy).

23.8.4 Reputational risk or harm to the Purchaser

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

- a) reports of poor governance and/or unethical behaviour;
- b) association with known notorious individuals and family of notorious individuals;
- c) poor performance issues, known to the Purchaser
- d) negative social media reports;
- e) adverse assurance (e.g. due diligence) report outcomes; or
- f) circumstances where the relevant vendor has employed, or is directed by, anyone who was previously employed in the service of the state (as defined in clause 1.53), where the person is or was negatively implicated in any SCM irregularity.

By or in relation to the Supplier, the Contract may be terminated by the Purchaser after providing notice to the Supplier.

- 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 In the event of the Supplier becoming bankrupt or otherwise insolvent the Purchaser may elect to:
- 26.1.1 At any time, terminate the Contract by giving written notice to the Supplier; or
- 26.1.2 Accept a Supplier's proposal (via the liquidator) to render delivery utilising the appropriate contractual mechanisms or takes steps to ensure its rights are protected and any negative impact on service delivery is mitigated.
- 26.2 In the event of the Purchaser electing to cancel the Contract in accordance with clause 26.1.1 above, the Purchaser shall make payment of all verified and signed off invoices. In the event of there being any dispute in respect of any outstanding invoices such dispute shall be dealt with in accordance with the dispute resolution mechanism in the Contract.

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 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 (a) and (b) and replace with the following:

- (a) notwithstanding any provision to the contrary contained in this contract, neither the supplier nor any of its officers, directors, employees, agents contractors, consultants or other representatives shall be liable to the purchaser, whether in contract, tort, or otherwise, for any indirect, incidental, special or consequential loss or damage of any kind, including without limitation the loss of use, loss of production, or loss of profits or interest costs, loss of goodwill, lost or damaged data or software, costs of substitute products/services and/or loss of business or business opportunities (whether

foreseeable or unforeseeable), provided that this exclusion shall not apply to any obligation of the supplier to pay penalties and/or damages to the purchaser;

- (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 day delivery of delivery or the next Working Day,
 - 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 Tenderer to submit evidence in the form of a valid Tax Compliance Status PIN 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), or included with this tender.

Add the following after clause 32.3:

32.4 The VAT registration number of the CCT 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 including Monthly Project Labour Reports (Annexure B). Any failure in this regard may result in a delay in the processing of payments.

Add the following Clause after Clause 35.1:

- 35.2 A Key Performance Indicator is an aspect of performance by the Supplier for which a target is stated in the Specification. From the starting date until the end of the Agreement, the Supplier reports to the Purchaser its performance against each of the Key Performance Indicators. Reports are provided at the intervals stated in the specification and include the forecast final measurement against each indicator.
- 35.3 If the Supplier's forecast final measurement against a Key Performance Indicator will not achieve the target stated, it submits to the Purchaser its proposals for improving performance.

C.7 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 as 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.
- 7.3 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.

C.8 ANNEXURES

Annexure A – Pro Forma Insurance Broker’s Warranty



Letterhead of supplier’s Insurance Broker

Date _____

CCT
City Manager
Civic Centre
12 Hertzog Boulevard
Cape Town
8000

Dear Sir

TENDER NO.: 025G.2024/25

TENDER DESCRIPTION: *Supply, Install, Connect & Commission Advanced Water Metering Infrastructure in Various Areas across the City of Cape Town*

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 CCT 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)

Annexure B – Monthly Project Labour Report

ANNEX 1

**CITY OF CAPE TOWN
MONTHLY PROJECT LABOUR REPORT**



Instructions for completing and submitting forms

General

- 1 The Monthly Project Labour Reports must be completed in full, using typed, proper case characters; alternatively, should a computer not be available, handwritten in black ink.
- 2 Incomplete / incorrect / illegible forms will not be accepted.
- 3 Any conditions relating to targeted labour stipulated in the Contract (in the case of contracted out services or works) shall apply to the completion and submission of these forms.
- 4 This document is available in Microsoft Excel format upon request from the City's EPWP office, tel 021 400 9406, email EPWPLR@capetown.gov.za.

Project Details

- 5 If a field is not applicable insert the letters: NA
- 6 Only the Project Number supplied by the Corporate EPWP Office must be inserted. The Project Number can be obtained from the Coordinator or Project Manager or from the e-mail address in point 4 above.
- 7 On completion of the contract or works project the anticipated end date must be updated to reflect the actual end date.

Beneficiary Details and Work Information

- 8 Care must be taken to ensure that beneficiary details correspond accurately with the beneficiary's ID document.

- 9 A new beneficiary is one in respect of which a new employment contract is signed in the current month. A certified ID copy must accompany this labour report on submission.
 - 10 Was the beneficiary sourced from the City's job seeker database?
 - 11 The contract end date as stated in the beneficiary's employment contract.
 - 12 Where a beneficiary has not worked in a particular month, the beneficiary's name shall not be reflected on this form at all for the month in question.
 - 13 Training will be recorded separately from normal working days and together shall not exceed the maximum of 23 days per month
 - 14 Workers earning more than the maximum daily rate (currently R450 excluding any benefits) shall not be reflected on this form at all.
- Submission of Forms
- 15 Signed hardcopy forms must be scanned and submitted to the City's project manager in electronic (.pdf) format, together with the completed form in Microsoft Excel format.
 - 16 Scanned copies of all applicable supporting documentation must be submitted along with each monthly project labour report. Copies of employment contracts and ID documents are only required in respect of new beneficiaries.
 - 17 If a computer is not available hardcopy forms and supporting documentation will be accepted.

PROJECT DETAILS

Numbers in cells below e.g (6) refer to the relevant instruction above for completing and submitting forms

CONTRACT OR WORKS PROJECT NAME: (6)		EPWP SUPPLIED PROJECT NUMBER: (6)										
DIRECTORATE:		DEPARTMENT:										
CONTRACTOR OR VENDOR NAME:		CONTRACTOR OR VENDOR E-MAIL ADDRESS:										
CONTRACTOR OR VENDOR CONTACT PERSON:		CONTRACTOR OR VENDOR TEL. NUMBER:										
CELL WORK												
PROJECT LABOUR REPORT CURRENT MONTH (mark with "X")												
JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	YEAR

ACTUAL START DATE (yyyy/mm/dd)						ANTICIPATED / ACTUAL END DATE (yyyy/mm/dd) (7)					
TOTAL PROJECT EXPENDITURE / VALUE OF WORK DONE TO-DATE (INCLUDING ALL COSTS, BUT EXCLUDING VAT)											
R											

MONTHLY PROJECT LABOUR REPORT

BENEFICIARY DETAILS AND WORK INFORMATION



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			

Annexure C - Pro Forma Performance Security/ Guarantee

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 CCT 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 CCT 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 CCT intends to call upon the Guarantor to make payment in terms of 4.2;
 - 4.2 A first written demand issued by the CCT 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 CCT the Guaranteed Sum or the full outstanding balance upon receipt of a first written demand from the CCT 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 CCT 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 CCT's bank compounded monthly and calculated from the date payment was made by the Guarantor to the CCT 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 CCT shall have the absolute right to arrange its affairs with the Supplier in any manner which the CCT 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)

Approved Financial Institution as at 28 February 2023:

1.1 National Banks

- ABSA Bank Limited
- Firststrand Bank Limited
- Investec Bank Limited
- Nedbank Limited
- Standard Bank of South Africa Limited

1.2 International Banks (with branches in South Africa)

- Barclays Bank PLC
- Citibank NA
- Credit Agricole Corporate and Investment Bank
- HSBC Bank PLC
- JPMorgan Chase Bank
- Societe Generale
- Standard Chartered Bank

1.3 Insurance Companies

- American International Group Inc (AIG)
- Bryte Insurance Company Limited
- Coface SA
- Compass Insurance Company Limited
- Credit Guarantee Insurance Corporation of Africa Limited
- Guardrisk Insurance Company Limited
- Hollard Insurance Company Limited
- Infiniti Insurance Limited
- Lombard Insurance Company Limited
- Mutual and Federal Risk Financing Limited
- New National Assurance Company Limited
- PSG Konsult Ltd (previously Absa Insurance)
- Regent Insurance Company Limited
- Renasa Insurance Company Limited
- Santam Limited...]

Annexure D - Pro Forma Advance Payment Guarantee

Not Applicable

Approved Financial Institution as at 28 February 2023:

1.1 National Banks

- ABSA Bank Limited
- Firststrand Bank Limited
- Investec Bank Limited
- Nedbank Limited
- Standard Bank of South Africa Limited

1.2 International Banks (with branches in South Africa)

- Barclays Bank PLC
- Citibank NA
- Credit Agricole Corporate and Investment Bank
- HSBC Bank PLC
- JPMorgan Chase Bank
- Societe Generale
- Standard Chartered Bank

1.3 Insurance Companies

- American International Group Inc (AIG)
- Bryte Insurance Company Limited
- Coface SA
- Compass Insurance Company Limited
- Credit Guarantee Insurance Corporation of Africa Limited
- Guardrisk Insurance Company Limited
- Hollard Insurance Company Limited
- Infiniti Insurance Limited
- Lombard Insurance Company Limited
- Mutual and Federal Risk Financing Limited
- New National Assurance Company Limited
- PSG Konsult Ltd (previously Absa Insurance)
- Regent Insurance Company Limited
- Renasa Insurance Company Limited
- Santam Limited...]

Annexure F – Tender Returnable Documents

Schedule F.1: Contract Price Adjustment and/or Rate of Exchange Variation

1. TENDER CONDITIONS

- 1.1 The Contract Price Adjustment (CPA) mechanism and/or provisions relating to Rate of Exchange (RoE) Variation, contained in this schedule is compulsory and binding on all Tenderers/Suppliers and this schedule (the parts relevant to the particular tender) must be completed by all Tenderers / Suppliers.
- 1.2 Tenderers/Suppliers are not permitted to amend, vary, alter or delete this schedule or any part thereof unless otherwise stated in this schedule.
- 1.3 Tenderers are not permitted to offer fixed and firm prices except as provided for in the Price Schedule.

