



**CIDB 7EP OR HIGHER**

**PROJECT NO: ERW2311/01**

**PUBLISH DATE: FRIDAY, 16<sup>TH</sup> MAY 2025**

**DESCRIPTION: THE APPOINTMENT OF PANEL SERVICE PROVIDER/S IN A FRAMEWORK CONTRACT FOR THE SUPPLY, INSTALLATION AND COMMISSIONING OF ELECTRICAL DISTRIBUTION SWITCHBOARD AND MOTOR CONTROL CENTRES FOR VARIOUS SITES AT EKURHULENI WATER CARE WORKS ON 'AS AND WHEN REQUIRED' BASIS FOR A PERIOD OF THIRTY-SIX (36) MONTHS**

**DEPARTMENT: INFRASTRUCTURE PLANNING AND PROJECTS**

**COMPULSORY VIRTUAL BRIEFING SESSION: *TUESDAY, 3<sup>RD</sup> JUNE 2025 @ 10H30***

Zoom Link: <https://erwatza.zoom.us/meeting/register/BS2A7OkcQTWmPIKHb1WaeA>

**CLOSING DATE: *WEDNESDAY, 18<sup>TH</sup> JUNE 2025 @ 12:00 NOON***

**FULL NAME OF BIDDER:**

(Bidding Entity: cc, (Pty) Ltd,  
JV, Sole Proprietor, etc.)

: \_\_\_\_\_

**CONTACT PERSON**

: \_\_\_\_\_

**TEL NUMBER**

: \_\_\_\_\_

**E-MAIL**

: \_\_\_\_\_

**CIDB REGISTRATION NO.**

: CRS \_\_\_\_\_

**CENTRAL SUPPLIER**

**DATABASE REG NO.**

: M \_\_\_\_\_

**BID AMOUNT (VAT INCLUSIVE) : RATE BASED TENDER**

**ERWAT STAMP**



Contractor



Witness 1



Witness 2



Employer



Witness 1



Witness 2



**PROJECT NO: ERW2311/01**

**THE APPOINTMENT OF PANEL SERVICE PROVIDER/S IN A FRAMEWORK CONTRACT  
FOR THE SUPPLY, INSTALLATION AND COMMISSIONING OF ELECTRICAL  
DISTRIBUTION SWITCHBOARD AND MOTOR CONTROL CENTRES FOR VARIOUS SITES  
AT EKURHULENI WATER CARE WORKS ON 'AS AND WHEN REQUIRED' BASIS FOR A  
PERIOD OF THIRTY-SIX (36) MONTHS**

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*Contractor*

*Witness 1*

*Witness 2*

*Employer*

*Witness 1*

*Witness 2*



## T1.1 REQUEST FOR PROPOSAL NOTICE AND INVITATION

### TENDER NOTICE

Bidders are hereby invited to submit tender offers for the project listed below:

Project No.	Project Description	CIDB Grading	Contact	Compulsory virtual Briefing Session Date	Closing Date
ERW2311/01	APPOINTMENT OF PANEL SERVICE PROVIDER/S IN A FRAMEWORK CONTRACT FOR THE SUPPLY, INSTALLATION AND COMMISSIONING OF ELECTRICAL DISTRIBUTION SWITCHBOARD AND MOTOR CONTROL CENTRES FOR VARIOUS SITES AT EKURHULENI WATER CARE WORKS ON 'AS AND WHEN REQUIRED' BASIS FOR A PERIOD OF THIRTY-SIX (36) MONTHS	7EP	MS. H NHLAPHO 011 929 7000	Tuesday, 3rd June 2025 at 10h30  Note: Kindly register to attend the briefing session	Wednesday, 18th June 2025 at 12h00 Noon

Potential bidders may download the bid document from the ERWAT tender site free of charge. Bidders must however note that it remains their responsibility to print the full document and any omissions submitted due to not printing the full tender document may result in your bid being null and void. Bidders may not alter the downloaded document in any form what so-ever.

Compulsory virtual briefing session date and time. *Kindly refer to Clause F.2.7 of the bidding document relating to the Clarification Meeting (provisions for attending briefing sessions).*

Completed Tenders in ink and clearly marked "**Bid No.: ERW2311/01 APPOINTMENT OF PANEL SERVICE PROVIDER/S IN A FRAMEWORK CONTRACT FOR THE SUPPLY, INSTALLATION AND COMMISSIONING OF ELECTRICAL DISTRIBUTION SWITCHBOARD AND MOTOR CONTROL CENTRES FOR VARIOUS SITES AT EKURHULENI WATER CARE WORKS ON 'AS AND WHEN REQUIRED' BASIS FOR A PERIOD OF THIRTY-SIX (36) MONTHS**" must be placed in the Tender Box, ERWAT Head Office, Hartbeestfontein Office Park, R25 (Bapsfontein/ Bronkhorstspuit), Kempton Park, not later than **12:00 Wednesday, 18<sup>th</sup> June 2025**, at which hour and date the Tenders will be opened in public at ERWAT Head Office. Tenders shall remain valid for a period of 120 days from closing date and no late, faxed or other form of Tender will be accepted.

**All SCM Enquiries shall be addressed to Brenda Matlala at [brenda.matlala@erwat.co.za](mailto:brenda.matlala@erwat.co.za) and All Technical Enquiries shall be addressed to MS. H Nhlapho at [hlengiwe.zwane@erwat.co.za](mailto:hlengiwe.zwane@erwat.co.za)**

Bids will be evaluated in terms of ERWAT' Supply Chain Management Policy, the MFMA SCM Regulations, the Preferential Procurement Policy Framework Act and its Regulations, 2022, the General Conditions of Contract for construction (GCC) and, if applicable, any other special conditions of contract.

*"The Special Conditions of Contract are supplementary to that of the General Conditions of Contract. In the event of any contradiction between the GCC or any other applicable contractual agreement, the Municipal Financial Management Act and its applicable regulations will take precedence."*

**NB: NO BIDS WILL BE CONSIDERED FROM PERSONS IN THE SERVICE OF THE STATE (as defined in Regulation 44 of the Local Government: Municipal Supply Chain Management Regulations).**

ERWAT accepts no responsibility for bidders accessing the tender notices from other sites/sources other than the newspapers used, its website ([www.erwat.co.za/procurement](http://www.erwat.co.za/procurement)) and the National Treasury's e-tender portal ([www.etenders.gov.za](http://www.etenders.gov.za)).

**FRIDAY, 16<sup>TH</sup> MAY 2025 (date of advert is available on the website and advertised)**

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

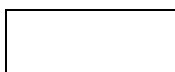
**PROJECT NO: ERW2311/01****APPOINTMENT OF PANEL SERVICE PROVIDER/S IN A FRAMEWORK CONTRACT FOR THE SUPPLY, INSTALLATION AND COMMISSIONING OF ELECTRICAL DISTRIBUTION SWITCHBOARD AND MOTOR CONTROL CENTRES FOR VARIOUS SITES AT EKURHULENI WATER CARE WORKS ON 'AS AND WHEN REQUIRED' BASIS FOR A PERIOD OF THIRTY-SIX (36) MONTHS****T1.2 TENDER DATA****General**

The conditions of tender are the Standard Conditions of Tender as contained in Annex F of Board Notice 136 of 2015 in Government Gazette 38960 of 10 July 2015, Construction Industry Development Board (CIDB) Standard for Uniformity in Construction Procurement. See [www.cidb.org.za](http://www.cidb.org.za) which is reproduced without amendment or alteration for the convenience of Bidders as an Annex to this Tender Data.

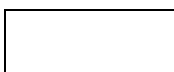
The Standard Conditions of Tender make several references to the Tender Data for details that apply specifically to this tender. The Tender Data shall have precedence in the interpretation of any ambiguity or inconsistency between it and the standard Conditions of Tender. Each item of data given below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

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

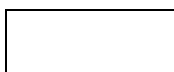
Clause No.	TENDER DATA
<b>F1.1</b>	<b>The Employer is:</b>  Ekurhuleni Water Care Company (ERWAT) Hartebeestfontein Office Park R25 (Bapsfontein/Bronkhorstspuit Road) Kempton Park
<b>F1.2</b>	<b>The Tender document's contents is as follows:</b>  <b><u>THE TENDER</u></b>  <b>Part T1: Tender Procedures (Pink)</b> T1.1 Tender notice and invitation to Tender T1.2 Tender Data



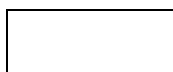
Contractor



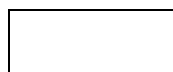
Witness 1



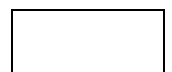
Witness 2



Employer



Witness 1



Witness 2

	<p><b>Part T2: Returnable Documents (Pink)</b></p> <p>T2.1 List of returnable documents</p> <p>T2.2 Returnable schedules</p> <p><b><u>THE CONTRACT</u></b></p> <p><b>Part C1: Agreements and Contract Data (Yellow)</b></p> <p>C1.1 Form of Offer and Acceptance</p> <p>C1.2 Contract Data</p> <p>C1.3 Form of Guarantee</p> <p>C1.4 Occupational Health and Safety</p> <p>C1.5 Corporate Governance Breach Clause</p> <p><b>Part C2: Pricing Data (Yellow)</b></p> <p>C2.1 Pricing Instructions</p> <p>C2.2 Bill of Quantities</p> <p><b>Part C3: Scope of Work (Blue)</b></p> <p>C3.1 Description of Works</p> <p>C3.2 Engineering</p> <p>C3.3 Construction</p> <p>C3.4 Management of Works</p> <p>C3.5 Health and Safety</p> <p>C3.6 Environmental Management During Construction</p>
<b>F1.3</b>	<p><b>Interpretation</b></p> <p>The Tender data and additional requirements contained in the Tender schedules that are included in the returnable documents are deemed to be part of these Tender conditions.</p>
<b>F1.4</b>	<p><b>The Employer's Representatives are:</b></p> <p><b>SCM: Brenda Matlala - 011 929-7115</b> E-mail Address: <a href="mailto:brenda.matlala@erwat.co.za">brenda.matlala@erwat.co.za</a></p> <p><b><u>Technical:</u></b> Hlengiwe Nhlapho - <b>011 929 7000</b> E-mail Address: <a href="mailto:hlengiwe.zwane@erwat.co.za">hlengiwe.zwane@erwat.co.za</a></p> <p>Attention is drawn to the fact that verbal communication given by the Employer's representative prior to the close of Request for Proposals (Tender) will not be regarded as binding on the employer. Only information issued formally by the employer in writing to the bidders, under the signature of the Accounting Officer or his nominee will be regarded as amending the Tender documents. Tender offer communicated on paper shall be submitted as an original.</p> <p>In the event that no correspondence or communication is received from ERWAT within one hundred and twenty (120) days after the stipulated closing date and time of the Tender, the Tender proposal will be deemed to be unsuccessful.</p>