2. CPA PROVISIONS SELECTION

- 2.1 The prices stipulated on the Price Schedule are subject to adjustment as set out below.
- 2.2 Tenderer to indicate the specific CPA and/or RoE provisions applicable to their bid by marking the relevant checkboxes below. Tenderers to note that the CPA and/or RoE provisions are not exclusive and multiple CPA Types can exist if the bid contains both local and foreign exchange based pricing. In such cases the CPA and/or ROE provision applies only to that particular portion of the tendered price.
- 2.3 The CPA and/or RoE provisions applicable to this tender and resulting contract are to be indicated below by checking the relevant boxes (with multiple selections only where indicated permissible):

	<u>Indicate option</u>	<u>CPA Type</u>	<u>Period</u>	<u>Refer to Section</u>
A	<input type="checkbox"/> N/A	FIRM PRICES as per Pricing Schedule	Annual	<i>Pricing Schedule C.4 and Schedule F.1 (A)</i>
<u>LOCAL (RSA) TENDER CONTENT:</u>				
EITHER				
B	<input type="checkbox"/> N/A	SEIFSA Index based CPA	Monthly / Quarterly	<i>Schedule F.1 (B)</i>
OR				
C	<input type="checkbox"/> N/A	Pricelist / Quotation Based CPA	Ad-Hoc	<i>Schedule F.1 (C)</i>
OR				
D	<input checked="" type="checkbox"/> Yes	STATS SA CPI Index Based CPA	Annually	<i>Schedule F.1 (D)</i>
OR/AND				
E	<input type="checkbox"/> N/A	Sectorial Determination 1:Contract Cleaning Sector	Annually	<i>Schedule F.1 (E)</i>
OR				
E	<input type="checkbox"/> N/A	Sectorial Determination 6: Private Security Sector	Annually	<i>Schedule F.1 (E)</i>
<u>IMPORTED GOODS AND / OR COMPONENTS (IF APPLICABLE)</u>				
F	<input checked="" type="checkbox"/> Yes	ROE based CPA	Ad-Hoc	<i>Schedule F.1 (F)</i>

AND (IF REQUIRED), EITHER

G	N/A	Pricelist / Quotation based CPA	Ad-Hoc / Periodic	<i>Schedule F.1 (G)</i>
OR				
H	N/A	Overseas CPI / PPI index based CPA	Ad-Hoc / Periodic	<i>Schedule F.1 (H)</i>

2.4 CPA and/or RoE provisions marked as **not applicable** is not relevant and will not apply to this tender and resulting contract.

3. CONTRACT CPA APPLICATIONS AND ADMINISTRATION

3.1 Any claim for variation in the contract price (either CPA or RoE adjustments) must be submitted in writing:

- i. By letter to: Director (**Water and Sanitation: Commercial Services**), City of Cape Town, P O Box 655, Cape Town, 8000 or
- ii. By email to: **CSB.ContractManagement@capetown.gov.za**

at least 14 days prior to the month upon which the adjustment would become effective in the case of prices being set in advance, and as soon as relevant indices are available and no later than 60 days after the date of delivery of goods or the completion of the project (i.e. date of issue of the Taking-Over Certificate, if applicable) in the case of adjustments being claimed retrospectively for Goods or Services. The latter case is only applicable where specifically provided for in the CPA provisions.

- 3.2 When submitting a request for CPA and/or RoE adjustment the Supplier shall indicate the Rand Value claimed for each item listed on C.4 - Price Schedule, clearly indicating the item number as per C.4 - Price Schedule. Percentage increases will not be considered. A mere notification of a request for CPA without stating the new price claimed for each item shall, for the purpose of this clause, not be regarded as a valid request.
- 3.3 The CCT reserves the right to request the Supplier to submit auditor's certificates or such other documentary proof as it may require in order to verify a claim for CPA or RoE adjustments. Price adjustments will not be processed until such time as the Supplier submits such auditor's certificates or other documentary proof to the CCT. Should the Supplier fail to submit the auditor's certificates or other documentary proof to the CCT within 30 days from the written request, it shall be presumed that the Supplier has abandoned his request.
- 3.4 The CCT reserves the right to withhold payment of any claim for adjustment while only provisional figures are available and until such time as the final (revised) figures are issued by the relevant authority.
- 3.5 The CCT will confirm in writing once processing of the CPA or RoE adjustments have been completed including the effective date of the adjustments.
- 3.6 Where pricelist-based and other non-index based CPA requests are investigated and found to be not reasonable and market related, the CCT reserves the right to reject such requests. Where disputes arise with respect to such rejected requests the CCT reserves the right to procure the Goods from other available Suppliers until such time as the dispute is resolved.
- 3.7 Unless indicated otherwise in the relevant schedule below, all Purchase Orders issued on or after the effective date of the adjustment shall be issued at, and the Goods or Services supplied, invoiced and paid for at the adjusted prices. The relevant adjustment will not be applied to Purchase Orders issued prior to the effective date.

Or

Unless indicated otherwise in the relevant schedule below, the adjustment will apply to all Purchase Orders or Purchase Order lines where the delivery date is on or after the effective date of the adjustment.

F.1 (A) – FIRM PRICES

NOT APPLICABLE

F.1 (B) LOCAL SOUTH AFRICAN CONTENT – SEIFSA INDICES

NOT APPLICABLE

F.1 (C) LOCAL SOUTH AFRICAN CONTENT - SUPPLIER/ MANUFACTURER PRICE LIST/QUOTATIONS

NOT APPLICABLE

F.1 (D) LOCAL SOUTH AFRICAN CONTENT - STATS SA CONSUMER PRICE INDEX

1. Applicable where the Tenderer/Suppliers has indicated their tendered prices are subject to adjustment based on changes in the Statistics South Africa (STATS SA) Consumer Price Indices.
2. A minimum of 10% of the tender price as per C.4 Pricing Schedule shall be fixed and free of variation for the duration of the contract.
3. A total of 90% of the tender price as per C.4 Pricing Schedule shall be adjusted annually in accordance with clause 5 below.
4. The Contract Price(s) shall remain FIRM for the first 12 calendar months from date of Commencement Date of Contract and Suppliers are not permitted to requests CPA during this period.
5. The Contract Price(s) will thereafter be subject to adjustment annually based on the average percentage of change over 12 months as published by STATS SA: Consumer Price Index (P0141–Table B2 – CPI headline year-on-year rates) as follows:
 - 5.1 CPA applicable from the start of the 13th month to the end of the 24th month calculated as follows:
 - a) The base month for the price adjustment being three (3) calendar months prior to Commencement Date of Contract; and
 - b) The end month shall be three (3) calendar months prior to the 12th month.
 - 5.2 CPA applicable from the start of the 25th month to end of the 36th month calculated as follows:
 - a) The base month for the price adjustment shall be three (3) calendar months prior to the 13th month; and
 - b) The end month shall be three (3) calendar months prior to 24th month.
 - 5.3 The average CPI percentage will be calculated using the base month to the end month (both included) divided by the number of months. (12 months totalled/12 to achieve the average CPI)
6. Subject to prior approval by the CCT delegated authority, in the event of any extension of the contract period, the CPA applicable beyond month 36th of the contract will follow the same principle in determining the base month (i.e. 3 calendar months prior to 25th month) and end date (3 calendar months prior to 36th month) as outlined above.

F.1. (E) LOCAL SOUTH AFRICAN CONTENT – SECTORIAL DETERMINATION

NOT APPLICABLE

F.1. (F) GOODS AND/OR COMPONENTS IMPORTED FROM OUTSIDE OF SOUTH AFRICA – RATE OF EXCHANGE PRICE VARIATIONS

- Subject to the above, when tendered prices of certain items in C.4 Price Schedule are subject to adjustment for changes in the cost of goods and/or components imported from outside of South Africa, the Tenderer must (as part of the bid submission) provide a list of such items and other information as required in Table F.1 (F).2 below and include it in the bid submission.
- Only tenderers who are the direct importer of the goods may claim rate of exchange price variations.

Table F.1 (F).1: Information required for prices subject to Rate of Exchange adjustments

Exchange Rate on which tender is based:	_____ 1 : Rand _____
Exchange Rate on which tender is based: (if more than one currency)	_____ 1 : Rand _____
Exchange Rate on which tender is based: (if more than one currency)	_____ 1 : Rand _____
Name of Bank	
Date of quoted rate of exchange	
Documentation relevant to calculation of adjustments based on Rate of Exchange (Mark with "x")	
Bill of Lading	
Waybill	
Customs invoice	
Other: _____	

TABLE F.1 (F).2: Price Basis for Imported Resources

C.4 Price Schedule Detail		Rand Value Calculation for Foreign Content (FOB)			Customs Surcharge		Customs Duty			Rand Value for South African Content (FOR)	Total Tender Price in Rand of (C) + (D) + (E) + (F) included in Price Schedule C.4
C.4 Price Schedule Item No.	Description of Resources	Value in Foreign Currency denomination (A)	Rate of Exchange as at Base Date* (B)	Value in Rand for Foreign currency content (A) x (B) (C)	%	Rand (D)	%	Rand (E)	Customs Duty Tariff Reference	Value in Rand for South African Content (F)	(G)

* Base Date: 7 (seven) calendar days before tender closing.

- Any items/resources not inserted in Table F.1 (F).2 above, are deemed to be manufactured / supplied in South Africa and is not subject to adjustment in terms of variation in rate of exchange.
- The price adjustment for variations in the cost of plant and materials imported from outside of South Africa shall be based on the information contained on the schedule titled "Price Basis for Imported Resources" (Table F.1 (F).2). The Rand value of goods and components comprising entirely or partly imported content that is inserted on the Table F.1(F).2 titled "Price Basis for Imported Resources" (column (G)) shall be the rate tendered in the Pricing Schedule C.4, and shall be the value in foreign currency (column (A)) converted to South African Rand (column (C)) by using the closing spot selling rate on the Base Date (seven calendar days before tender closing date) rounded to the second decimal place (column (B)), to which shall be added

any Customs Surcharge and Customs Duty applicable at that date (columns (D) and (E)) and any South African manufactured or added content (column (F)). Any mark-up by the Tenderer or other costs not detailed above shall be entirely contained within the South African Content (Column (F)).