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

<b>F1.5</b>	<p><b>Reject or Accept</b></p> <p>The Employer may accept or reject any variation, deviation, Tender offer, or alternative Tender offer, and may cancel the Tender process and reject all Tender offers at any time before the formation of a contract. The employer shall not accept or incur any liability to a bidder for such a cancellation and rejection, but will give written reasons for such action upon written request to do so.</p>
<b>F1.6:</b>	<p><b>Appointment of Multiple Bidders</b></p> <p>ERWAT reserves the right to award this contract to one or more bidders. The lowest bidder or any bid will not necessarily be accepted. The intention of ERWAT is to appoint a Minimum of One (1) bidder, and a Maximum of Four (4) Bidders for this Framework Contract.</p> <p>The decision to appoint multiple bidders will be based on the evaluation of bids received, the nature and scope of the work, and the Company's discretion to ensure optimal project delivery.</p>
<b>F2.1</b>	<p><b>CIDB Requirements</b></p> <p>Only those Bidders who are registered with the CIDB, or are capable of being so prior to the evaluation of submissions, in a contractor grading designation equal to or higher than a contractor grading designation determined in accordance with the sum tendered, or a value determined in accordance with Regulation 25 (1B) or 25(7A) of the Construction Industry Development Regulations, for a <b>7 EP class</b> of construction work, are eligible to have their tenders evaluated.</p> <p>Furthermore, the contractor grading designations (<b>7 EP class</b>) for construction works taking place over an agreed number of years (36 Months) shall be based on the entire contract value where such work is:</p> <ul style="list-style-type: none"> <li>on an "as and when required" basis</li> </ul> <p>Joint ventures are eligible to submit tenders provided that:</p> <ol style="list-style-type: none"> <li>Every member of the joint venture is registered with the CIDB:</li> <li>The lead partner has a contractor grading designation in the <b>7 EP class</b> of construction work; and</li> <li>The combined contractor grading designation calculated in accordance with the Construction Industry Development Regulations is equal to or higher than a contractor grading designation determined in accordance with the sum tendered for a <b>7 EP Class</b> of construction work or a value determined in accordance with Regulation 25 (1B) or 25(7A) of the Construction Industry Development Regulations.</li> <li>The bulk of the work for this Contract is Mechanical, however it may also include civil, electrical and control &amp; instrumentation aspects. Should these portions be sub-contracted, each Sub-Contractor shall have a sufficient CIDB grading in their field to cover their portion of the Contract price. An indication of the portion of the total Contract price allocated to each Sub-Contractor as well as proof of each Sub-Contractors CIDB grading shall be included in the Bidders submissions.</li> </ol>
<b>F2.2</b>	<p><b>Cost of Bidding</b></p> <p>Accept that the Employer will not compensate the Bidders 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 satisfy requirements.</p>

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

F2.3	<p><b>Check documents</b></p> <p>The Bidder shall satisfy himself that the set of tender documents is complete and in accordance with the index. If any page has been omitted or duplicated, or if the script or dimensions, or anything else in the tender document is indistinct, or if doubt exists as to the meaning of any description, or if the tender document contains any obvious errors, the Bidder shall immediately notify the Employer accordingly, in writing, so that such discrepancy or indistinctness can be clarified and rectified, as ERWAT or the Agent will not accept any responsibility or consider any claim in connection with such discrepancy or indistinctness, which are not rectified during the tender period.</p>		
F2.4	<p><b>Confidentiality and copyright of documents</b></p> <p>Treat as confidential all matters arising in connection with the Tender. Use and copy the documents issued by the employer only for the purpose of preparing and submitting a proposal offer in response to the invitation.</p>		
F2.5	<p><b>Reference Documents</b></p> <p>Obtain, as necessary for submitting a tender offer, copies of the latest versions of standards, specifications, conditions of contract and other publications, which are not attached but which are incorporated into the tender documents by reference</p>		
F2.6	<p><b>Acknowledge Addenda</b></p> <p>Acknowledge receipt of addenda to the proposal documents, which the employer may issue, and if necessary apply for an extension of the closing time stated in the Tender data, in order to take the addenda into account.</p>		
F2.7	<p><b>The arrangements for a compulsory Virtual briefing/clarification meeting are:</b></p> <table border="1"> <tr> <td> <p><b>Date:</b> <b>Tuesday, 3<sup>rd</sup> June 2025</b> <b>Time: 10:30</b></p> </td><td> <p><b>Online:</b> Kindly register to attend the virtual compulsory briefing session at:</p> <p>Zoom Link: <a href="https://erwatza.zoom.us/meeting/register/BS2A7OkcQTWmPIKHb1WaeA">https://erwatza.zoom.us/meeting/register/BS2A7OkcQTWmPIKHb1WaeA</a></p> </td></tr> </table>	<p><b>Date:</b> <b>Tuesday, 3<sup>rd</sup> June 2025</b> <b>Time: 10:30</b></p>	<p><b>Online:</b> Kindly register to attend the virtual compulsory briefing session at:</p> <p>Zoom Link: <a href="https://erwatza.zoom.us/meeting/register/BS2A7OkcQTWmPIKHb1WaeA">https://erwatza.zoom.us/meeting/register/BS2A7OkcQTWmPIKHb1WaeA</a></p>
<p><b>Date:</b> <b>Tuesday, 3<sup>rd</sup> June 2025</b> <b>Time: 10:30</b></p>	<p><b>Online:</b> Kindly register to attend the virtual compulsory briefing session at:</p> <p>Zoom Link: <a href="https://erwatza.zoom.us/meeting/register/BS2A7OkcQTWmPIKHb1WaeA">https://erwatza.zoom.us/meeting/register/BS2A7OkcQTWmPIKHb1WaeA</a></p>		
<p><b>Attendance of ERWAT Briefing Sessions</b></p> <p>Bidders must take note of the provisions for site/briefing sessions as advertised in the media, ERWAT website and or on the e-tender portal.</p> <p>In the event that a compulsory briefing session will be conducted, bidders must attend the session either on site or via zoom platform as indicated in the bid document and advertisement. Bidders will be given a link on the advert and tender document to register prior to the briefing session. On the day of the briefing session, bidders must log onto the link to attend. The zoom platform keeps record of bidders registered and in attendance.</p> <p>Documents will only be accepted from bidders whose names appear on the attendance register. Failure to attend the compulsory briefing sessions and bidders whose names do not appear on the register, will render the bidder's submission invalid and will not be considered for evaluation.</p> <p><b>Kindly note that the company representative that attends this session will be accepted as a person with the relevant technical expertise applicable to this bid. Please list a minimum of one representative that attended the briefing session below.</b></p> <p><i>Kindly indicate the company representative/s e-mail address who <b><u>attended</u></b> the briefing session:</i></p>			

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

	<p>Name: _____ Name: _____</p> <p>E-mail address: _____ E-mail address: _____</p> <p>Contact number: _____ Contact number: _____</p> <p><i>Kindly note that the above e-mail address/s will be utilised to verify your attendance at the compulsory briefing session conducted on Zoom or on-site. In the event that the indicated e-mail address/es cannot be traced on the physical attendance register; zoom registration and/or on-line attendance register, it will be taken that your company did not attend the briefing session and will result in your bid not being evaluated. It is the bidder's responsibility to provide correct e-mail address and/or contact details.</i></p> <p><b>Joint Venture:</b></p> <p><i>In the event that the bidding entity wishes to submit an offer as a joint venture, one or both company representatives must attend the briefing session.</i></p> <p><i>Kindly indicate above one or both representatives e-mail address who attended the briefing session.</i></p> <p>Bidders are encouraged to collect/access bidding documents before the briefing session to allow them sufficient time to peruse the scope so that any queries can be dealt with at the briefing session. Bidders will be allowed 10 days from the date of the compulsory briefing session to direct further queries to the SCM department per e-mail. An addendum will be sent to the attending bidders with clarity on questions raised during these 10 days. A copy of the minutes and attendance register will be attached thereto for ease reference.</p> <p>No individual should represent more than one bidder at the compulsory briefing session. At least one member of the JV be represented at the compulsory clarification meeting.</p>
<b>F2.8</b>	<p><b>Seek clarification</b></p> <p>Questions or queries must be submitted to the Employer at least five (5) working days before the stipulated closing date and time of the Tender. However, ERWAT shall not be liable nor assume liability for failure of the bidder to receive response to any questions and / or queries raised by the bidder by the closing time.</p>
<b>F2.9</b>	<p><b>Pricing the Tender</b></p> <p>State the rates and prices in South African Rand (ZAR).</p> <ul style="list-style-type: none"> <li>• Prices shall be <b>FIXED</b> and <b>FIRM</b> for the first 12 months of the <b>Contract</b>. <b>Price increments will be based on CPI annually on the anniversary of this tender.</b></li> <li>•</li> </ul>
<b>F2.10</b>	<p><b>Alterations to documents</b></p> <p>Bidder must not make any alterations or additions to the proposal documents, except to comply with instructions issued by the employer, or necessary to correct errors made by the bidder. All signatories to the Tender offer shall sign next to all such alterations. Erasures and the use of masking fluid are prohibited. Copies are not allowed, only original documents will be accepted.</p>

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2



<p><b>F2.11</b></p>	<p><b>Submitting a Tender offer</b></p> <p>No late, faxed or other form of Tender will be accepted. Completed Tenders with attached documents, if any, must be submitted in Black ink in sealed envelopes and clearly marked:</p> <p><b><u>"CONTRACT NO ERW2311/01: APPOINTMENT OF PANEL SERVICE PROVIDER/S IN A FRAMEWORK CONTRACT FOR THE SUPPLY, INSTALLATION AND COMMISSIONING OF ELECTRICAL DISTRIBUTION SWITCHBOARD AND MOTOR CONTROL CENTRES FOR VARIOUS SITES AT EKURHULENI WATER CARE WORKS ON 'AS AND WHEN REQUIRED' BASIS FOR A PERIOD OF THIRTY-SIX (36) MONTHS</u></b></p> <p>and must be placed in Tender Box at ERWAT Head Office, Hartebeestfontein Office Park, R25 (Bapsfontein / Bronkhorstspuit), Kempton Park.</p> <p>Accept that the tender submitted to the employer cannot be withdrawn or substituted. <b>No substitute tender offers will be considered.</b></p> <p>All Tenders received by ERWAT will remain in the Company's possession.</p> <p><b>A Special Request:</b></p> <p>Bidders are required to submit the fully tender document and their priced Bill of Quantities (BOQ) in both hard copy (as part of the comprehensive tender document submission) and digital electronic format (Microsoft Excel file) to facilitate efficient evaluation. The hard copy BOQ submitted with the tender documents will take precedence over digital electronic submission. Submission of the digital format is not mandatory, and failure to provide it will not lead to disqualification. However, providing digital excel priced BOQ is highly encouraged for smoother processing.</p> <p>Bidders shall submit their tender document and priced Bill of Quantities (BOQ) in Microsoft Excel format via e-mail to specialrequests@erwat.co.za. The subject line of the e-mail must clearly state the project number, project description and the name of the bidding entity.</p>
<p><b>F2.12</b></p>	<p><b>Information and data to be completed in all respects</b></p> <p>To facilitate review of this Tender by ERWAT, it is requested that submissions conform to the following format:</p> <ol style="list-style-type: none"> <li><b>Coversheet:</b> List Tender Statement, the name of your firm, and the name, address and telephone number of a contact person for questions concerning the Tender submitted.</li> <li><b>Executive Summary:</b> Provide a brief overview of the project, description of the overall approach to the project, key features of the technologies offered and an overview of the performance guaranteed.</li> <li><b>Relevant Experience and Reference Projects:</b> Information of similar sized projects completed by the Bidder (in South Africa and worldwide) using the specific technologies requested must be provided. The referenced projects must be comparable in size, complexity and performance achieved to the tendered project. Operation and maintenance experience must also be included here.</li> <li><b>Project Team:</b> Provide a project team organogram showing the structure and composition of the proposed team. A CV highlighting the relevant project specific experience for each team member must be supplied. Permanent staff and contracted staff must be distinguished.</li> <li><b>Project Schedule:</b> A detailed project schedule must be submitted showing details with respect to the different phases of the project as well as the different aspects pertaining to engineering,</li> </ol>