5. Column A of Table F.1 (F).2 shall detail the actual quotation for the imported Goods or components, and shall be substantiated by the original source quotation for such Goods or components. (Source quotation from foreign supplier/manufacturer, see Schedule F.1 (G), Table F.1 (G).1 below). No Supplier mark-up on the foreign currency value of such imported Goods or components is permissible. All Supplier mark-up shall be included in the South African content, Column F of Table F.1 (F).2 above.
6. Based on the evidence provided in Clause 5 above, the value in Rand inserted in column (C) on the schedule titled "Price Basis for Imported Resources" shall be recalculated using the forward cover rate obtained, and any increase or decrease in the Rand value defined in this clause shall be adjusted accordingly, subject to Clause 7 below.
7. The adjustments shall be calculated upon the value in foreign currency in the Supplier's forward cover contract, provided that, should this value exceed the value in foreign currency inserted in column (A) of the schedule titled "Price Basis for Imported Resources", then the value in column (A) shall be used (or any adjusted value approved in accordance with Schedule F.1 (G) below).
8. Any increase or decrease in the Rand value between the amounts of Customs Surcharge and Customs Duty inserted in on the schedule titled "Price Basis for Imported Resources" and those amounts actually paid to the Customs and Excise Authorities, which are due to changes in the percentage rates applicable or to the foreign exchange rate used by the authorities, shall be adjusted accordingly.
9. The Tenderer shall state the Customs Duty Tariff Reference applicable to each item and the Supplier shall advise the CCT's Agent of any changes which occur.
10. Suppliers shall take out Forward Cover covering the foreign exchange component of the cost of any imported portion of the Goods ordered on each purchase order issued by the Employer.
11. The process to be followed by Suppliers for claims for Rate of Exchange Variations shall be as follows:
 - a) The Supplier shall within seven working days from the date of receipt of the purchase order arrange for cover or recovering forward by way of a contract with a bank which is an authorised foreign exchange dealer, the foreign exchange component of the cost of any imported goods and components inserted by the Tenderer on the scheduled titled "Price Basis for Imported Resources" (Table F.1 (F).2), and submit such Forward Cover quotation to the City for approval.
 - b) Upon receipt of the quotation for Forward Cover from the bank, the Supplier must forward the quote ideally, within 15 minutes of receiving it from their banker to the CCT: CPA.Request@capetown.gov.za and Contract Manager: **CSB.ContractManagement@capetown.gov.za**. This is to ensure that the time difference from generation of the quotation for Forward Cover to finalising the Forward Cover with the Bank, is kept to a minimum due to the change in the exchange rate throughout the day.
 - c) The Contract Manager will forward the quotation to the CCT Treasury Department immediately for their consideration and approval. The cut-off time for receipt of quotations for Forward Cover will be 14h00. It must be noted that if this deadline will not be achieved, it is recommended that the quotation process be undertaken on the following day which should fall within the 7 days of receipt of the purchase order.
 - d) Only once the Forward Cover quotation rate has been approved by CCT Treasury Department, may the Supplier finalise the Forward Cover contract with their bank at the rate approved by the CCT Treasury Department for that Purchase Order and forward a copy of the contract to the CCT via email: CPA.Request@capetown.gov.za and Contract Manager: **CSB.ContractManagement@capetown.gov.za**.
 - e) The Forward Cover quotation envisaged above shall have the CCT purchase order number and a Forward Cover Contract (FCC) Value Date that is directly based upon the required delivery date for the imported Goods or components necessary in order to meet the Contract Delivery Period. Future FCC Value Dates beyond the Contract Delivery Period shall not be acceptable.

12. On delivery of the goods to the City the Supplier shall submit the following documentation to the CCT via email: CPA.Request@capetown.gov.za and Contract Manager: **CSB.ContractManagement@capetown.gov.za** :
- a) The Bill of Lading/Waybill/Customs Invoice (clearly indicating the items as identified on the purchase order).
 - b) Calculations detailing the difference in the rate of exchange at the time of entry and the date of tender. These shall be submitted on a covering letter.
 - c) The invoice / credit note for the Rate of Exchange adjustment applicable to the specific order.
13. In exceptional circumstances, and subject to the Employer's explicit approval, Rate of Exchange variations on Goods or components that are imported in bulk in advance in fulfilment of the contract requirements or to create buffer stocks, but not specifically in response to specific purchase orders placed by the Employer in accordance with the contract, shall be based upon whichever of the following two methodologies is more advantageous to the Employer:
- a) Methodology 1: A spot quotation for the Forward Cover Contract rate for the imported portion of the Goods, based upon the FCC Value Date for the particular purchase order(s), as outlined in clause 11 above.
 - b) Methodology 2: The actual Rate of Exchange cost variations incurred in fulfilment of the purchase order(s), fully substantiated by detailed Bills of Lading and Customs Invoice applicable to the particular Goods delivered. The applicable Rate of Exchange shall be the rate as defined on the Customs Invoice for the imported Goods.
 - c) Determination of the more advantageous methodology shall be conducted and approved following delivery of the imported Goods or components to the Supplier but prior to delivery of the Goods to the Employer.
14. Approval of the process detailed in Clause 13 and sub-clauses above shall be on an order by order basis and application shall be submitted, with required supporting documents, immediately on receipt of the relevant purchase order(s).

**F.1. (G) GOODS AND/OR COMPONENTS IMPORTED FROM OUTSIDE OF SOUTH AFRICA -
MANUFACTURER/SUPPLIER PRICE/QUOTATION LIST**

NOT APPLICABLE

F.1. (H) GOODS AND/OR COMPONENTS IMPORTED FROM OUTSIDE OF SOUTH AFRICA - BASED ON FOREIGN INDICES

NOT APPLICABLE

Schedule F.2: Certificate of Authority for Partnerships/ Joint Ventures/ Consortiums

This schedule is to be completed if the tender is submitted by a partnership/joint venture/ consortium.

1. We, the undersigned, are submitting this tender offer as a partnership/ joint venture/ consortium and hereby authorize Mr/Ms _____, of the authorised entity _____, acting in the capacity of Lead Partner, to sign all documents in connection with the tender offer and any contract resulting from it on the partnership/joint venture/ consortium’s behalf.
2. By signing this schedule the partners to the partnership/joint venture/ consortium:
 - 2.1 warrant that the tender submitted is in accordance with the main business and objectives of the partnership/joint venture/ consortium;
 - 2.2 agree that the CCT shall make all payments in terms of this Contract into the following bank account of the Lead Partner:
 Account Holder: _____
 Financial Institution: _____
 Branch Code: _____
 Account No.: _____
 - 2.3 agree that in the event that there is a change in the partnership/ joint venture/ consortium and/or should a dispute arise between the partnership/joint venture/ consortium partners, that the CCT shall continue to make any/all payments due and payable in terms of the Contract into the aforesaid bank account until such time as the CCT is presented with a Court Order or an original agreement (signed by each and every partner of the partnership/joint venture/ consortium) notifying the CCT of the details of the new bank account into which it is required to make payment.
 - 2.4 agree that they shall be jointly and severally liable to the CCT for the due and proper fulfilment by the successful tenderer/supplier of its obligations in terms of the Contract as well as any damages suffered by the CCT as a result of breach by the successful tenderer/supplier. The partnership/joint venture/ consortium partners hereby renounce the benefits of excussion and division.

SIGNED BY THE PARTNERS OF THE PARTNERSHIP/ JOINT VENTURE/ CONSORTIUM		
NAME OF FIRM	ADDRESS	DULY AUTHORISED SIGNATORY
Lead partner		Signature..... Name..... Designation.....
		Signature..... Name..... Designation.....
		Signature..... Name..... Designation.....
		Signature..... Name..... Designation.....

Note: A copy of the Joint Venture Agreement shall be appended to *List of Other Documents Attached by Tenderer Schedule*.

Schedule F.3: Declaration for Procurement above R10 million

If the value of the transaction is expected to exceed R10 million (VAT included) the tenderer shall complete the following questionnaire, attach the necessary documents and sign this schedule:

1. Are you by law required to prepare annual financial statements for auditing? **(Please mark with X)**

YES		NO	
-----	--	----	--

If YES, submit audited annual financial statements:

- (i) For the past three years, or
- (ii) Since the date of establishment of the tenderer (if established during the past three years)

By attaching such audited financial statements to **List of Other Documents Attached by Tenderer Schedule**.

2. Do you have any outstanding undisputed commitments for municipal services towards the CCT or other municipality in respect of which payment is overdue for more than 30 (thirty) days? **(Please mark with X)**

YES		NO	
-----	--	----	--

2.1 If NO, this serves to certify that the tenderer has no undisputed commitments for municipal services towards any municipality for more than three (3) (three) months in respect of which payment is overdue for more than 30 (thirty) days.

2.2 If YES, provide particulars:

3. Has any contract been awarded to you by an organ of state during the past five (5) years? **(Please mark with X)**

YES		NO	
-----	--	----	--

If YES, insert particulars in the table below including particulars of any material non-compliance or dispute concerning the execution of such contract. Alternatively attach the particulars to **List of Other Documents Attached by Tenderer** schedule in the same format as the table below:

Organ of State	Contract Description	Contract Period	Non-compliance/dispute (if any)

4. Will any portion of the goods or services be sourced from outside the Republic, and if so, what portion and whether any portion of payment from the CCT is expected to be transferred out of the Republic? **(Please mark with X)**

YES		NO	
-----	--	----	--

If YES, furnish particulars below

The tenderer hereby certifies that the information set out in this schedule and/or attached hereto is true and correct, and acknowledges that failure to properly and truthfully complete this schedule may result in steps being taken against the tenderer, the tender being disqualified, and/or (in the event that the tenderer is successful) the cancellation of the contract, restriction of the tenderer or the exercise by the CCT of any other remedies available to it.

 Signature
 Print name:
 On behalf of the tenderer (duly authorised)

 Date

Schedule F.4: Preference Points Claim Form in Terms Of the Preferential Procurement Regulations 2022

1. GENERAL CONDITIONS

1.1 The following preference point systems are applicable to invitations to tender:
 - the 90/10 system for requirements with a Rand value above R50 000 000 (all applicable taxes included).

1.2 To be completed by the organ of state

The applicable preference point system for this tender is the 90/10 preference point system.

1.3 Points for this tender (even in the case of a tender for income-generating contracts) shall be awarded for:

- (a) Price; and
- (b) Specific Goals.

1.4 To be completed by the organ of state:

The maximum points for this tender are allocated as follows:

	POINTS
PRICE	90
SPECIFIC GOALS	10
Total points for PRICE and SPECIFIC GOALS	100

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

1.6 The organ of state reserves the right to require of a tenderer, either before a tender is adjudicated or at any time subsequently, to substantiate any claim in regard to preferences, in any manner required by the organ of state.

2. DEFINITIONS

The following definitions shall apply to this schedule:

- (a) "tender" means a written offer in the form determined by an organ of state in response to an invitation to provide goods or services through price quotations, competitive tendering process or any other method envisaged in legislation;
- (b) "price" means an amount of money tendered for goods or services, and includes all applicable taxes less all unconditional discounts;
- (c) "rand value" means the total estimated value of a contract in Rand, calculated at the time of bid invitation, and includes all applicable taxes;
- (d) "tender for income-generating contracts" means a written offer in the form determined by an organ of state in response to an invitation for the origination of income-generating contracts through any method envisaged in legislation that will result in a legal agreement between the organ of state and a third party that produces revenue for the organ of state, and includes, but is not limited to, leasing and disposal of assets and concession contracts, excluding direct sales and disposal of assets through public auctions; and
- (e) "The Act" means the Preferential Procurement Policy Framework Act, 2000 (Act No. 5 of 2000).