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

	<p>procurement, construction, installation, commissioning and start up. The key milestones during the project must be indicated.</p> <p><b>6. Technical Specification &amp; Datasheets:</b> All information asked for regarding the technical equipment shall be included here.</p> <p>Accept that Tender offers, which do not provide all the data or information requested completely and in the form required, may be regarded by the employer as non-responsive. Responsive Tenders are ONLY those Tenders with all documents and pages, contained herein, that have been signed by the responsible person duly authorised to sign all documents indicated on the returnable document <b>“FORM C Authority of Signatory”</b>.</p> <p>The above is to be read in conjunction with F3.11 below as well as the Project Specifications detailed in Section C3: Scope of Works.</p>
<b>F2.13</b>	<p><b>Closing time</b></p> <p><b>CLOSING DATE: WEDNESDAY, 19<sup>TH</sup> JUNE 2025</b>  <b>CLOSING TIME: 12H00 NOON</b></p>
<b>F2.14</b>	<p><b>Tender offer validity</b></p> <p>The Tender offer validity period is 120 Days.</p>
<b>F2.15</b>	<p><b>Provide other information</b></p> <p><b>The bidders are required to submit following documents and if requested to resubmit in case if it was not initially submitted, it will result in automatic disqualification:</b></p> <ul style="list-style-type: none"> <li>(1) Proof of SARS Tax status (pin issued by the South African Revenue Services);</li> <li>(2) Completion of MBD 1, 2, 3.2, 4, 5, 6.1, 8 and 9 forms</li> <li>(3) Copy of municipal Statement not older than 3 months or letter from landlord stating that rates and taxes are not in arrears for more than 90 days from date of closing of bid.</li> <li>(4) In case of Joint Venture – the Joint Venture Agreement</li> </ul> <p><b>NB: - Please note that non-compliance to specification may be deemed as an automatic disqualification. Service Providers must quote for all aspects as per the specification.</b></p>
<b>F2.16</b>	<p><b>Certificates</b></p> <p>The Bidder is required to submit with his Tender a letter of intent from an approved insurer undertaking to provide the Performance Guarantee to the format included in Part C1.3 of this Tender Document.</p>
<b>F3.1</b>	<p><b>Opening of tender</b></p> <p>Tenders will be opened in public at the ERWAT Head Office, Hartbeestfontein Office Park, R25 (Bapsfontein / Bronkhorstspuit), Kempton Park.</p>

Contractor

Witness 1

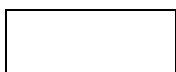
Witness 2

Employer

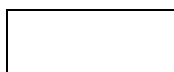
Witness 1

Witness 2

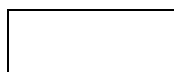
<b>F3.2</b>	<p><b>Two-envelope System</b></p> <p>A two-envelope procedure will <b>NOT</b> be followed.</p>
<b>F3.3</b>	<p><b>Non-disclosure</b></p> <p>After the opening of the Tender offers, no information relating to the clarification, determination of responsiveness, evaluation and comparison of Tender offers and recommendations concerning the award of the Tender shall be disclosed to any other Bidder or persons not concerned with such process until the award of the Tender has been announced by ERWAT.</p>
<b>F3.4</b>	<p><b>Arithmetical errors, omissions and discrepancies</b></p> <p>ERWAT is to check BID offers for arithmetical errors in the following manner:</p> <ol style="list-style-type: none"> <li>Where there is a discrepancy between the amounts in words and amounts in figures, the amount in words shall govern.</li> <li>If bills of quantities or pricing schedules apply and there is an error in the line item total resulting from the product of the unit rate and the quantity, the line item total shall govern and the rate shall be corrected. Where there is an obviously gross misplacement of the decimal point in the unit rate, the line item total as quoted shall govern, and the unit rate shall be corrected.</li> <li>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 Bidder's addition of prices, the total of the prices shall govern and the Bidder will be asked to revise selected item prices (and their rates if bills of quantities apply) to achieve the tendered total of the prices.</li> </ol> <p>Consider the rejection of a tender offer if the Bidder does not correct or accept the correction of the arithmetical error in the manner described above.</p>
<b>F3.5</b>	<p><b>1. Evaluation of tender offers</b></p> <p>The Bidders notice is drawn to the fact that the evaluation, adjudication and awarding of this Tender will be in terms of the Supply Chain Management Policy of ERWAT and the Preferential Procurement Regulations of 2022.</p> <p>If the submitted Tender does not comply with the Tender conditions, the Tender may be rejected. If specifications are not met, the Tender may also be rejected. With regard to the above, certain actions or errors are unacceptable, and warrant <b>REJECTION OF THE TENDER</b>, for example:</p> <ul style="list-style-type: none"> <li>Proof of SARS Tax status (pin issued by the South African Revenue Services);</li> <li>Non submission of company registration certificates.</li> <li>Pages that were to be completed being removed from the Tender document and have therefore not been submitted.</li> <li>Failure to fully complete form of offer.</li> <li>Scratching out without initialling next to the amended rates or information.</li> <li>Writing over / painting out rates / the use of Tippex/correction fluid or any erasable ink.</li> <li>Failure to attend compulsory briefing meetings</li> <li>The Tender has not been properly signed by a party having the authority to do so, according to the <b>Form C– “Authority for Signatory”</b>.</li> <li>No authority for signatory submitted.</li> <li>Particulars required in respect of the proposal have not been provided: non- compliance of Tender requirements and/or specifications.</li> <li>The Bidder's attempts to influence, or has in fact influenced the evaluation and/or awarding</li> </ul>



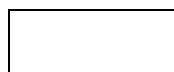
Contractor



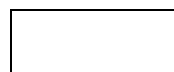
Witness 1



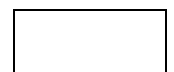
Witness 2



Employer



Witness 1



Witness 2

of the contract.

- The Proposal has been submitted after the relevant closing date and time.
- If any municipal rates and taxes or municipal service charges owed by that Bidder or any of its directors to the company, or to any other company or municipal entity, are in arrears for more than three months (90 days).
- If any Bidder who during the last five years has failed to perform satisfactorily on a previous contract with the company or any other organ of state after written notice was given to that Bidder that performance was unsatisfactory.

## 2. Good standing with SA Revenue Services

- Determine whether the bidders tax matters are in order as provided for by SARS.
- The Bidder must complete the MBD 2 form in the returnable schedule and or attach their valid SARS Pin to verify their Tax matters to the designated page of the Tender document.

If the Tender does not meet the requirements contained in the ERWAT Supply Chain Policy, and the mentioned framework, it will be rejected and may not subsequently be made acceptable by correction or withdrawal of the non-conforming deviation or reservation.

## 3. Penalties

ERWAT will, if upon investigation it is found that a preference in terms of the Preferential Procurement Policy Framework Act, 2000 and these regulations has been obtained on a fraudulent basis, or any specified goals are not attained in the performance of the contract, one or more of the following penalties will be imposed:

- Cancel the contract and recover all losses or damages incurred or sustained from the Bidder.
- Impose a financial penalty of twice the theoretical financial preference associated with the claim, which was made in the Tender.
- Restrict the firm, its shareholders and directors on obtaining any business from ERWAT for a period of 5 years and blacklisted on the National Treasury database of restricted suppliers.

## 4. Evaluation Criteria

ERWAT will establish a Bid Evaluation Committee (BEC) whose responsibility it is to make recommendations to the Bid Adjudication Committee (BAC). The Bid Evaluation Committee will short list and evaluate the bid document in accordance with the criteria below and make recommendations to the BAC.

- 1) Pre compliance evaluation to be done and pre-qualified bidders goes through for the functionality evaluation. Where some pre compliance information is not provided the ERWAT supply chain will contact the responsible bidder to submit within 5 working days and failure to do so will result in disqualification.
- 2) Score Bid evaluation points for price and preference points
- 3) Calculate total Bid evaluation points, to two decimal places
- 4) Rank Bid offers from the highest number of Bid evaluation points to the lowest
- 5) Recommend Bidders with the highest number of Bid evaluation points for the award of the contract, unless there are compelling and justifiable reasons not to do so.

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

	<p><b>FUNCTIONALITY CRITERIA: -</b></p> <p>Note: The minimum required score for functionality is stipulated in the functionality table listed elsewhere in the document. Bidders scoring less than the stipulated threshold on functionality shall not proceed to the next stage of the evaluation.</p> <p>Functionality criteria maximum points in respect of each criterion shall be as set out at the bottom of this table.</p> <p>All Tender submission will be evaluated by at least three evaluators against the Table below. Bidders shall ensure that their tender submissions are sufficiently detailed and that all required information is included in their submissions. Information not provided will result in zero points awarded for the respective item.</p> <p><b>Tender evaluation points</b></p> <p>Tender evaluation points will be allocated as per the Supply Chain Management policy and the Preferential Procurement Policy Framework Act, 2000: Preferential Procurement Regulations, 2022 including the following:</p> <p>The points allocation for this Tender is:</p> <ul style="list-style-type: none"> <li>a) Price: 90</li> <li>b) B-BBEE Status Level of Contribution: 10</li> </ul> <p>Regulations of disputes, objections, complaints and queries will be handled in accordance with the GCC for construction works 2015.</p>
<b>F3.6</b>	<p><b>Contract Documents</b></p> <p>The Service Level Agreement (if applicable), Bid document and related attachments shall constitute the complete contract agreement.</p> <p>It should be noted that all ERWAT contracts are subject to the Municipal Financial Management Act (MFMA Act 56 of 2003), therefore in the event that there is any contradiction between the MFMA (<i>Act 56 of 2003</i>) and the GCC or any other applicable contractual agreement, the MFMA (<i>Act 56 of 2003</i>) and its applicable regulations shall take precedence.</p> <p><b>This is a CIDB Contract, and the CIDB Board has initiated a B.U.I.L.D Programme which focuses on Targeted Enterprise Development and/or Skills Development. This contract is affected by CIDB B.U.I.L.D Programme for Skills Development, therefore, the CIDB standard for Developing Skills through Infrastructure Contracts (Government gazette 28 April 2023) which forms part of the B.U.I.L.D Programme Standards shall form part of the contract. This standard requirement as well as any other regulatory or legislative requirements will be included during the Service Level Agreement (SLA) stage.</b></p>
<b>F3.7</b>	<p><b>Provide copies of the contracts</b></p> <p>The number of paper copies of the signed contract to be provided by the Employer is <b>one</b>.</p>

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

<b>Additional conditions</b>	<p>The additional conditions of the proposal are:</p> <ol style="list-style-type: none"> <li>1) ERWAT may also request that the Bidder provide written evidence that his financial, labour and resources are adequate for carrying out the project.</li> <li>2) ERWAT reserves the right to appoint a firm of chartered accountants and auditors and / or execute any other financial investigations on the financial resources of any Bidder. The Bidders shall provide all reasonable assistance in such investigations</li> <li>3) ERWAT reserves the right to award this contract to one or more bidders. The lowest bidder or any bid will not necessarily be accepted. The intention of ERWAT is to appoint a Minimum of One (1) bidder, and a Maximum of Four (4) Bidders for this Framework Contract.</li> </ol> <p>The decision to appoint multiple bidders will be based on the evaluation of bids received, the nature and scope of the work, and the Company's discretion to ensure optimal project delivery.</p> <ol style="list-style-type: none"> <li>4) The number of bidders that will be appointed and the allocation of activities or items per bidder will be at ERWAT's discretion</li> <li>5) The lowest bidding price will not necessarily be accepted and ERWAT reserves the right to determine market related rate to be offered to the successful bidders.</li> <li>6) The rates of the highest scoring bidder subject to market evaluation (market related rate) will be offered to the second and third highest scoring bidders</li> <li>7) If the tender is found to be unauthorised, fruitless and wasteful or irregular as informed through a formal investigation, internal and or external audit outcome, the Auditor General, Council, ERWAT Board of Directors or National Treasury, ERWAT reserves the right to cancel the tender with immediate effect and the bidder will have no claim to his effect whatsoever. The final terms of payment (where applicable) will be negotiated with the bidder at the time for final close out of the contract.</li> </ol>
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Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

## 1.1 TECHNICAL AND FUNCTIONALITY EVALUATION

### 1.1.1 MANDATORY REQUIREMENTS

#### Scope related Information and Documentation required:

Please ensure that the following supporting documents are attached to your Bid Document. Failure to submit the below mentioned documents will result in disqualification of your bid.