**3. FORMULAE FOR PROCUREMENT OF GOODS AND SERVICES
POINTS AWARDED FOR PRICE**

THE 90/10 PREFERENCE POINT SYSTEMS

A maximum of 90 points is allocated for price on the following basis:

90/10

$$P_s = 90 \left(1 + \frac{P_t - P_{max}}{P_{max}} \right)$$

Where

- Ps = Points scored for price of tender under consideration
- Pt = Price of tender under consideration
- Pmin = Price of lowest acceptable tender

4. N/A

5. POINTS AWARDED FOR SPECIFIC GOALS

5.1 In terms of Regulation 4(2); 5(2); 6(2) and 7(2) of the Preferential Procurement Regulations, preference points must be awarded for specific goals stated in the tender. For the purposes of this tender the tenderer will be allocated points based on the goals stated in table 1 below as may be supported by proof/ documentation stated in the conditions of this tender:

5.2 In cases where organs of state intend to use Regulation 3(2) of the Regulations, which states that, if it is unclear whether the 90/10 preference point system applies, an organ of state must, in the tender documents, stipulate in the case of—

- (a) an invitation for tender for income-generating contracts, that either the 90/10 preference point system will apply and that the highest acceptable tender will be used to determine the applicable preference point system; or
 - (b) any other invitation for tender, that either the 90/10 preference point system will apply and that the lowest acceptable tender will be used to determine the applicable preference point system,
- then the organ of state must indicate the points allocated for specific goals for the 90/10 preference point system.

Table 1: Specific goals for the tender and points claimed are indicated per the table below.

(Note to organs of state: Where either the 90/10 preference point system is applicable, corresponding points must also be indicated as such.

Note to tenderers: The tenderer must indicate how they claim points for each preference point system.)

The specific goals allocated points in terms of this tender	To be Completed by the Tenderer	
	Number of points Allocated (90/10 system)	Number of points claimed (90/10 system)
Gender	3	
Race	3	
Disability	1	
Promotion of Micro and Small Enterprises	3	

DECLARATION WITH REGARD TO COMPANY/FIRM

5.3 Name of company/firm.....

5.4 Company registration number:

5.5 TYPE OF COMPANY/ FIRM

- Y Partnership/Joint Venture / Consortium
- Y One-person business/sole propriety
- Y Close corporation

- Y Public Company
- Y Personal Liability Company
- Y (Pty) Limited
- Y Non-Profit Company
- Y State Owned Company

[Tick applicable box]

5.6 I, the undersigned, who is duly authorised to do so on behalf of the company/firm, certify that the points claimed, based on the specific goals as advised in the tender, qualifies the company/ firm for the preference(s) shown and I acknowledge that:

- i) The information furnished is true and correct;
- ii) The preference points claimed are in accordance with the General Conditions as indicated in paragraph 1 of this form;
- iii) In the event of a contract being awarded as a result of points claimed as shown in paragraphs 5.1 and 5.2, the Supplier may be required to furnish documentary proof to the satisfaction of the organ of state that the claims are correct;
- iv) If the specific goals have been claimed or obtained on a fraudulent basis or any of the conditions of contract have not been fulfilled, the organ of state may, in addition to any other remedy it may have –
 - (a) disqualify the person from the tendering process;
 - (b) recover costs, losses or damages it has incurred or suffered as a result of that person's conduct;
 - (c) cancel the contract and claim any damages which it has suffered as a result of having to make less favourable arrangements due to such cancellation;
 - (d) recommend that the tenderer or Supplier, its shareholders and directors, or only the shareholders and directors who acted on a fraudulent basis, be restricted from obtaining business from any organ of state for a period not exceeding 10 years, after the audi alteram partem (hear the other side) rule has been applied; and
 - (e) forward the matter for criminal prosecution, if deemed necessary.

<i>Signature of Tenderer</i>	<i>Date</i>	<i>Name and Surname</i>	<i>Address</i>

For official use.		
SIGNATURE OF CCT OFFICIALS AT TENDER OPENING		
1.	2.	3.

Schedule F.5: Declaration of Interest – State Employees (MBD 4 amended)

1. No bid will be accepted from:
 - 1.1 persons in the service of the state¹, or
 - 1.2 if the person is not a natural person, of which any director, manager or principal shareholder or stakeholder is in the service of the state, or
 - 1.3 from persons, or entities of which any director, manager or principal shareholder or stakeholder, has been in the service of the City of Cape Town (CCT) during the previous twelve (12) months, or
 - 1.4 from an entity who has employed a former CCT employee who was at a level of T14 of higher at the time of leaving the CCT's employ and involved in any of the CCT's bid committees for the bid submitted, if:
 - 1.4.1 the CCT employee left the CCT's employment voluntarily, during the previous twelve (12) months;
 - 1.5 a person who was a CCT employee, or an entity that employs a CCT employee, if
 - 1.5.1 the CCT employee left the CCT's employment whilst under investigation for alleged misconduct, or
 - 1.5.2 was facing disciplinary action or potential disciplinary action by the CCT, or
 - 1.5.3 was involved in a dispute against the CCT during the previous thirty six (36) months.

2. Any person, having a kinship with persons in the service of the state, including a blood relationship, may make an offer or offers in terms of this invitation to bid. In view of possible allegations of favouritism, should the resulting bid, or part thereof, be awarded to persons connected with or related to persons in service of the state, it is required that the tenderer or their authorised representative declare their position in relation to the evaluating/adjudicating authority.

3. In order to give effect to the above, the following questionnaire must be completed and submitted with the bid.
 - 3.1 Full Name of tenderer or his or her representative: _____
 - 3.2 Identity Number: _____
 - 3.3 Position occupied in the Company (director, trustee, shareholder²): _____
 - 3.4 Company or Close Corporation Registration Number: _____

 - 3.5 Tax Reference Number: _____
 - 3.6 VAT Registration Number: _____

 - 3.7 The names of all directors / trustees / shareholders members, their individual identity numbers and state employee numbers must be indicated in paragraph 4 below.
 - 3.8 Are you presently in the service of the state? **YES / NO**
 - 3.8.1 If yes, furnish particulars: _____
 - 3.9 Have you been in the service of the state for the past twelve months? **YES / NO**
 - 3.9.1 If yes, furnish particulars: _____
 - 3.10 Do you have any relationship (family, friend, other) with persons in the service of the state and who may be involved with the evaluation and or adjudication of this bid? **YES / NO**
 - 3.10.1 If yes, furnish particulars: _____
 - 3.11 Are you, aware of any relationship (family, friend, other) between any other tenderer and any persons in the service of the state who may be involved with the evaluation and or adjudication of this bid? **YES / NO**
 - 3.11.1 If yes, furnish particulars: _____
 - 3.12 Are any of the company's directors, trustees, managers, principle shareholders or stakeholders in service of the state? **YES / NO**

3.12.1 If yes, furnish particulars: _____

3.13 Are any spouse, child or parent of the company's directors, trustees, managers, principle shareholders or stakeholders in service of the state? **YES / NO**

3.13.1 If yes, furnish particulars: _____

3.14 Do you or any of the directors, trustees, managers, principle shareholders, or stakeholders of this company have any interest in any other related companies or business whether or not they are bidding for this contract? **YES / NO**

3.14.1 If yes, furnish particulars: _____

3.15 Have you, or any of the directors, trustees, managers, principle shareholders, or stakeholders of this company been in the service of the CCT in the past twelve months? **YES / NO**

3.15.1 If yes, furnish particulars: _____

3.16 Do you have any employees who was in the service of the CCT at a level of T14 or higher at the time they left the employ of the CCT, and who was involved in any of the CCT's bid committees for this bid? **YES / NO**

3.16.1 If yes, furnish particulars: _____

4. Full details of directors / trustees / members / shareholders

Full Name	Identity Number	State Employee Number

If the above table does not sufficient to provide the details of all directors / trustees / shareholders, please append full details to the tender submission.

The tenderer hereby certifies that the information set out in this schedule and/or attached hereto is true and correct, and acknowledges that failure to properly and truthfully complete this schedule may result in steps being taken against the tenderer, the tender being disqualified, and/or (in the event that the tenderer is successful) the cancellation of the contract, restriction of the tenderer or the exercise by the CCT of any other remedies available to it.

Signature
Print name:
On behalf of the tenderer (duly authorised)

Date

'MSCM Regulations: "in the service of the state" means to be –

- (a) **a member of –**
 - (i) **any municipal council;**
 - (ii) **any provincial legislature; or**
 - (iii) **the national Assembly or the national Council of provinces;**
- (b) **a member of the board of directors of any municipal entity;**
- (c) **an official of any municipality or municipal entity;**
- (d) **an employee of any national or provincial department, national or provincial public entity or constitutional institution within the meaning of the Public Finance Management Act, 1999 (Act No.1 of 1999);**
- (e) **an executive member of the accounting authority of any national or provincial public entity; or**
- (f) **an employee of Parliament or a provincial legislature.**

² **Shareholder" means a person who owns shares in the company and is actively involved in the management of the company or business and exercises control over the company.**

Schedule F.6: Conflict of Interest Declaration

1. The tenderer shall declare whether it has any conflict of interest in the transaction for which the tender is submitted. **(Please mark with X)**

YES		NO	
-----	--	----	--

1.1 If yes, the tenderer is required to set out the particulars in the table below:

2. The tenderer shall declare whether it has directly or through a representative or intermediary promised, offered or granted:

2.1 Any inducement or reward to the CCT for or in connection with the award of this contract; or

2.2 Any reward, gift, favour or hospitality to any official or any other role player involved in the implementation of the supply chain management policy. **(Please mark with X)**

YES		NO	
-----	--	----	--

If yes, the tenderer is required to set out the particulars in the table below:

Should the tenderer be aware of any corrupt or fraudulent transactions relating to the procurement process of the CCT, please contact the following:

The CCT's anti-corruption hotline at 0800 32 31 30 (toll free)

The tenderer hereby certifies that the information set out in this schedule and/or attached hereto is true and correct, and acknowledges that failure to properly and truthfully complete this schedule may result in steps being taken against the tenderer, the tender being disqualified, and/or (in the event that the tenderer is successful) the cancellation of the contract, restriction of the tenderer or the exercise by the CCT of any other remedies available to it.