Item	Description of Document/Proof Sought
1.	Proof of Electrical Contractors Board registration for the bidding company.
2.	The Contract CIDB Rating required for this Contract is_ CIDB 7EP _ Bidders shall submit proof of Current Registration.

### 1.1.2 FUNCTIONALITY EVALUATION

Potential service providers will have to achieve a minimum of **75 points out of 100** for their technical proposals before their financial proposals and B-BBEE status are evaluated. This is required so that there is a level of comfort that the potential service provider can deliver the project with the required professionalism and quality.

### 1.1.3 SCORING PROCESS

The Technical / Functional Evaluation Task Team will be established to determine the following:

- Whether or not the Bidder understood the project specifications.
- The bidders experience with similar projects.
- The qualifications and experience of the key staff proposed.
- Bidder's financial capacity, and
- Bidder's support from the OEM

No alteration of functionality proposals will be permitted after the deadline for receipt of bids. Questions may be asked for clarification needed to evaluate their proposals, but bidders would not be permitted to change the substance or price of their bids after bid opening. Requests for clarification and the bidder's responses would be made in writing. No interviews will be conducted in this regard.

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

## SCORING CRITERIA FOR CIDB CONTRACTS:

The score for the Technical / Functionality Evaluation will be calculated in accordance with the table

CRITERION	CRITERION DETAILS	POINTS
<p><b>Company Experience</b></p> <p>Only signed completion certificates or reference letters on the letterheads of the previous client/employer with a clear description of works, contract value, contact person, and contact details of the contact person (day telephone number and company e-mail address) will be accepted.</p>	<p><b>Please provide reference letters or completion certificates of completed projects, on the relevant clients' company letterhead, for the Manufacturing (meaning that the Company would have done designing, assembling, testing, quality control and certification) and Installation of MCC Panels. The reference letters or completion certificates must at minimum includes the installation of MCC Panels. Work completed should not be older than 5 years from the closing date of the tender.</b></p> <ul style="list-style-type: none"> <li>• 4 and more Letters/Certificates = 30</li> <li>• 3 Letters/Certificates = 20</li> <li>• 2 Letters/Certificates = 10</li> <li>• 1 Letter/Certificate = 5</li> <li>• No reference Letter submitted = 0</li> </ul> <p>Appointment Letters, Contractual Agreements, and Invoices will not be accepted. Each letter should represent the entire works completed not section or plants partially completed.</p>	30
<p><b>Expertise of key staff</b></p> <p>Bidders to provide Curriculum Vitae(s) to prove the relevant experience as well as complete pro-forma CVs in full.</p>	<p><b>Expertise of key staff:</b> No points shall be allocated for submission of irrelevant experience that does not speak to the Scope of Works for this Contract. Copies of the qualifications must also be attached. Experience of key staff will be evaluated based on the years/ months post qualification attainment.</p> <p><b><u>Project Manager with a National Diploma Electrical Engineering Min. NQF Level 6: (10)</u></b></p> <ul style="list-style-type: none"> <li>• 0 – 47 Months Experience = 0</li> <li>• 48 - 59 Months Experience = 05</li> <li>• 60 - or more Months experience = 10</li> </ul> <p><b><u>Lead Engineer Professional Electrical Engineer Min. NQF Level 7 (Registered ECSA): (05)</u></b></p> <ul style="list-style-type: none"> <li>• 0 – 47 Months Experience = 0</li> <li>• 48 - 59 Months Experience = 03</li> <li>• 60 - or more Months experience = 05</li> </ul> <p><b><u>Electrician with Trade Test :( 05)</u></b></p> <ul style="list-style-type: none"> <li>• 0 – 23 Months Experience = 0</li> <li>• 24 - 35 Months Experience =03</li> <li>• 36 - or more Months experience =05</li> </ul> <p><b><u>Instrumentation Technician with Diploma in Electrical Engineering (05)</u></b></p> <ul style="list-style-type: none"> <li>• 0 – 23 Months Experience = 0</li> <li>• 24 - 35 Months Experience = 03</li> <li>• 36 - or more Months experience = 05</li> </ul> <p><b><u>Instrumentation Mechanician with Trade Test:(05)</u></b></p> <ul style="list-style-type: none"> <li>• 0 – 23 Months Experience = 0</li> <li>• 24 - 35 Months Experience = 03</li> <li>• 36 - or more Months experience = 05</li> </ul>	30

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2



<p><b>Financial Resources</b></p> <p><b>Kindly submit a bank rating from the companies bank institution (not older than six months)</b></p>	<p><b>Based on reference checks with Bidder's Bank.</b></p> <ul style="list-style-type: none"> <li>Bank Rating A - Undoubted for the amount of enquiry = 10</li> <li>Bank Rating B - Good for the amount of your enquiry = 8</li> <li>Bank Rating C - Good for the amount quoted, if strictly in the way of business = 6</li> <li>Bank Rating D - Fair trade risk for the amount of your enquiry =4</li> <li>Bank Rating E - Figures considered too high = 2</li> <li>Failure to produce a bank document explicitly stating the Bank rating will result in 0 points being awarded in this category = 0</li> </ul>	<p><b>10</b></p>
<p><b>Letters of Support</b></p>	<p><b>Manufacturer's (Supplier) of Variable Speed Drives Statement of Support = 30</b></p> <p>The letter shall be addressed to the bidder, and clearly stipulate that the manufacturer of the Variable Speed Drives will provide Installation and Operational Support for the equipment.</p> <p>Failure to supply the above letter will result in the bidder scoring 0 points</p> <p>Bidders may supply letters from the official suppliers, provided that the bidder provides an agreement between the official supplier and the Original Equipment Manufacturer.</p>	<p><b>30</b></p>
<p><b>TOTAL</b></p>	<p><b>Bidder must score a minimum of 75 points to be considered for further evaluation</b></p>	<p><b>100</b></p>

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

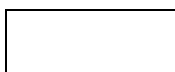


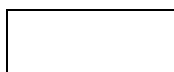
## PROJECT NO: ERW2311/01

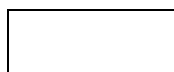
### APPOINTMENT OF PANEL SERVICE PROVIDER/S IN A FRAMEWORK CONTRACT FOR THE SUPPLY, INSTALLATION AND COMMISSIONING OF ELECTRICAL DISTRIBUTION SWITCHBOARD AND MOTOR CONTROL CENTRES FOR VARIOUS SITES AT EKURHULENI WATER CARE WORKS ON 'AS AND WHEN REQUIRED' BASIS FOR A PERIOD OF THIRTY-SIX (36 NO.) MONTHS

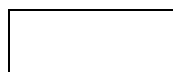
#### T 2.1 LIST OF RETURNABLE DOCUMENTS

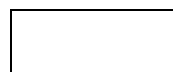
1. Failure to fully complete and sign the relevant returnable documents shall render such a tender offer unresponsive.
2. Bidders shall note that their signatures appended to each returnable form represents a declaration that they vouch for the accuracy and correctness of the information provided, including the information provided by candidates proposed for the specified keypositions.
3. Notwithstanding any check or audit conducted by or on behalf of the Employer, the information provided in the returnable documents is accepted in good faith and as justification for entering into a contract with a Bidder. If subsequently any information is found to be incorrect such discovery shall be taken as will full misrepresentation by that Bidder to induce the contract. In such event the Employer has the discretionary right to terminate the contract.

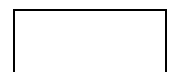
  
Contractor

  
Witness 1

  
Witness 2

  
Employer

  
Witness 1

  
Witness 2

**THE BIDDER MUST COMPLETE AND SIGN THE FOLLOWING RETURNABLE SCHEDULES:****RETURNABLE SCHEDULES REQUIRED FOR TENDER EVALUATION PURPOSES**

MBD 1	INVITATION TO BID
MBD 2	TAX CLEARANCE REQUIREMENTS
MBD 3.2	PRICING STRUCTURE: NON-FIRM PRICES
MBD 4	DECLARATION OF INTEREST
MBD 5	DECLARATION FOR PROCUREMENT ABOVE R10 MILLION (ALL APPLICABLE TAXES INCLUDED)
MBD 6.1	PREFERENCE POINTS CLAIM FORM IN TERMS OF THE PREFERENTIAL PROCUREMENT REGULATIONS 2022
MBD 7.1	CONTRACT FORM: PURCHASE OF GOODS/SERVICES
	PART 1: TO BE COMPLETED BY THE BIDDER
	PART 2: TO BE COMPLETED BY ERWAT
MBD 8	DECLARATION OF BIDDER'S PAST SUPPLY CHAIN MANAGEMENT PRACTICES
MBD 9	CERTIFICATE OF INDEPENDENT BID DETERMINATION
FORM A	<p>MUNICIPAL SERVICES, RATES AND TAXES OR RENTAL AGREEMENT WITH LANDLORD:</p> <p>Copy of Municipal Statement not older than 3 months before date of closing of bid OR Letter from landlord stating that you are renting from his/her property OR a Copy of Lease agreement and Contact details.</p> <p>Rates and taxes must not be in arrears for longer than 90 (ninety) days of date of closing of bid.</p>
FORM B	NATIONAL TREASURY CENTRALISED SUPPLIER DATABASE
FORM C	AUTHORITY OF SIGNATORY
FORM D	FINANCIAL REFERENCES /BIDDER'S CREDIT RATING AND BANK DETAILS
FORM E	RECORD OF ADDENDA TO TENDER DOCUMENTS
FORM F	CERTIFICATE OF AUTHORITY FOR SIGNATORY TO AGREEMENT IN TERMS OF OCCUPATIONAL HEALTH AND SAFETY ACT, 1993 (ACT NO
FORM G	OCCUPATIONAL HEALTH AND SAFETY AGREEMENT
FORM H	CERTIFIED COPY OF ID DOCUMENT/S OF OWNERS/MEMBERS/SHAREHOLDERS
FORM I	CURRENT CERTIFICATE OF GOOD STANDING FROM COMPENSATION COMMISSIONER
FORM J	PROGRAM OF WORKS/SERVICES
FORM K	EXPERTISE OF THE KEY PERSONNEL

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

FORM L	PROOF OF RELEVANT REGULATORY CERTIFICATION OR OTHER REQUIREMENTS IN TERMS OF THE REQUIRED REGULATORY AUTHORITY AS SET OUT IN THE SCOPE OF WORKS
FORM M	LETTER OF INTENT TO SUBMIT THIRD PARTY LIABILITY INSURANCE AND ALL RISK CONTRACTORS' INSURANCE TO COVER THIS CONTRACT
FORM N	COPY OF COMPANY REGISTRATION DOCUMENTS
FROM O	BACKGROUND AND WORK EXPERIENCE
FROM P	PROTECTION OF PERSONAL INFORMATION ACT, 4 OF 2013

**Returnable Documents that will be incorporated into the contract**

C1.1	OFFER PORTION OF FORM OF OFFER AND ACCEPTANCE
C1.2	CONTRACT DATA (PART 2)
C1.3	FORM OF GUARANTEE (THIRD PARTY LIABILITY AND ALL RISK INSURANCE)

*Contractor*

*Witness 1*

*Witness 2*

*Employer*

*Witness 1*

*Witness 2*

### T2.1.1 IMPORTANT: Required Returnable Documentation:

Please ensure that the following supporting documents are attached to your Bid Document. Failure to submit the below mentioned documents will result in disqualification of your bid.