 Signature
 Print name:
 On behalf of the tenderer (duly authorised)

 Date

Schedule F.7: Declaration of Tenderer's Past Supply Chain Management Practices (MBD 8)

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

- 1 The tender offer of any tenderer may be rejected if that tenderer or any of its directors/members have:
- abused the municipality's / municipal entity's supply chain management system or committed any fraudulent conduct in relation to such system;
 - been convicted for fraud or corruption during the past five years;
 - willfully neglected, reneged on or failed to comply with any government, municipal or other public sector contract during the past five years; or
 - been listed in the Register for Tender Defaulters in terms of section 29 of the Prevention and Combating of Corrupt Activities Act (No 12 of 2004) or Database of Restricted Suppliers.
- 2 In order to give effect to the above, the following questionnaire must be completed and submitted with the bid.

Item	Question	Yes	No
2.1	<p>Is the tenderer or any of its directors/members listed on the National Treasury's Database of Restricted Suppliers as companies or persons prohibited from doing business with the public sector?</p> <p>(Companies or persons who are listed on this Database were informed in writing of this restriction by the Accounting Officer/Authority of the institution that imposed the restriction after the <i>audi alteram partem</i> rule was applied).</p> <p>The Database of Restricted Suppliers now resides on the National Treasury's website (www.treasury.gov.za) and can be accessed by clicking on its link at the bottom of the home page.</p>	Yes <input type="checkbox"/>	No <input type="checkbox"/>
2.1.1	If so, furnish particulars:		
2.2	<p>Is the tenderer or any of its directors/members listed on the Register for Tender Defaulters in terms of section 29 of the Prevention and Combating of Corrupt Activities Act (No 12 of 2004) or Database of Restricted Suppliers?</p> <p>The Register for Tender Defaulters can be accessed on the National Treasury's website (www.treasury.gov.za) by clicking on its link at the bottom of the home page.</p>	Yes <input type="checkbox"/>	No <input type="checkbox"/>
2.2.1	If so, furnish particulars:		
2.3	<p>Was the tenderer or any of its directors/members convicted by a court of law (including a court of law outside the Republic of South Africa) for fraud or corruption during the past five years?</p>	Yes <input type="checkbox"/>	No <input type="checkbox"/>
2.3.1	If so, furnish particulars:		
Item	Question	Yes	No

2.4	Does the tenderer or any of its directors owe any municipal rates and taxes or municipal charges to the municipality / municipal entity, or to any other municipality / municipal entity, that is in arrears for more than three months?	Yes <input type="checkbox"/>	No <input type="checkbox"/>
2.4.1	If so, furnish particulars:		
2.5	Was any contract between the tenderer and the municipality / municipal entity or any other organ of state terminated during the past five years on account of failure to perform on or comply with the contract?	Yes <input type="checkbox"/>	No <input type="checkbox"/>
2.5.1	If so, furnish particulars:		

The tenderer hereby certifies that the information set out in this schedule and/or attached hereto is true and correct, and acknowledges that failure to properly and truthfully complete this schedule may result in steps being taken against the tenderer, the tender being disqualified, and/or (in the event that the tenderer is successful) the cancellation of the contract,, restriction of the tenderer or the exercise by the CCT of any other remedies available to it.

 Signature
 Print name:
 On behalf of the tenderer (duly authorised)

 Date

Schedule F.8: Authorisation for the Deduction of Outstanding Amounts Owed to the CCT

To: THE CITY MANAGER, City of Cape Town

From: _____
(Name of tenderer)

RE: AUTHORISATION FOR THE DEDUCTION OF OUTSTANDING AMOUNTS OWED TO THE CCT

The tenderer:

- a) hereby acknowledges that according to SCM Regulation 38(1)(d)(i) the City Manager may reject the tender of the tenderer if any municipal rates and taxes or municipal service charges owed by the tenderer (or any of its directors/members/partners) to the CCT, or to any other municipality or municipal entity, are in arrears for more than 3 (three) months; and
- b) therefore hereby agrees and authorises the CCT to deduct the full amount outstanding by the Tenderer or any of its directors/members/partners from any payment due to the tenderer; and
- c) confirms the information as set out in the tables below for the purpose of giving effect to b) above;

Physical Business address(es) of the tenderer	Municipal Account number(s)	Inside the CCT municipal boundary (Yes/No)

If there is not enough space for all the names, please attach the information to **List of other documents attached by tenderer** schedule in the same format:

Name of Director / Member / Partner	Identity Number	Physical residential address of Director / Member / Partner	Municipal Account number(s)	Inside the CCT municipal boundary (Yes/No)

The tenderer hereby certifies that the information set out in this schedule and/or attached hereto is true and correct, and acknowledges that failure to properly and truthfully complete this schedule may result in steps being taken against the tenderer, the tender being disqualified, and/or (in the event that the tenderer is successful) the cancellation of the contract, restriction of the tenderer or the exercise by the CCT of any other remedies available to it.

Signature
Print name:
On behalf of the tenderer (duly authorised)

Date

Schedule F.9: Certificate of Independent Tender Determination

I, the undersigned, in submitting this tender number **025G.2024/25** and tender description: “**SUPPLY, INSTALL, CONNECT & COMMISSION ADVANCED WATER METERING INFRASTRUCTURE IN VARIOUS AREAS ACROSS THE CITY OF CAPE TOWN**” in response to the tender invitation made by THE CCT, do hereby make the following statements, which I certify to be true and complete in every respect:

I certify, on behalf of: _____ (Name of tenderer)
that:

1. I have read and I understand the contents of this Certificate;
2. I understand that this tender will be disqualified if this Certificate is found not to be true and complete in every respect;
3. I am authorised by the tenderer to sign this Certificate, and to submit this tender, on behalf of the tenderer;
4. Each person whose signature appears on this tender has been authorised by the tenderer to determine the terms of, and to sign, the tender on behalf of the tenderer;
5. For the purposes of this Certificate and this tender, I understand that the word ‘competitor’ shall include any individual or organisation other than the tenderer, whether or not affiliated with the tenderer, who:
 - (a) has been requested to submit a tender in response to this tender invitation;
 - (b) could potentially submit a tender in response to this tender invitation, based on their qualifications, abilities or experience; and
 - (c) provides the same goods and services as the tenderer and/or is in the same line of business as the tenderer.
6. The tenderer has arrived at this tender independently from and without consultation, communication, agreement or arrangement with any competitor. However, communication between partners in a joint venture or consortium¹ will not be construed as collusive price quoting.
7. In particular, without limiting the generality of paragraphs 5 and 6 above, there has been no consultation, communication, agreement or arrangement with any competitor regarding:
 - (a) prices;
 - (b) geographical area where product or service will be rendered (market allocation);
 - (c) methods, factors or formulas used to calculate prices;
 - (d) the intention or decision to submit or not to submit a tender;
 - (e) the submission of a tender which does not meet the specifications and conditions of the tender; or
 - (f) tendering with the intention not to win the contract.
8. In addition, there have been no consultations, communications, agreements or arrangements with any competitor regarding the quality, quantity, specifications and conditions or delivery particulars of the products or services to which this tender invitation relates.
9. The terms of this tender have not been and will not be disclosed by the tenderer, directly or indirectly, to any competitor, prior to the date and time of the official tender opening or of the awarding of the contract.
10. I am aware that, in addition and without prejudice to any other remedy provided to combat any restrictive practices related to tenders and contracts, tenders that are suspicious will be reported to the Competition Commission for investigation and possible imposition of administrative penalties in terms of section 59 of the Competition Act, Act 89 of 1998, and/o/r may be reported to the National Prosecuting Authority (NPA) for criminal investigation, and/or may be restricted from conducting business with the public sector for a period not exceeding 10 (ten) years in terms of the Prevention and Combating of Corrupt Activities Act, Act 12 of 2004, or any other applicable legislation.

Signature
Print name:

Date

On behalf of the tenderer (duly authorised)

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

Schedule F.11: List of Other Documents Attached by Tenderer

The tenderer has attached to this schedule, the following additional documentation:		
	Date of Document	Title of Document or Description (refer to clauses / schedules of this tender document where applicable)
1.		
2.		
3.		
4.		
5.		
6.		
7.		
8.		
9.		
10.		
11.		
12.		
13.		
14.		
15.		
16.		
17.		

Attach additional pages if more space is required.

Signature
Print name:
On behalf of the tenderer (duly authorised)

Date

Schedule F.12: Record of Addenda to Tender Documents

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

	Date	Title or Details
1.		
2.		
3.		
4.		
5.		
6.		
7.		
8.		
9.		
10.		

Attach additional pages if more space is required.

 Signature
 Print name:
 On behalf of the tenderer (duly authorised)

 Date

Schedule F.13: Information to Be Provided with the Tender

Contents

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 Signature
 Print name:
 On behalf of the tenderer (duly authorised)

 Date

Schedule F.13 (1) RETURNABLE SCHEDULES

Schedule F.13 (1) PART A: TRACK RECORD OF COMPANY

To be considered for an appointment in terms of this tender, Tenderers are to be guided by clause 2.2.1.1.5 (Minimum score for functionality) when filling out this section. Each Project to have their own filled in table. Projects worked on by key personnel while not in the employment of the Tenderer may be listed here.

Project Submission
 (Example: 1 of 5)

_____ of _____

Reference to Functionality Table:	
Name of Project:	
Client Name:	
Appointed Company Name:	
Value of Works: <i>(Currency to be Stated)</i>	
Completion Date: <i>(YYYY-MM)</i>	
Reference Document Provided: Report <i>(Close-Out-Performance)</i> , Questionnaire/ Reference Letter/ Other <i>(Please specify)</i>	

Additional Information (Optional)			

Brief Scope of Works:
(include quantity of AMI meter installations/cloud services deployments and duration of project rollout - if applicable)

Performance Assessment and Customer Satisfaction

As specified in clause 2.2.1.1.5 (Minimum score for functionality) tenderers are to provide a summary on - Meter reading accuracy - Operational reliability / metering faults. - Information recovery system / backup/ failure recovery system - Total running time of system. - Customer satisfaction evaluation results.

Tenderers are to state where these can be verified by specify clause/page numbers within the supporting documents provided by the tender (close out report, reference questionnaire, etc.)