Item	Description of Document/Proof Sought	To be completed by the Bidder: Please fill in Yes or No if Proof/ Documentation attached	For Office Use Only Verified by SCM Official: Please fill in Yes or No if Proof/ Documentati on attached
1	A valid Tax Clearance Certificate/SARS issued pin		
2	Certified Copy of ID documents of owners/members/shareholders (see Bidders Information Section).		
3	Copy of Municipal Statement not older than 3 months OR Letter from landlord stating that you are renting from his/her property OR Copy of Lease agreement and Contact details (Statement and arrears should not be older than 3 months)		
4	Current Certificate of Good Standing from Compensation Commissioner		
5	Occupational Health & Safety Plan		

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

## T2.1.2 Other Returnable Documents required for the evaluation

Item	Description of Document/Proof Sought	To be completed by the Bidder: Please fill in Yes or No if Proof/ Documentation attached	For Office Use Only Verified by SCM Official: Please fill in Yes or No if Proof/ Documentation attached
1	Copy of Company/ Registration Documents (see Bidders Information Section). – Failure to submit will result in disqualification.		
2	Original or Certified copy of B-BBEE Verification certificate from an accredited Verification Agency or B-BBEE Affidavit signed by Commissioner of Oaths, as provisioned in the B-BBEE Act and its Regulations. <b>Failure to submit will result in a zero score for B-BBEE Contribution Level Status points awarded.</b>		
3	Certificate that there are no outstanding commitments for municipal rates and taxes for more than 90 days – failure to submit this information will result in disqualification.		
4	Proof of CSD registration (Supplier number and unique reference ID) – failure to supply this information will result in disqualification. This tender may not be awarded to a person who is not registered on the CSD database.		

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2



## PROJECT NO: ERW2311/01

# APPOINTMENT OF PANEL SERVICE PROVIDER/S IN A FRAMEWORK CONTRACT FOR THE SUPPLY, INSTALLATION AND COMMISSIONING OF ELECTRICAL DISTRIBUTION SWITCHBOARD AND MOTOR CONTROL CENTRES FOR VARIOUS SITES AT EKURHULENI WATER CARE WORKS ON 'AS AND WHEN REQUIRED' BASIS FOR A PERIOD OF THIRTY-SIX (36 NO.) MONTHS

### T2.2 RETURNABLE SCHEDULES

*Contractor*

*Witness 1*

*Witness 2*

*Employer*

*Witness 1*

*Witness 2*

MBD 1

### PART A INVITATION TO BID

You are hereby invited to bid for requirements of ERWAT

Bid Number	<b>ERW2311/01</b>
Compulsory Briefing session date and time. <i>Kindly refer to Clause F.2.7 of the bidding document relating to the Clarification Meeting (provisions for attending briefing sessions)</i>	<b>TUESDAY, 3RD JUNE 2025 AT 10H30 – REGISTRATION REQUIRED.</b>  Zoom Link: <a href="https://erwatza.zoom.us/meeting/register/BS2A7OkcQTWmPIKHb1WaeA">https://erwatza.zoom.us/meeting/register/BS2A7OkcQTWmPIKHb1WaeA</a>
Closing date	<b>WEDNESDAY, 18TH JUNE 2025</b>
Closing time and venue	12h00 noon at ERWAT Head Office, R25 Bapsfontein Road, Norkem Park
The successful bidder will be required to fill in and sign a written contract form (MBD7).	

#### Bidder Information

<b>Name of Bidding Company</b>	
<b>Company physical address</b>	
<b>Company postal address</b>	
<b>Contact details</b>	Company Representative (Name):
	Telephone:
	Cell phone:
	E-mail address:
<b>National Treasury Central Supplier Database number: (Compulsory)</b>	MAAA
<b>CIDB Grading CRS number</b>	
<b>Vat registration number</b>	
<b>Tax Compliance status</b>	TCS Pin:
<b>Are you the accredited representative in South Africa for the goods/ services/ works offered? If yes, attach proof from the agency your company is accredited to represent</b>	
<b>Total number of items offered</b>	N/A
<b>Total price (including VAT)</b>	RATE BASED TENDER
<b>SCM related enquiries:</b>	Ms Brenda Matlala E-mail: <a href="mailto:brenda.matlala@erwat.co.za">brenda.matlala@erwat.co.za</a> Tel: 011 929 7000
<b>Technical enquiries</b>	Ms. Hlenqiwe Nhlapho E-mail: <a href="mailto:hlengiwe.zwane@erwat.co.za">hlengiwe.zwane@erwat.co.za</a> Tel: 011 929 7000

 Contractor

 Witness 1

 Witness 2

 Employer

 Witness 1

 Witness 2



## PART B TERMS AND CONDITIONS FOR BIDDING

### 1. BID SUBMISSION:

- 1.1. BIDS MUST BE DELIVERED BY THE STIPULATED TIME TO THE CORRECT ADDRESS. LATE BIDS WILL NOT BE ACCEPTED FOR CONSIDERATION.
- 1.2. **ALL BIDS MUST BE SUBMITTED ON THE OFFICIAL FORMS PROVIDED– (NOT TO BE RE-TYPED)**
- 1.3. THIS BID IS SUBJECT TO THE PREFERENTIAL PROCUREMENT POLICY FRAMEWORK ACT AND THE PREFERENTIAL PROCUREMENT REGULATIONS, 2022, THE GENERAL CONDITIONS OF CONTRACT FOR CONSTRUCTION WORKS (GCC 2015, THIRD EDITION) AND, IF APPLICABLE, ANY OTHER SPECIAL CONDITIONS OF CONTRACT.

### 2. TAX COMPLIANCE REQUIREMENTS

- 2.1 BIDDERS MUST ENSURE COMPLIANCE WITH THEIR TAX OBLIGATIONS.
- 2.2 BIDDERS ARE REQUIRED TO SUBMIT THEIR UNIQUE PERSONAL IDENTIFICATION NUMBER (PIN) ISSUED BY SARS TO ENABLE THE ORGAN OF STATE TO VIEW THE TAXPAYER'S PROFILE AND TAX STATUS.
- 2.3 APPLICATION FOR THE TAX COMPLIANCE STATUS (TCS) CERTIFICATE OR PIN MAY ALSO BE MADE VIA E-FILING. IN ORDER TO USE THIS PROVISION, TAXPAYERS WILL NEED TO REGISTER WITH SARS AS E-FILERS THROUGH THE WEBSITE WWW.SARS.GOV.ZA.
- 2.4 FOREIGN SUPPLIERS MUST COMPLETE THE PRE-AWARD QUESTIONNAIRE IN PART B:3.
- 2.5 BIDDERS MAY ALSO SUBMIT A PRINTED TCS CERTIFICATE TOGETHER WITH THE BID.
- 2.6 IN BIDS WHERE CONSORTIA / JOINT VENTURES / SUB-CONTRACTORS ARE INVOLVED, EACH PARTY MUST SUBMIT A SEPARATE TCS CERTIFICATE / PIN / CSD NUMBER.
- 2.7 WHERE NO TCS IS AVAILABLE BUT THE BIDDER IS REGISTERED ON THE CENTRAL SUPPLIER DATABASE (CSD), A CSD NUMBER MUST BE PROVIDED.

### 3. QUESTIONNAIRE TO BIDDING FOREIGN SUPPLIERS

- 3.1. IS THE ENTITY A RESIDENT OF THE REPUBLIC OF SOUTH AFRICA (RSA)? ☐ YES ☐ NO
- 3.2. DOES THE ENTITY HAVE A BRANCH IN THE RSA? ☐ YES ☐ NO
- 3.3. DOES THE ENTITY HAVE A PERMANENT ESTABLISHMENT IN THE RSA? ☐ YES ☐ NO
- 3.4. DOES THE ENTITY HAVE ANY SOURCE OF INCOME IN THE RSA? ☐ YES ☐ NO
- 3.5. IS THE ENTITY LIABLE IN THE RSA FOR ANY FORM OF TAXATION? ☐ YES ☐ NO

**IF THE ANSWER IS "NO" TO ALL OF THE ABOVE, THEN IT IS NOT A REQUIREMENT TO REGISTER FOR A TAX COMPLIANCE STATUS SYSTEM PIN CODE FROM THE SOUTH AFRICAN REVENUE SERVICE (SARS) AND IF NOT REGISTER AS PER 2.3 ABOVE.**

NB: Failure to provide any of the above particulars may result in your bid being disqualified.

Name & Surname of Representative: \_\_\_\_\_

Signature Of Bidder: \_\_\_\_\_

Capacity Under Which This Bid Is Signed: \_\_\_\_\_

Date: \_\_\_\_\_

\_\_\_\_\_

Contractor

\_\_\_\_\_

Witness 1

\_\_\_\_\_

Witness 2

\_\_\_\_\_

Employer

\_\_\_\_\_

Witness 1

\_\_\_\_\_

Witness 2

**MBD 2**

### **TAX CLEARANCE CERTIFICATE REQUIREMENT**

**It is a condition of bid that the taxes of the successful bidder must be in order, or that satisfactory arrangements have been made with South African Revenue Service (SARS) to meet the bidder's tax obligations.**

#### **NEED A TAX CLEARANCE? GO ONLINE**

- Electronically request your Tax Compliance Status which will include a unique PIN which you can provide to any third party (if requested) to enable them to verify your tax compliance status online via e-Filing.
- Request a TCC via e-filing which will give you the option to print the TCC.
- Or request a TCC at a SARS branch where a SARS agent will be able to print or e-mail the TCC to you.
- To register for e-filing go to: [www.sarsefiling.co.za](http://www.sarsefiling.co.za)

A tax compliant status is a holistic view of your tax compliance level across all your registered tax types.

#### **Is your tax compliance status green?**

- Ensure all tax returns are submitted
- No outstanding debt owed to SARS
- SARS has been notified of any change of residential or business address
- Your business is registered for all required tax types e.g. PAYE, VAT, income tax.

Check your tax compliance status by logging onto your e-filing profile and viewing your "my compliance Profile" and rectify any non-compliance.

*Contractor*

*Witness 1*

*Witness 2*

*Employer*

*Witness 1*

*Witness 2*

**THIRD PARTY AUTHORISATION TO VIEW BIDDER TCS:**

To assist with the evaluation process of your bid we require your consent to check your SARS tax compliance via e-filing. Kindly complete the table below authorising MLM to check TCC for tender purposes only.

<b>TCS Details</b>	
<b>Tax payer name</b>	
<b>Trading Name</b>	
<b>Purpose of request</b>	TENDER
<b>Request Reference number</b>	
<b>PIN</b>	
<b>PIN EXPIRY DATE</b>	

**Note: Bidders may attach their Tax compliance status printout to the bidding document.**

I, \_\_\_\_\_ in my capacity as \_\_\_\_\_ duly appointed as authorised signatory holder, hereby grant **ERWAT** permission to check the TCC status of \_\_\_\_\_ and it is duly understood that the search is for tender purposes only.