Virtual Private Cloud Service Provider Only (Provide details of the uptime or the historic availability of the environment in production over a period of 1 year)

Schedule F.13 (1) PART B: FUNCTIONALITY TABLES FOR KEY PERSONNEL

Tenderers are to be guided by clause 2.2.1.1.5 (Minimum score for functionality): “Expertise of key personnel” when filling this table. This must include for key personnel in all parties to the tender. Indicate which party the person forms part of under Name/Company field. The Curriculum Vitae of key individuals in each role must be appended to this schedule.

Schedules to be completed per project, per key personnel.

Programme Manager/Programme Director:								
NAME:		JOB TITLE:		QUALIFICATIONS:			NO. OF YEARS SPECIFIED EXPERIENCE:	
<u>Project Name:</u>				Project Submission (Example: 1 of 5) _____ of _____				
<u>Duration of Key Personnel Role- Start and End date:</u>								
<u>Description of Works:</u>								
<u>Project Type:</u> (Tick all applicable)	Mechanical Meter Deployment	Smart Meter Deployment	<i>Integrating</i> Comms Network Deployment	<i>Integrating</i> Cyber Security Implem.	<i>Integrating</i> HES Implem.	<i>Integrating</i> MDMS Implem.	<i>Integrating</i> VPC Implem.	Other (Specify)
<u>Specific Project activities that person was involved in:</u> (Tick all applicable)	Project/ Contract Management	Cost Management	Strategy and Planning	Operations and Maintenance	<i>Integrating</i> HES Implem.	<i>Integrating</i> MDMS Implem.	<i>Integrating</i> VPC Implem.	Other (Specify)
<u>Substantiating Documents included:</u>								

IT Specialist:								
NAME:		JOB TITLE:		QUALIFICATIONS:			NO. OF YEARS SPECIFIED EXPERIENCE:	
Project Name:				Project Submission (Example: 1 of 5) _____ of _____				
Duration of Key Personnel Role- Start and End date:								
Description of Works:								
<u>Project Type:</u> (Tick all applicable)	Mechanical Meter Deployment	Smart Meter Deployment	<i>Integrating</i> Comms Network Deployment	<i>Integrating</i> Cyber Security Implem.	<i>Integrating</i> HES Implem.	<i>Integrating</i> MDMS Implem.	<i>Integrating</i> VPC Implem.	Other (Specify)
<u>Specific Project activities that person was involved in:</u> (Please Specify)								
<u>Substantiating Documents included:</u>								

Network Communications Engineer:								
NAME:		JOB TITLE:		QUALIFICATIONS:		NO. OF YEARS SPECIFIED EXPERIENCE:		
Project Name:				Project Submission (Example: 1 of 5) _____ of _____				
Duration of Key Personnel Role- Start and End date:								
Description of Works:								
<u>Project Type:</u> (Tick all applicable)	Mechanical Meter Deployment	Smart Meter Deployment	<i>Integrating</i> Comms Network Deployment	<i>Integrating</i> Cyber Security Implem.	<i>Integrating</i> HES Implem.	<i>Integrating</i> MDMS Implem.	<i>Integrating</i> VPC Implem.	Other (Specify)
<u>Specific Project activities that person was involved in:</u> (Please Specify)								
<u>Substantiating Documents included:</u>								

Schedule F.13 (1) PART C: PROJECT CLOSE OUT REPORTS / PERFORMANCE REPORTS / REFERENCE LETTERS / OTHER EVIDENCE TO SUPPORT THE FUNCTIONALITY TABLE FOR COMPANY TRACK RECORD

Company Track Record supporting documentation to be inserted here.

<u>Reference to Functionality Table:</u>	
<u>Document Name:</u>	

Schedule F.13 (1) PART D: CVS / QUALIFICATIONS / OTHER EVIDENCE TO SUPPORT THE FUNCTIONALITY TABLE FOR KEY PERSONNEL

Key personnel supporting documentation to be provided here.

<u>Reference to Functionality Table:</u>	
<u>Document Name:</u>	

Schedule F.13 (1) PART E: CERTIFICATION FOR COMPLIANCE WITH COMPULSORY NATIONAL STANDARDS

Compulsory National Standards Certification documentation to be provided here.

Schedule F.13 (1) PART F: SCHEDULE OF TYPE TESTS COMPLETED

Schedule of Type Tests documentation to be provided here.

Schedule F.13 (1) PART G: QUALITY MANAGEMENT PLAN

Quality Management Plan to be provided here.

Schedule F.13 (2) TECHNICAL CHECKLIST

Section 2 (Technical Checklist):

Item	Title	Description	Technical Specification Reference
1	Letter of Support by the Communications Network Provider	Letter from mobile network provider that bidder has an APN and this can be created in CCTs name. This letter also confirms the support of the mobile network provider for this bid.	Sections 3.1, 6.2
2	SABS Approval	Proof of SABS approval for meter boxes, specified fittings and components.	Sections 4.1, 4.2, 7.3
3	Smart Static (Solid-State) Meters	Technical Datasheets in compliance with Technical Specifications, indicating photos, technical drawings, performance schedules and applicable descriptions. Markings on devices to be compliant with SANS 1529-1 and SANS 1529-4, provided through clear photographs.	Sections 3.6, 4.2
	Typical Sizes		
3.1	15mm	Where 1 x datasheet summarizes multiple meter sizes, all applicable boxes to be completed accordingly per submitted datasheet. Do not duplicate datasheet submissions.	Sections 3.6, 4.2
3.2	20mm		
3.3	25mm		
3.4	40mm		
3.5	50mm		
3.6	80mm		
3.7	100mm		
3.8	150mm		
3.9	200mm		
3.10	250mm		
4	Meter Interface Units (MIU)	Technical Datasheets in compliance with Technical Specifications, indicating photos, technical drawings, performance schedules and applicable descriptions.	Sections 3.1, 4.2
	Typical Sizes		
4.1	40mm	Where 1 x datasheet summarizes multiple meter sizes, all applicable boxes to be completed accordingly per submitted datasheet. Do not duplicate datasheet submissions.	Sections 3.1, 4.2
4.2	50mm		
4.4	80mm		
4.5	100mm		
4.6	150mm		
4.7	200mm		
4.8	250mm		
5	Smart Remote Flow Controls	Technical Datasheets in compliance with Technical Specifications, indicating photos, technical drawings, performance schedules and applicable descriptions.	Section 3.1
	Typical Sizes		

Item	Title	Description	Technical Specification Reference																		
5.1	15mm	Where 1 x datasheet summarizes multiple meter sizes, all applicable boxes to be completed accordingly per submitted datasheet. Do not duplicate datasheet submissions.	Section 3.1																		
5.2	20mm																				
5.3	25mm																				
6	Electromagnetic/ultrasonic flow measurement	The Smart Static (Solid-State) Meters has capability to measure electromagnetic/ultrasonic flow measurement	Sections 3.1, 4.1, 5.2, 6.1, 7.2, SANS 1200A Clause 8.4.2																		
7	Ambient temperature and water measurements	The Smart Static (Solid-State) Meters is able to measure ambient and water temperatures	Sections 3.1, 4.1, 5.2, 6.1, 7.2, SANS 1200A Clause 8.4.2																		
8	Leak detection	The Smart Static (Solid-State) Meters is able to detect leakages	Sections 3.1, 4.2, 5.2, 7.2																		
9	Waterproof	The Smart Static (Solid-State) Meters is a level of IP68 rating of waterproof	Section 4.2																		
10	Network Accessible Programmatic Interface – API	<p>Technical specification / architectural diagrams that indicate the presence of network accessible API for all data and functionalities</p> <p>Technical specification confirming the API standards to which it will conform.</p> <p>Examples of API guides, or tutorials, or examples and use cases from previous work / projects.</p> <p>Provision in Scope of Work for API guides, or tutorials, or examples and use cases.</p> <table border="1"> <thead> <tr> <th>Protocol/Standard</th> <th>Protocol</th> <th>Serialization/Data Format</th> </tr> </thead> <tbody> <tr> <td>File Transfer</td> <td>FTP (RFC 959) SFTP (RFC 4253)</td> <td>OpenDocument (ODT)</td> </tr> <tr> <td>Database connections</td> <td>ODBC protocol JDBC protocol</td> <td></td> </tr> <tr> <td>email</td> <td>POP3 (RFC 1939) IMAP (RFC 3501) SMTP (RFC 2821)</td> <td></td> </tr> <tr> <td>REST - SOAP - GraphQL - (October 2021)</td> <td>HTTP (RFC 2616) HTTP2 (RFC 7540) WebSockets (RFC 6455) OAuth (RFC 6750)</td> <td>JSON (RFC 4627) XML (RFC 3023) YAML (RFC 7826) Version 1.2</td> </tr> <tr> <td>Message Queue Protocol</td> <td>AMQP (RFC 6375) MQTT (RFC 6346) STOMP (RFC 6614) RabbitMQ (RFC 6375)</td> <td></td> </tr> </tbody> </table> <p>Table 1 - Open Standards</p>	Protocol/Standard	Protocol	Serialization/Data Format	File Transfer	FTP (RFC 959) SFTP (RFC 4253)	OpenDocument (ODT)	Database connections	ODBC protocol JDBC protocol		email	POP3 (RFC 1939) IMAP (RFC 3501) SMTP (RFC 2821)		REST - SOAP - GraphQL - (October 2021)	HTTP (RFC 2616) HTTP2 (RFC 7540) WebSockets (RFC 6455) OAuth (RFC 6750)	JSON (RFC 4627) XML (RFC 3023) YAML (RFC 7826) Version 1.2	Message Queue Protocol	AMQP (RFC 6375) MQTT (RFC 6346) STOMP (RFC 6614) RabbitMQ (RFC 6375)		Sections 3.1, 3.8, 5.2, 6.6, 7.2
Protocol/Standard	Protocol	Serialization/Data Format																			
File Transfer	FTP (RFC 959) SFTP (RFC 4253)	OpenDocument (ODT)																			
Database connections	ODBC protocol JDBC protocol																				
email	POP3 (RFC 1939) IMAP (RFC 3501) SMTP (RFC 2821)																				
REST - SOAP - GraphQL - (October 2021)	HTTP (RFC 2616) HTTP2 (RFC 7540) WebSockets (RFC 6455) OAuth (RFC 6750)	JSON (RFC 4627) XML (RFC 3023) YAML (RFC 7826) Version 1.2																			
Message Queue Protocol	AMQP (RFC 6375) MQTT (RFC 6346) STOMP (RFC 6614) RabbitMQ (RFC 6375)																				
11	Service Provider Experience for Integration of a HES into a MDMS	Provide a Technical description for system designed to manage, process, and analyse vast amounts of data collected from smart meters.	Sections 3.1, 3.8, 5.2, 6.6, 7.2																		
12	Integration of a MDMS into a utilities billing and asset systems Service Provider (SAP) or similar	Provide a Technical description for system designed to manage, process, and analyse vast amounts of data collected from smart meters.	Sections 3.1, 3.3, 3.4, 3.5, 3.8, 5.1, 5.2, 6.6, 7.2, 7.3																		
13	Programme / Schedule	Provide a detailed Programme/Schedule based on experience in similar projects,	Sections 3.1 – 3.14																		

Item	Title	Description	Technical Specification Reference
		demonstrating a full understanding of the project brief according to the Technical Specifications. The Programme/Schedule should use a reputable project management software (e.g., Microsoft Project) to define phases, tasks, milestones, resource allocation, and critical path with logical linkages, including both a digital file and a printed Gantt chart. It should reflect five or more process levels, indicate reasonable milestones and durations with logical dependencies, and relate all activities to key AMI requirements, showing interdependencies and linkages between them. The schedule should include a Project Startup/Mobilisation Phase that covers deployment plan preparation and procurement of meters, and reflect geographical sequencing and prioritisation of areas in alignment with the Technical Specifications.	Section 9
14	Technical Approach Methodology Write Up	Service providers should submit a detailed Approach & Methodology Statement based on experience in similar projects. This document, not exceeding 40 pages, must clearly indicate understanding of the project brief and define the approach and methodology to achieve the required outcomes as per the Technical Specifications. The statement should articulate a strategy for scalability, outline a logical step-by-step process for HES and MDMS setup and deployment, and demonstrate comprehensive planning for compatibility and integration with existing systems. It must also describe detailed data validation processes, provide a plan for continuous operational support, and present a strategy for selecting a cloud service provider with extensive experience, local data centre presence, industry certifications, and innovation in cloud solutions. Additionally, it should include a plan for establishing a VPC, covering scalability, data analytics, IoT integration, and compliance with security regulations.	Sections 3.1 – 3.14, 4, 5
15	Skills Transfer Plan	Evidence of past training materials developed and trained, to support operational water utility staff in the inspection, replacement, maintenance, and operation of AMI infrastructure. This should include	Sections 3.4,3.5

Item	Title	Description	Technical Specification Reference
		<p>Technical/Engineering water utility staff, who should be equipped with extraction, analysis, and reporting skills from AMI IT interfaces. Lastly, support to IT staff should involve training on maintenance and operation of IT infrastructure related to AMI technologies.</p>	
16	Project Organogram	<p>Tenders are to provide a project organization chart, which is a visual reference of the proposed team's structure – including all participants required to fulfil the <u>AMI requirements</u>*. This chart shall demonstrate the variety of relationships, including reporting and supervision hierarchies, as well as interactions and responsibilities expected of various roles in the project framework. The number of members per role, are to be indicated for clarity on the size of the team proposed.</p> <ul style="list-style-type: none"> • HES & MDMS • Meter Data Validations, Operations, and maintenance • Virtual Private Cloud Service • Cyber Security • Communications Network • Digital Quality and Exception Management • Field services and management • Skills Transfer <p>Brief Summary of Each Role per AMI Section</p> <ul style="list-style-type: none"> • Role • Role Description • Number of Assigned Individuals • Validation of Competency (Qualifications/Trade Certificates/Work Experience/etc.) 	Sections 3.1 – 3.14
17	Communication Approach and Plan	<p>Provide an in-depth explanation of the chosen communication option and its rationale, detailing how this solution will ensure that key primary KPIs are achieved and applied. Include a comprehensive technical methodology and implementation plan, outlining the step-by-step deployment process such as network setup, device installation, data validation, and user acceptance</p>	Section 6

Item	Title	Description	Technical Specification Reference
		testing. Highlight strategic considerations including compatibility with existing systems, scalability, and security measures. Clearly delineate timelines, responsibilities, and roles throughout the implementation phase. Additionally, outline geographical prioritization for meter deployment with a detailed analysis aligned to the Deployment Strategy provided in the annexure of this tender document. Ensure that coverage maps are included to demonstrate the communication solution's effectiveness and reach, supporting the deployment strategy.	
18	Cyber Security Approach, Methodology and Plan	Service providers should submit a comprehensive Cyber Security Approach, Methodology, and Plan as part of the tender. This plan should include conducting risk assessments, explaining their security policies, and compliance with industry standards. It must detail network and endpoint security measures, data encryption, access controls, and continuous monitoring and auditing. Additionally, the plan should outline an implementation timeline, incident response strategy, training programs, and robust backup and recovery plans.	Section 5
19	Letter of support from the smart meter and meter enclosure OEM	As part of the tender submission, service providers should include a Letter of Support from the smart meter Original Equipment Manufacturer (OEM). This letter should confirm the OEM's partnership with the service provider, ensuring product compatibility with the proposed HES and MDMS, and guarantee ongoing technical support and warranty services to meet the project's technical specifications and ensure long-term reliability and performance.	Section 4
20	Field Services and Digital Quality Assurance Approach, Methodology and Plan	Service Providers should provide an approach and methodology statement which outlines a micro-level, step-by-step process for meter	Section 7

Item	Title	Description	Technical Specification Reference
		<p>installation and replacement, including work order management and necessary site audits.</p> <p>Additionally, the statement should outline comprehensive strategies for ensuring installation Quality, including surface reinstatement, workmanship for the range of meter sizes and adherence to quality control standards.</p>	
21	Leak Detection Approach and Methodology	<p>Service providers are required to detail their approach and methodology for how the leak detection functionality and process HES and MDMS will be provided. The methodology should include real-time processing capabilities, advanced algorithms for detecting continuous water flow indicative of leaks, burst alerts from the meter and configurable rules and thresholds to differentiate between high usage and actual leaks. The process to validate the leak, visualize it on a dashboard and notify CCT must be explained.</p>	Section 3.1

Schedule F.13 (2) Technical Checklist Returnable

Technical Returnable to be provided here.

<p><u>Document Name:</u></p>	<p>Technical Returnable Item (Example: 1 of 21)</p> <hr/> <p style="text-align: right;">of 21</p>
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Schedule F.14: Appeal Application

annexure 'B'

OFFICIAL RECEIPT
(Valid only if printed
by official cash
receiving machine)

IRISITI ESESIKWENI
(Isemthethweni kuphela
xa ishicilelwe
ngumatshini wokukhupa
irisiti osesikweni.)

AMPTELIKE KWITANSIE
(Geldig alleenlik indien deur
amptelike kontantvangs
masjien gedruk.)

GL DATA CAPTURE RECEIPT
(CASHIER TO RETAIN A COPY)

RECEIPT NO: _____

DATE: _____

SAP GL:

8	1	0	1	0	0
---	---	---	---	---	---

PROFIT CENTRE:

1	3	0	5	0	0	0	1
---	---	---	---	---	---	---	---

NAME/COMPANY NAME:

AMOUNT:

						R	3	0	0	-	0	0
--	--	--	--	--	--	---	---	---	---	---	---	---

SERVICE DEPARTMENT DETAILS-

DEPARTMENT: LEGAL SERVICES: APPEALS UNIT

CONTACT PERSON: CHARLENE CEBEKHULU / MELANIE CLOETE

PHONE NO: 021 400 2503 / 021 400 3788

OFFICIAL RECEIPT
(Valid only if printed
by official cash
receiving machine)

IRISITI ESESIKWENI
(Isemthethweni kuphela
xa ishicilelwe
ngumatshini wokukhupa
irisiti osesikweni.)

AMPTELIKE KWITANSIE
(Geldig alleenlik indien deur
amptelike kontantvangs
masjien gedruk.)

GL DATA CAPTURE RECEIPT
(CASHIER TO RETAIN A COPY)

RECEIPT NO: _____

DATE: _____

SAP GL:

8	1	0	1	0	0
---	---	---	---	---	---

PROFIT CENTRE:

1	3	0	5	0	0	0	1
---	---	---	---	---	---	---	---

NAME/COMPANY NAME:

AMOUNT:

						R	3	0	0	-	0	0
--	--	--	--	--	--	---	---	---	---	---	---	---

SERVICE DEPARTMENT DETAILS-

DEPARTMENT: LEGAL SERVICES: APPEALS UNIT

CONTACT PERSON: CHARLENE CEBEKHULU / MELANIE CLOETE

PHONE NO: 021 400 2503 / 021 400 3788

CIVIC CENTRE IZIKO LOLUNTU BURGERSENTRUM
12 HERTZOG BOULEVARD CAPE TOWN 8001 P.O BOX 298 CAPE TOWN 8000
www.capetown.gov.za

Making progress possible. Together.

Annexure G – Environmental Management Returnable Documents

Environmental Management Returnable Documents Checklist:

Item	Title	Description
G1	Environmental Management Method Statement	Typical Method Statement template provided for project reference
G2	Environmental Management Site Inspection Checklist	Typical Site Checklist template provided for project reference
G3	Tender Environmental Management Plan Required	In accordance with the Technical Specifications, and Environmental Management Specification, a Tender Environmental Management Plan is required detailing the understanding of the works to be undertaken, outlining the environmental measures to be implemented.
G4	Additional Issues deemed to form part of the Environmental Management Programme	Issues outlined for reference

Schedule G.1: Environmental Management Method Statement

CONTRACT:.....

DATE:.....

PROPOSED ACTIVITY (give title of method statement and reference number from the EMP):

WHAT WORK IS TO BE UNDERTAKEN (give a brief description of the works - attach extra information to ensure accurate description given):

WHERE THE WORKS ARE TO BE UNDERTAKEN (where possible, provide an annotated plan and a full description of the extent of the works):

START AND END DATE OF THE WORKS FOR WHICH THE METHOD STATEMENT IS REQUIRED:

Start Date:

End Date:

HOW THE WORKS ARE TO BE UNDERTAKEN (provide as much detail as possible, including annotated sketches and plans where possible):



Note: please give too much information rather than too little. Please ensure that issues such as emergency procedures, hydrocarbon management, wastewater management, access, individual responsibilities, materials, plant used, maintenance of plant, protection of natural features, etc. are covered where relevant

DECLARATIONS

1) EMPLOYER’S AGENT’S REPRESENTATIVE/ENVIRONMENTAL OFFICER/ENVIRONMENTAL CONTROL OFFICER

The work described in this Method Statement, if carried out according to the methodology described, appears to be satisfactorily mitigated to prevent avoidable environmental harm:

(signed)

(print name)

Dated: _____

2) CONTRACTOR

I understand the contents of this Method Statement and the scope of the works required of me. I further understand that this Method Statement may be amended on application to other signatories and that the Employer’s Agent’s Representative/Environmental Officer/Environmental Control Officer will audit my compliance with the contents of this Method Statement. I understand that this method statement does not absolve me from any of my obligations or responsibilities in terms of the Contract.