\_\_\_\_\_  
**NAME AND SURNAME**

\_\_\_\_\_  
**DESIGNATION**

\_\_\_\_\_  
**DATE**

\_\_\_\_\_  
**SIGNATURE**

**FOR ERWAT OFFICE USE ONLY:**  
**VERIFIED** ☐ YES / ☐ NO

<i>Contractor</i>	<i>Witness 1</i>	<i>Witness 2</i>	<i>Employer</i>	<i>Witness 1</i>	<i>Witness 2</i>

MBD 3.2

**PRICING SCHEDULE – NON-FIRM PRICES  
(PURCHASES)****NOTE: PRICE ADJUSTMENTS WILL BE ALLOWED AT THE PERIODS AND TIMES SPECIFIED IN THE BIDDING DOCUMENTS.****IN CASES WHERE DIFFERENT DELIVERY POINTS INFLUENCE THE PRICING, A SEPARATE PRICING SCHEDULE MUST BE SUBMITTED FOR EACH DELIVERY POINT**

Name of Bidder: \_\_\_\_\_

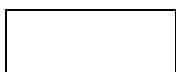
Bid number: **ERW2311/01**Closing Time : **12:00 NOON**Closing Date: **WEDNESDAY, 18TH JUNE 2025**

OFFER TO BE VALID FOR 120 DAYS FROM THE CLOSING DATE OF BID.

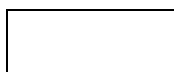
ITEM NO.	QUANTITY	DESCRIPTION	BID PRICE IN RSA CURRENCY **(ALL APPLICABLE TAXES INCLUDED)
-	Required by:	<b>EKURHULENI WATER CARE WORKS</b>	
-	At:	<b>INFRASTRUCTURE PROJECTS AND PLANNING</b>	
-	Brand and model	.....	
-	Country of origin	.....	
-	Does the offer comply with the specification(s)?	*YES/NO	
-	If not to specification, indicate deviation(s)	.....	
-	Period required for delivery	.....	
-	Delivery:	*Firm/Not firm	

\*\* "all applicable taxes" includes value- added tax, pay as you earn, income tax, unemployment insurance fund contributions and skills development levies.

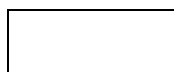
\*Delete if not applicable



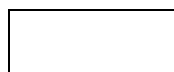
Contractor



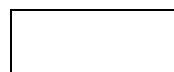
Witness 1



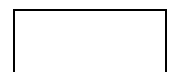
Witness 2



Employer



Witness 1



Witness 2

## MBD 3.2

## PRICE ADJUSTMENTS

## A NON-FIRM PRICES SUBJECT TO ESCALATION

1. IN CASES OF PERIOD CONTRACTS, NON FIRM PRICES WILL BE ADJUSTED (LOADED) WITH THE ASSESSED CONTRACT PRICE ADJUSTMENTS IMPLICIT IN NON FIRM PRICES WHEN CALCULATING THE COMPARATIVE PRICES
2. IN THIS CATEGORY PRICE ESCALATIONS WILL ONLY BE CONSIDERED IN TERMS OF THE FOLLOWING FORMULA:

$$Pa = (1-V)Pt \left( D1 \frac{R1t}{R1o} + D2 \frac{R2t}{R2o} + D3 \frac{R3t}{R3o} + D4 \frac{R4t}{R4o} \right) + VPt$$

Where:

Pa	=	The new escalated price to be calculated.
(1-V) Pt	=	85% of the original bid price. <b>Note that Pt must always be the original bid price and not an escalated price.</b>
D1, D2..	=	Each factor of the bid price e.g. Labour, transport, clothing, footwear, etc. The total of the various factors D1,D2...etc. must add up to 100%.
R1t, R2t.....	=	Index figure obtained from new index (depends on the number of factors used).
R1o, R2o	=	Index figure at time of bidding.
VPt	=	15% of the original bid price. This portion of the bid price remains firm i.e. it is not subject to any price escalations.

The following index/indices must be used to calculate your bid price:

Index..... Dated.....      Index..... Dated.....      Index..... Dated.....

Index..... Dated.....      Index..... Dated.....      Index..... Dated.....

FURNISH A BREAKDOWN OF YOUR PRICE IN TERMS OF ABOVE-MENTIONED FORMULA. THE TOTAL OF THE VARIOUS FACTORS MUST ADD UP TO 100%.

FACTOR (D1, D2 etc. eg. Labour, transport etc.)	PERCENTAGE OF BID PRICE

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

**MBD 3.2****PRICES SUBJECT TO RATE OF EXCHANGE VARIATIONS**

Please furnish full particulars of your financial institution, state the currencies used in the conversion of the prices of the items to South African currency, which portion of the price is subject to rate of exchange variations and the amounts remitted abroad.

PARTICULARS OF FINANCIAL INSTITUTION	ITEM NO	PRICE	CURRENCY	RATE	PORTION OF PRICE SUBJECT TO ROE	AMOUNT IN FOREIGN CURRENCY REMITTED ABROAD
				ZAR=		
				ZAR=		
				ZAR=		
				ZAR=		
				ZAR=		
				ZAR=		

Adjustments for rate of exchange variations during the contract period will be calculated by using the average monthly exchange rates as issued by your commercial bank for the periods indicated hereunder: (Proof from bank required)

AVERAGE MONTHLY EXCHANGE RATES FOR THE PERIOD:	DATE DOCUMENTATION MUST BE SUBMITTED TO THIS OFFICE	DATE FROM WHICH NEW CALCULATED PRICES WILL BECOME EFFECTIVE	DATE UNTIL WHICH NEW CALCULATED PRICE WILL BE EFFECTIVE

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

- 4.1 Full Name of bidder or his or her representative:

---

- 4.2 Identity Number:

- 4.3 Position occupied in the Company (director, trustee, shareholder<sup>2</sup>):

---

- 4.4 Company Registration Number: \_\_\_\_\_

- 4.5 Tax Reference Number: \_\_\_\_\_

- 4.6 VAT Registration Number: \_\_\_\_\_

- 4.8 Are you presently in the service of the state? YES / NO  
If so, furnish particulars.

---

---

- 4.9 Have you been in the service of the state for the past twelve months? YES / NO
- If so, furnish particulars.

---

- \_\_\_\_\_

**Contractor**

\_\_\_\_\_

Witness 1

\_\_\_\_\_

Witness 2

\_\_\_\_\_

**Employer**

\_\_\_\_\_

Witness 1

**Witness 2**

YES / NO

If so, furnish particulars.

---

---

- 4.11 Are you, aware of any relationship (family, friend, other) between any other bidder and any persons in the service of the state who may be involved with the evaluation and or adjudication of this bid?

YES / NO

If so, furnish particulars.

---

---

- 4.12 Are any of the company's directors, trustees, managers, principle shareholders or stakeholders in service of the state?

YES / NO

If so, furnish particulars.

---

---

- 4.13 Are any spouse, child or parent of the company's directors, trustees, managers, principle shareholders or stakeholders in service of the state?

YES / NO

If so, furnish particulars.

---

---

- 4.14 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? **(this refers to all companies involved in, regardless of the commodity)**

YES / NO

If so, furnish particulars.

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Contractor

---

Witness 1

---

Witness 2

---

Employer

---

Witness 1

---

Witness 2



5. Full details of directors / trustees / members / shareholders **in the service of the state.**

FULL NAME	IDENTITY NUMBER	STATE EMPLOYEE NUMBER

**1 MSCM Regulations: "in the service of the state" means to be –**

- (a) A member of –
  - any municipal council/entity;
  - any provincial legislature; or
  - 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) a member of the accounting authority of any national or provincial public entity; or
- (f) an employee of Parliament or a provincial legislature.

<sup>2</sup> 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.

**CERTIFICATION**

**I, THE UNDERSIGNED (NAME) \_\_\_\_\_  
CERTIFY THAT THE INFORMATION FURNISHED ON THIS DECLARATION FORM IS CORRECT.**

**I ACCEPT THAT THE STATE MAY ACT AGAINST ME SHOULD THIS DECLARATION PROVE TO BE FALSE.**

\_\_\_\_\_  
**SIGNATURE**

\_\_\_\_\_  
**DATE**

\_\_\_\_\_  
**POSITION**

\_\_\_\_\_  
**NAME OF BIDDER**

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

**MBD 5**

**DECLARATION FOR PROCUREMENT ABOVE R10 MILLION (ALL APPLICABLE TAXES INCLUDED)**

For all procurement expected to exceed R10 million (all applicable taxes included), bidders must complete the following questionnaire.

Bidders are required to submit **audited** financial statements for the **past three years** for bids where the threshold exceeds R10 million if they are required to prepare annual financial statements for auditing by law

**1 Are you by law required to prepare annual financial statements for auditing?**

**\*YES/NO**

1.1 If **"YES"**, submit **audited** annual financial statements (**as provided for under the Companies Act**) for the **past three years** or since the date of establishment if established during the past three years.

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**2** Do you have any outstanding undisputed commitments for municipal services towards any municipality for more than three months or any other service provider in respect of which payment is overdue for more than 30 days?

**\*YES/NO**

2.1 If no, this serves to certify that the bidder has no undisputed commitments for municipal services towards any municipality for more than three months or other service provider in respect of which payment is overdue for more than 30 days.

2.2 If yes, provide particulars.

---



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**3** Has any contract been awarded to you 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?

**\*YES/ NO**

3.1 If yes, furnish particulars

---



---

**\* Delete if not applicable**

*Contractor*

*Witness 1*

*Witness 2*

*Employer*

*Witness 1*

*Witness 2*

- 4 Will any portion of goods or services be sourced from outside the Republic, and, if so, what portion and whether any portion of payment from the municipality / municipal entity is expected to be transferred out of the Republic?

**\*YES / NO**

4.1 If yes, furnish particulars

---

---

**CERTIFICATION**

I, THE UNDERSIGNED (NAME) \_\_\_\_\_

**CERTIFY THAT THE INFORMATION FURNISHED ON THIS DECLARATION FORM IS CORRECT.**

**I ACCEPT THAT THE STATE MAY ACT AGAINST ME SHOULD THIS DECLARATION PROVE TO BE FALSE.**

\_\_\_\_\_  
**SIGNATURE**

\_\_\_\_\_  
**DATE**

\_\_\_\_\_  
**POSITION**

\_\_\_\_\_  
**NAME OF BIDDER**

*Contractor*

*Witness 1*

*Witness 2*

*Employer*

*Witness 1*

*Witness 2*

MBD 6.1

**PREFERENCE POINTS CLAIM FORM IN TERMS OF THE PREFERENTIAL PROCUREMENT REGULATIONS 2022**

This preference form must form part of all tenders invited. It contains general information and serves as a claim form for preference points for specific goals.

**NB: BEFORE COMPLETING THIS FORM, TENDERERS MUST STUDY THE GENERAL CONDITIONS, DEFINITIONS AND DIRECTIVES APPLICABLE IN RESPECT OF THE TENDER AND 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 The 90/10 preference point system will be applicable in this tender. The lowest/ highest acceptable tender will be used to determine the accurate system once tenders are received and shall be awarded for:

- (a) Price; and
- (b) Specific Goals.

1.5 The maximum points for this tender are allocated as follows:

	POINTS
PRICE	90
SPECIFIC GOALS	10
<b>Total points for Price and SPECIFIC GOALS</b>	<b>100</b>

1.3 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.