(signed)

(print name)

Dated: _____

3) EMPLOYER’S AGENT

The works described in this Method Statement are approved.

(signed)

(print name)

(designation)

Dated: _____

Schedule G.2: Environmental Site Inspection Checklist

To be submitted to the Employer's Agent once a week

CONTRACT:.....

DATE:.....

ENVIRONMENTAL ASPECT	YES/ NO (✓ or X)	COMMENTS
<ul style="list-style-type: none"> All new personnel on Site are aware of the contents of the EMP and have been through the environmental awareness course. 		
<ul style="list-style-type: none"> Contractor's camp is neat and tidy and the labourers' facilities are of an acceptable standard. 		
<ul style="list-style-type: none"> Sufficient and appropriate firefighting equipment is visible and readily available in the appropriate places. 		
<ul style="list-style-type: none"> Waste control and removal system is being maintained. 		
<ul style="list-style-type: none"> Fences are being maintained. 		
<ul style="list-style-type: none"> Drip trays are being utilised where there is a risk of spillage. 		
<ul style="list-style-type: none"> Bunded areas/drip trays are being emptied on a regular basis (especially after rain). 		
<ul style="list-style-type: none"> No leaks are visible from vehicles. 		
<ul style="list-style-type: none"> Refuelling of vehicles and plant occurs within designated areas, and appropriate refuelling apparatus and drip trays are being used. 		
<ul style="list-style-type: none"> "No go" areas, natural features, vegetation, etc. have not been damaged. 		
<ul style="list-style-type: none"> Dust control measures (if necessary) are in place and are effectively controlling dust. 		
<ul style="list-style-type: none"> Noise control measures (if necessary) are in place and are working effectively. 		
<ul style="list-style-type: none"> Erosion and sedimentation control measures (if necessary) are in place and are controlling effectively. 		
<ul style="list-style-type: none"> Material stockpiles are located within the boundary of the Site and are protected from erosion. 		
<ul style="list-style-type: none"> Other 		

Completed by:.....

Signed:.....

Schedule G.3: Tender Environmental Management Plan

Tender Environmental Management Plan to be provided here.

Schedule G.4: Additional Issues deemed to form part of the Environmental Management Programme

Listed below are issues pertaining to the environment that form part of the Contract Document. The clause references relate to the **General Conditions of Contract for Construction Works, Third Edition, 2015 (GCC 2015)**. They are listed here to emphasise that they form part of the environmental considerations and requirements for this project. They must be read together with any Contract Specific Data referring thereto in Part C1.2 Contract Data. The comments made below on the various issues are to be taken as explanatory, in so far as environmental matters are concerned, and do not modify the clauses in any way.

1. Monitoring

Clause 3.1.1 makes provision for the Employer's Agent to administer the Contract in accordance with the provisions of the Contract, including the monitoring of any environmental variables.

2. Health and safety

Clauses 3.1.4, 4.3.1, 4.3.2 and 4.10.1 remind the Contractor of his obligations in terms of the Occupational Health and Safety Act (No. 85 of 1993) and Construction Regulations 2003.

Clause 5.7 of SANS 1200A reinforces these requirements through the observation of proper and adequate safety arrangements.

3. Employer's Agent's authority to delegate

Clause 3.2.4 gives the Employer's Agent the authority to appoint a representative to act as the Environmental Officer (EO) for the Contract. The EO, who shall be responsible for monitoring compliance with the EMP, may be the Employer's Agent's Representative or any other person accountable to the Employer's Agent.

4. Employer's Agent's instructions

Clause 4.2.1 requires that the Contractor comply with the Employer's Agent's instructions on any matter relating to the Works. Moreover, Clause 4.2.2 ensures that the Contractor only takes instructions from the Employer's Agent, the Employer's Agent's Representative or a person authorised by the Employer's Agent in terms of Clause 3.2.4.

5. Compliance with applicable laws

Clause 4.3.1 requires that the Contractor comply with all applicable laws, regulations, etc. in fulfilling the Contract.

6. Protection of fossils, etc.

Clause 4.7.1 requires the Contractor to take reasonable precautions to prevent any person from damaging, *inter alia* anything of geological or archaeological interest, and requires that he inform the Employer's Agent and follows any instructions issued in this regard.

7. Housing, food and transport

Clause 4.10.1 requires the Contractor to make his own arrangements for payment, housing, feeding and transport for his employees, provided that if he uses any part of the Site for such purposes he shall obtain the Employer's Agent's prior approval.

Clause 4.2 of SANS 1200A further requires that facilities provided comply with local authority regulations and are maintained in a clean and sanitary condition.

8. Competent employees

Clause 4.11.1 requires that all persons employed on Site are careful, competent, and efficient. These attributes embrace knowledge of the environmental matters and issues dealt with in the EMP.

9. Removal from Site

Clause 4.11.2 makes provision for the Employer's Agent to instruct the removal from the Works and Site of any person who is guilty of misconduct, or is incompetent or negligent, or is an undesirable presence on Site.

Clause 7.1.1 requires that all Construction Equipment be in good working order. Accordingly, the Employer's Agent may order that any Construction Equipment not complying with the environmental specifications be removed from Site.

10. Unacceptable documentation

Clauses 5.3.1 and 5.3.2 require the Contractor to provide documentation required before commencement with Works execution, failing which the Employer may terminate the Contract. Such documentation includes the Protection of the Environment Declaration provided for in the Contract Document.

11. Programme and Method Statements

Clause 5.6.1 makes provision for the Employer's Agent to request the programmes for carrying out the Works.

Clause 5.6.2 makes provision for the Employer's Agent to request statements from the Contractor for the entire scope of the work. In the case of the environmental specifications, these would be submitted as Method Statements.

12. Hours of operation

Clause 5.8.1 restricts the Contractors hours of operation to between sunrise and sunset on working days (usually from Monday to Saturday), unless, *inter alia*, permitted by the Employer's Agent in writing.

Clause 5.7.2 further requires that in the event that permission is granted for night work, then such work shall be carried out without excessive noise and disturbance.

13. Suspension of Works

Clause 5.11.1 enables the Employer's Agent to suspend the progress of the Works or any part thereof, which may be as a result of some default or breach of the Contract on the part of the Contractor.

14. Site clean-up

Clause 5.15.1 requires that, on completion of the Works, the Contractor shall clear away and remove from the Site all Construction Equipment, surplus materials, rubbish and Temporary Works of every kind and leave the whole of the Site and Works clean and in a safe condition. All streams and watercourses shall be restored to the condition as at the commencement of the Works. Should the Contractor fail to do the work upon notice from the Employer's Agent, the Employer may in terms of Clause 7.8.3, employ others to carry out the work and recover the cost of doing so from the Contractor.

15. Access to the Works

Clause 7.3.1 makes provision for the Employer's Agent to authorise the Environmental Officer (EO) to have access to the Works and Site.

16. Pollution prevention and interferences

Clause 8.1.2 requires that all operations necessary for the execution of the Works be carried out so as not to cause unnecessary noise or pollution, or to interfere unnecessarily or improperly with public services, or the access to, use and occupation of public or private roads and footpaths or properties.

Clause 5.6 of SANS 1200A further requires the Contractor to minimise dust nuisance and pollution of streams and inconvenience to or interference with the public.

17. Dust

Clause 8.1.2 requires that all operations necessary for the execution of the Works be carried out so as not to cause unnecessary pollution.

Clause 5.6 of SANS 1200A requires that the Contractor take all reasonable measures to minimise any dust nuisance.

18. Noise

Clause 8.1.2 requires that all operations necessary for the execution of the Works be carried out so as not to cause unnecessary noise.

Clause 4.1 of SANS 1200A requires that when working in built-up areas, the Contractor shall provide and use suitable and effective silencing devices for pneumatic tools and other plant that would otherwise cause a noise level exceeding 85dB.

19. Protection of existing environment

Clause 8.1.3 requires that the Contractor uses every reasonable means to prevent any roads or bridges to or in the vicinity of the Site being subjected to damage by excessive loads, or disruption due to excessive traffic, occasioned by his transport arrangements.

20. Reinstatement

Clauses 8.2 and 8.4 make provision for the Contractor to repair and make good any damage to the Works in his care (other than "excepted risks"), and bear any costs associated with such reinstatement.

21. Reporting accidents

Clause 8.5.1 requires the Contractor to report to the Employer's Agent every occurrence on the Site which causes environmental damage.

Annexure H – Health & Safety Management Returnable Documents

Health & Safety Management Returnable Documents Checklist:

Item	Title
H.1	Letter of good standing from COIDA / FEM / RAM
H.2	Tender health and safety plan, that must address the tenderer's scope of work
H.3	Risk assessment representing the scope of work
H.4	The SACPCMP registration certificate of the person to be appointed as the safety officer.

Schedule H.1: Letter of Good Standing from COIDA / FEM / RAM

Letter of Good Standing to be provided here.

Schedule H.2: Tender health and safety plan, that must address the tenderer's scope of work

Tender Health and Safety Plan to be provided here.

Schedule H.3: Risk assessment representing the scope of work

Risk Assessment to be provided here.

Schedule H.4: The SACPCMP registration certificate of the person to be appointed as the safety officer.

SACPCMP Safety Registration Certificate to be provided here.

Annexure J – Water & Sanitation – Service Guidelines & Standards

Standard document to be referred to in support of compliance criteria for this programme implementation.

Annexure K – Standard Detail Drawings

Existing typical technical details as per current CCT tender specifications.

- a. 15mm
- b. 20mm
- c. 25mm

Typical Details, in accordance with the CCT Standards where this is available for the different typologies for commercial, and bulk meters.

- d. 40mm
- e. 50mm
- f. 80mm
- g. 100mm
- h. 150mm
- i. 200mm
- j. 250mm

Annexure L – Standard Operating Procedures

Standard operating procedures for various activities undertaken by the City of Cape Town provided as reference for coordination and alignment requirements as stipulated in the Technical Specifications.

Annexure M – Device Mobility Activities

Standard processes through the Mobility Application provided for purposes of coordination, alignment and integration as stipulated in the Technical Specifications.

Annexure N – Project Programme

Anticipated Project Programme provided for purposes of coordination and alignment as stipulated in the Technical Specifications.