1.4 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. FORMULAE FOR PROCUREMENT OF GOODS AND SERVICES****2.1 POINTS AWARDED FOR PRICE****2.1.1 THE 90/10 PREFERENCE POINT SYSTEMS**

A maximum of 90 points is allocated for price on the following basis:

**90/10**

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

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

Where

$P_s$  = Points scored for price of tender under consideration

$P_t$  = Price of tender under consideration

$P_{min}$  = Price of lowest acceptable tender

### 3. POINTS AWARDED FOR SPECIFIC GOALS

3.1. 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:

**Table 1: Specific goals for the tender and points claimed are indicated per the table below.**

**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	Number of points allocated (90/10 system)	Number of points claimed (90/10 system) (To be completed by the tenderer)
EME or QSE 51% owned by women	2	
EME or QSE 51% owned by youth	2	
EME or QSE 51% owned by people with disabilities	2	
EME or QSE 51% owned by military veterans	2	
EME or QSE within the boundaries of Ekurhuleni Municipality	2	

The above information will be verified in accordance with the bidders B-BBEE certificate, and or a certificate from the companies and intellectual property commission (CIPC), the department of Military Veterans and or other supporting documents. All supporting evidence must be submitted in order to claim the preferential procurement points claimed. ERWAT reserves the right to verify the information submitted.

In the case of multi-parties (Joint ventures, consortiums, partnerships, etc.), allocation of points will be calculated by adding the individual parties in the JV, etc. ownership % together; divide the total by the number of parties in the respective joint ventures, consortiums, partnerships, etc. The average % will thus be the indicating factor for the number of points to be scored.

### EXAMPLE

#### Joint venture

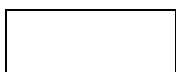
Party 1 = 51% EME/QSE owned by women

Party 2 = 100% EME/QSE owned by women

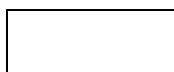
= **151%** / 2 parties in the JV = 75% and will score = 2 points

The above principle will apply to points 1, 2, 3 & 4 indicated in Table 1 above.

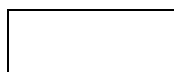
For point 5: The collective JV agreement's address, or the Lead JV partners' domicile Address will be utilized for scoring of points.



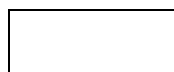
Contractor



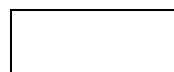
Witness 1



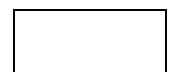
Witness 2



Employer



Witness 1



Witness 2

**DECLARATION WITH REGARD TO COMPANY/FIRM**

3.2. Name of company/firm.....

3.3. Company registration number: .....

3.4. TYPE OF COMPANY/ FIRM

- ☐ Partnership/Joint Venture / Consortium  
☐ One-person business/sole propriety  
☐ Close corporation  
☐ Public Company  
☐ Personal Liability Company  
☐ (Pty) Limited  
☐ Non-Profit Company  
☐ State Owned Company

[TICK APPLICABLE BOX]

3.5. 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 1.4 and 4.2, the contractor 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 contractor, 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.

.....  
**SIGNATURE(S) OF TENDERER(S)**

**SURNAME AND NAME:** .....

**DATE**.....

**ADDRESS**.....

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

MBD 7.1

## CONTRACT FORM - PURCHASE OF GOODS/WORKS

**THIS FORM MUST BE FILLED IN DUPLICATE BY BOTH THE SUCCESSFUL BIDDER (PART 1) AND THE PURCHASER (PART 2). BOTH FORMS MUST BE SIGNED IN THE ORIGINAL SO THAT THE SUCCESSFUL BIDDER AND THE PURCHASER WOULD BE IN POSSESSION OF ORIGINALLY SIGNED CONTRACTS FOR THEIR RESPECTIVE RECORDS.**

### PART 1 (TO BE FILLED IN BY THE BIDDER)

1. I hereby undertake to supply all or any of the goods and/or works described in the attached bidding documents to (name of institution)..... in accordance with the requirements and specifications stipulated in bid number **ERW2311/01** at the price/s quoted. My offer/s remain binding upon me and open for acceptance by the purchaser during the validity period indicated and calculated from the closing time of bid.
2. The following documents shall be deemed to form and be read and construed as part of this agreement:
  - (i) Bidding documents, viz
    - Invitation to bid;
    - Tax clearance certificate;
    - Pricing schedule(s);
    - Technical Specification(s);
    - Preference claims for Broad Based Black Economic Empowerment Status Level of Contribution in terms of the Preferential Procurement Regulations 2022;
    - Declaration of interest;
    - Declaration of bidder's past SCM practices;
    - Certificate of Independent Bid Determination;
    - Special Conditions of Contract;
  - (ii) General Conditions of Contract; and
  - (iii) Other (specify)
3. I confirm that I have satisfied myself as to the correctness and validity of my bid; that the price(s) and rate(s) quoted cover all the goods and/or works specified in the bidding documents; that the price(s) and rate(s) cover all my obligations and I accept that any mistakes regarding price(s) and rate(s) and calculations will be at my own risk.
4. I accept full responsibility for the proper execution and fulfilment of all obligations and conditions devolving on me under this agreement as the principal liable for the due fulfilment of this contract.
5. It is noted that this is rates-based tender. The contract is limited to Purchase orders issued within the available budget allocated for such on an as and when required basis.
6. I declare that I have no participation in any collusive practices with any bidder or any other person regarding this or any other bid.
7. I confirm that I am duly authorised to sign this contract.

**NAME (PRINT)** \_\_\_\_\_

**CAPACITY** \_\_\_\_\_

**SIGNATURE** \_\_\_\_\_

**NAME OF FIRM** \_\_\_\_\_

#### WITNESSES

1. \_\_\_\_\_

2. \_\_\_\_\_

**DATE:** \_\_\_\_\_

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

MBD 7.1

**CONTRACT FORM - PURCHASE OF GOODS/WORKS****PART 2 (TO BE FILLED IN BY THE PURCHASER)**

1. I..... in my capacity as.....  
accept your bid under reference number **ERW2311/01** dated.....for the supply of goods/works indicated hereunder and/or further specified in the annexure(s).
2. An official order indicating delivery instructions is forthcoming.
3. I undertake to make payment for the goods/works delivered in accordance with the terms and conditions of the contract, within 30 (thirty) days after receipt of an invoice accompanied by the delivery note.

ITEM NO.	DESCRIPTION OF SERVICE	PRICE (ALL APPLICABLE TAXES INCLUDED)	COMPLETION DATE	B-BBEE STATUS LEVEL OF CONTRIBUTION	MINIMUM THRESHOLD FOR LOCAL PRODUCTION AND CONTENT (if applicable)
	<i>Kindly refer to the BOQ*</i>	<i>Kindly refer to the pricing schedule/BOQ*</i>	<i>Determined in the Service Agreement Level</i>	<i>Refer to MBD 6.1</i>	<i>N/A</i>

**\* It is noted that this is rate-based tender. The contract is limited to Purchase orders issued within the available budget allocated for such on an as and when required basis.**

4. I confirm that I am duly authorized to sign this contract.

NAME (PRINT) \_\_\_\_\_

CAPACITY \_\_\_\_\_

SIGNATURE \_\_\_\_\_

NAME OF FIRM \_\_\_\_\_

DATE \_\_\_\_\_

**WITNESSES**

1. \_\_\_\_\_

2. \_\_\_\_\_

DATE: \_\_\_\_\_

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2



**MBD 8**

**DECLARATION OF BIDDER'S PAST SUPPLY CHAIN MANAGEMENT PRACTICES**

- 1 This Municipal Bidding Document must form part of all bids invited.
- 2 It serves as a declaration to be used by municipalities and municipal entities in ensuring that when goods and services are being procured, all reasonable steps are taken to combat the abuse of the supply chain management system.
- 3 The bid of any bidder may be rejected if that bidder, or any of its directors have:
  - a. abused the company's / municipal entity's supply chain management system or committed any improper conduct in relation to such system;
  - b. been convicted for fraud or corruption during the past five years;
  - c. wilfully neglected, reneged on or failed to comply with any government, municipal or other public sector contract during the past five years; or
  - d. 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).
- 4 **In order to give effect to the above, the following questionnaire must be completed and submitted with the bid.**

Item	Question	Yes	No
4.1	<p>Is the bidder or any of its directors 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 (<a href="http://www.treasury.gov.za">www.treasury.gov.za</a>) and can be accessed by clicking on its link at the bottom of the home page.</p>	<p>Yes</p> <input type="checkbox"/>	<p>No</p> <input type="checkbox"/>
4.1.1	If so, furnish particulars:		
4.2	<p>Is the bidder or any of its directors listed on the Register for Tender Defaulters in terms of section 29 of the Prevention and Combating of Corrupt Activities Act (No 12 of 2004)?</p> <p>The Register for Tender Defaulters can be accessed on the National Treasury's website (<a href="http://www.treasury.gov.za">www.treasury.gov.za</a>) by clicking on its link at the bottom of the home page.</p>	<p>Yes</p> <input type="checkbox"/>	<p>No</p> <input type="checkbox"/>

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

4.2.1	If so, furnish particulars:		
4.3	Was the bidder or any of its directors convicted by a court of law (including a court of law outside the Republic of South Africa) for fraud or corruption during the past five years?	Yes <input type="checkbox"/>	No <input type="checkbox"/>
4.3.1	If so, furnish particulars:		
4.4	Does the bidder or any of its directors owe any municipal rates and taxes or municipal charges to the company / 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"/>
4.4.1	If so, furnish particulars:		
4.5	Was any contract between the bidder 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"/>
4.7.1	If so, furnish particulars:		

### **CERTIFICATION**

I, THE UNDERSIGNED (FULL NAME \_\_\_\_\_)

CERTIFY THAT THE INFORMATION FURNISHED ON THIS DECLARATION FORM IS TRUE AND CORRECT.

I ACCEPT THAT, IN ADDITION TO CANCELLATION OF A CONTRACT, ACTION MAY BE TAKEN AGAINST ME SHOULD THIS DECLARATION PROVE TO BE FALSE.

**SIGNATURE ON BEHALF OF BIDDER**

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

**MBD 9**

**CERTIFICATE OF INDEPENDENT BID DETERMINATION**

1. This Municipal Bidding Document (MBD) must form part of all bids<sup>1</sup> invited.
2. Section 4 (1) (b) (iii) of the Competition Act No. 89 of 1998, as amended, prohibits an agreement between, or concerted practice by, firms, or a decision by an association of firms, if it is between parties in a horizontal relationship and if it involves collusive bidding (or bid rigging).<sup>2</sup> Collusive bidding is a *pe se* prohibition meaning that it cannot be justified under any grounds.
3. Municipal Supply Regulation 38 (1) prescribes that a supply chain management policy must provide measures for the combating of abuse of the supply chain management system, and must enable the accounting officer, among others, to:
  - a. take all reasonable steps to prevent such abuse;
  - b. reject the bid of any bidder if that bidder or any of its directors has abused the supply chain management system of the municipality or municipal entity or has committed any improper conduct in relation to such system; and
  - c. cancel a contract awarded to a person if the person committed any corrupt or fraudulent act during the bidding process or the execution of the contract.
4. This MBD serves as a certificate of declaration that would be used by institutions to ensure that, when bids are considered, reasonable steps are taken to prevent any form of bid-rigging.
5. In order to give effect to the above, the attached Certificate of Bid Determination (MBD 9) must be completed and submitted with the bid:



*Contractor*



*Witness 1*



*Witness 2*



*Employer*



*Witness 1*



*Witness 2*

### **CERTIFICATE OF INDEPENDENT BID DETERMINATION**

I, the undersigned, in submitting the accompanying bid:

**PROJECT NO: ERW2311/01**

**DESCRIPTION: APPOINTMENT OF PANEL SERVICE PROVIDER/S IN A FRAMEWORK CONTRACT FOR THE SUPPLY, INSTALLATION AND COMMISSIONING OF ELECTRICAL DISTRIBUTION SWITCHBOARD AND MOTOR CONTROL CENTRES FOR VARIOUS SITES AT EKURHULENI WATER CARE WORKS ON 'AS AND WHEN REQUIRED' BASIS FOR A PERIOD OF THIRTY-SIX (36 NO.) MONTHS**

in response to the invitation for the bid made by:

**EKURHULENI WATER CARE COMPANY (ERWAT)**

(Name of Municipality/Entity)

do hereby make the following statements that I certify to be true and complete in every respect:

I certify, on behalf of \_\_\_\_\_ (Name of Bidder) that:

1. I have read and I understand the contents of this Certificate;
2. I understand that the accompanying bid will be disqualified if this Certificate is found not to be true and complete in every respect;
3. I am authorized by the bidder to sign this Certificate, and to submit the accompanying bid, on behalf of the bidder;
4. Each person whose signature appears on the accompanying bid has been authorized by the bidder to determine the terms of, and to sign, the bid, on behalf of the bidder;
5. For the purposes of this Certificate and the accompanying bid, I understand that the word "competitor" shall include any individual or organization, other than the bidder, whether or not affiliated with the bidder, who:
  - (a) has been requested to submit a bid in response to this bid invitation;
  - (b) could potentially submit a bid in response to this bid invitation, based on their qualifications, abilities or experience; and
  - (c) provides the same goods and services as the bidder and/or is in the same line of business as the bidder
6. The bidder has arrived at the accompanying bid independently from, and without consultation, communication, agreement or arrangement with any competitor. However, communication between partners in a joint venture or consortium<sup>3</sup> will not be construed as collusive bidding.
7. In particular, without limiting the generality of paragraphs 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 bid;

\_\_\_\_\_  
Contractor

\_\_\_\_\_  
Witness 1

\_\_\_\_\_  
Witness 2

\_\_\_\_\_  
Employer

\_\_\_\_\_  
Witness 1

\_\_\_\_\_  
Witness 2

- (e) the submission of a bid which does not meet the specifications and conditions of the bid; or  
(f) bidding with the intention not to win the bid.
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 bid invitation relates.
9. The terms of the accompanying bid have not been, and will not be, disclosed by the bidder, directly or indirectly, to any competitor, prior to the date and time of the official bid 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 bids and contracts, bids that are suspicious will be reported to the Competition Commission for investigation and possible imposition of administrative penalties in terms of section 59 of the Competition Act No. 89 of 1998 and or may be reported to the National Prosecuting Authority (NPA) for criminal investigation and or may be restricted from conducting business with the public sector for a period not exceeding ten (10) years in terms of the Prevention and Combating of Corrupt Activities Act No. 12 of 2004 or any other applicable legislation.

\_\_\_\_\_  
**SIGNATURE**

\_\_\_\_\_  
**DATE**

\_\_\_\_\_  
**POSITION**

\_\_\_\_\_  
**NAME OF BID**

*Contractor*

*Witness 1*

*Witness 2*

*Employer*

*Witness 1*

*Witness 2*

**FORM A**

**MUNICIPAL SERVICES, RATES AND TAXES CLEARANCE CERTIFICATE FOR SUPPLY CHAIN MANAGEMENT PURPOSE**

The purpose of this form is to obtain prove that municipal services, rates and taxes of the service provider are **not more than three months in arrears** with the relevant municipality / landlord in the municipal area where the service provider conduct his / her business. Kindly attach the latest municipal rates and taxes account not older than 3 months from date of advertising of bid.

**Where bidders are not owners of a property and cannot submit a copy of the municipal account, the following must be completed together with a Rental/lease agreement:**

**( TO BE COMPLETED BY THE LANDLORD)**

Name of the Landlord:

Property Physical Address:

**Please tick below**

Rental: in arrears for more than 3 months

Municipal services: in arrears for more than 3 months

**Yes**

**No**

Landlord Signature:

Date: \_\_\_\_\_

**Landlord's business stamp here (where applicable)**

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

**FORM B**

**CONFIRMATION OF REGISTRATION ON NATIONAL TREASURY CENTRALISED  
SUPPLIER DATABASE**

CONFIRMATION OF CSD VENDOR INFORMATION		
1	VENDOR NAME	
2	CSD APPROVED NUMBER	M _____
3	COMPANY REG NUMBER	
4	COMPANY TAX NUMBER	
5	COMPANY VAT NUMBER	
6	COMPANY BEE LEVEL	
7	CONTACT PERSON	
8	OFFICE TEL. NUMBER	
9	OFFICE FAX NUMBER	
10	E-MAIL ADDRESS	
11	CELL NUMBER	

I, \_\_\_\_\_ in my capacity as \_\_\_\_\_  
being the

authorized signatory, hereby declare that the above information is true and correct.

\_\_\_\_\_  
**AUTHORISED SIGNATORY DESIGNATION**

\_\_\_\_\_  
**NAME AND SURNAME**

\_\_\_\_\_  
**RESOLUTION DATE: AUTHORISED SIGNATORY APPOINTMENT**

\_\_\_\_\_  
**SIGNATURE**

\_\_\_\_\_  
**DATE**

*Contractor*

*Witness 1*

*Witness 2*

*Employer*

*Witness 1*

*Witness 2*

**FORM C**

**AUTHORITY OF SIGNATORY TO SIGN BIDS**

The bid shall be signed by a person duly authorised thereto and the following is applicable:

Company: A resolution by its board of directors authorising a director or other official of the company to sign the documents on behalf of the company.

Close Corporation: A resolution by its members authorising a member or other official of the corporation to sign the documents on each member's behalf.

Partnership: All the partners shall sign the documents unless one partner or a group of partners has been authorised to sign on behalf of each partner, in which case proof of such authorisation shall be included in the bid.

Joint Venture: Should two or more firms jointly submit a bid, the bid shall be accompanied by the document of establishment of the joint venture, duly registered and authenticated by a notary public or other official deputed to witness sworn statements, which defines the conditions under which the joint venture will function, the period of duration, the persons authorised to represent the Joint Venture and who are obligated thereby, the participation of the several firms forming the joint venture, and well as any other information necessary to permit a full appraisal of its functioning.

One Man Concern: This shall be clearly stated and all documents shall be signed accordingly.

---

Details of person responsible for Bid Document process:

Name : .....

Contact number: .....

Office address: .....

Signatories for close corporations and companies shall confirm their authority by attaching to this form a **duly signed and dated original or certified copy on the Company Letterhead** of the relevant resolution of their members or their board of directors, as the case may be.

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2



**PRO-FORMA FOR COMPANIES AND CLOSE CORPORATIONS:**

"By resolution of the board of directors passed on *(date)* \_\_\_\_\_

Prof./Dr/Mr/Ms \_\_\_\_\_

has been duly authorized to sign all documents in connection with the Bid Document for Contract Number \_\_\_\_\_ and any Contract which may arise there from on behalf

of \_\_\_\_\_

**(BLOCK CAPITALS)**

**SIGNED ON BEHALF OF THE COMPANY** \_\_\_\_\_

**IN HIS CAPACITY AS** \_\_\_\_\_

**DATE** \_\_\_\_\_

**FULL NAMES OF SIGNATORY** \_\_\_\_\_

**AS WITNESSES:** 1. \_\_\_\_\_

2. \_\_\_\_\_

*Contractor*

*Witness 1*

*Witness 2*

*Employer*

*Witness 1*

*Witness 2*

**PRO-FORMA FOR JOINT VENTURES:  
Certificate of Authority for Joint Ventures**

We, the undersigned, are submitting this Bid Document offer in Joint Venture and hereby authorise Mr/Ms \_\_\_\_\_, authorised signatory of the company \_\_\_\_\_, acting in the capacity of lead partner, to sign all documents in connection with the Bid Document offer and any contract resulting from it on our behalf.

NAME OF FIRM	ADDRESS	DULY AUTHORISED SIGNATORY
		Signature: ..... Name: ..... Designation: .....
		Signature: ..... Name: ..... Designation: .....
		Signature: ..... Name: ..... Designation: .....
		Signature: ..... Name: ..... Designation: .....

**N.B.: THE DULY SIGNED AND DATED ORIGINAL OR CERTIFIED COPY OF AUTHORITY OF SIGNATORY ON COMPANY LETTERHEAD SHOULD BE INCLUDED IN THE RETURNABLE DOCUMENTS PACK.**

*Contractor*

*Witness 1*

*Witness 2*

*Employer*

*Witness 1*

*Witness 2*

**FORM D**

**FINANCIAL REFERENCES/ BIDDERS'S CREDIT RATING AND DETAILS OF BIDDERS**  
**BANKING INFORMATION**

**Notes to Bidder:**

1. The Bidder shall attach to this form a letter from the bank confirming the bank account and details. Failure to provide the required letter with the Bid Document submission shall render the Bidder's offer unresponsive.
2. The Bidder's banking details as they appear below shall be completed.
3. In the event that the Bidder is a joint venture enterprise, details of all the members of the joint venture shall be similarly provided and attached to this form.

<b>BANK NAME:</b>										
<b>ACCOUNT NAME:</b> (e.g. ABC Civil Construction cc)										
<b>ACCOUNT TYPE:</b> (e.g. Savings, Cheque etc)										
<b>ACCOUNT NO:</b>										
<b>ADDRESS OF BANK:</b>										
<b>CONTACT PERSON:</b>										
<b>TEL. NO. OF BANK / CONTACT:</b>										
How long has this account been in existence:	<table border="1"> <tr> <td>0-6 months</td> <td></td> </tr> <tr> <td>7-12 months</td> <td></td> </tr> <tr> <td>13-24 months</td> <td></td> </tr> <tr> <td>More than 24 months</td> <td></td> </tr> </table>	0-6 months		7-12 months		13-24 months		More than 24 months		(Tick which is appropriate)
0-6 months										
7-12 months										
13-24 months										
More than 24 months										

**Signature on behalf of Bidder**

**N.B.: ORIGINAL LETTER FROM BANK OR BANK STATEMENT (NOT OLDER THAN THREE MONTHS) SHOULD BE INCLUDED IN THE RETURNABLE DOCUMENTS PACK.**

--

Contractor

--

Witness 1

--

Witness 2

--

Employer

--

Witness 1

--

Witness 2

**FORM E**

**RECORD OF ADDENDA TO BID DOCUMENTS**

N.B: Please note that where applicable, bidders are required to complete the table below acknowledging receipt of Addendum/s. All pages in relation to the Addendum must be struck through with a note “**REPLACED** by **ADDENDUM/S**”. The revised pages in relation to the Addendum/s must be **attached** as an Annexure to the bid document. The initial documents must remain in the bid document and **MUST NOT BE REMOVED** as this will lead to a disqualification.

Kindly note that where addendums are issued, such are communicated to bidders who attended the briefing session at the e-mail address that is supplied by the bidder/s recorded on the attendance register.

The e-mail address supplied by bidders on the attendance register for physical briefings will be utilised as the official communication address. Where virtual briefings are held, the e-mail address submitted by the suppliers on the registration attendance register will be utilised as the official communication address.

It remains the responsibility of the bidder to ensure that the correct valid e-mail address is captured. ERWAT accepts no responsibility for returned messages reflecting to be undeliverable or due to invalid/non-existing details.

The addendum/s are uploaded onto the ERWAT website under the respective tender number and bidders should visit the website before the closing date and time to ensure that all communication has been accessed and taken into account with the submission of this bid.

I/We confirm that the following Addendum/s listed below have been received and added to this document as an Addendum. Please note you may not modify or remove any part of the original Bid document except for the strikethrough requirement.	
Date	Addendum/s No

**SIGNATURE ON BEHALF OF BIDDER**

**DATE**

--

Contractor

--

Witness 1

--

Witness 2

--

Employer

--

Witness 1

--

Witness 2

**FORM F**

**CERTIFICATE OF AUTHORITY FOR SIGNATORY TO AGREEMENT IN TERMS OF THE  
OCCUPATIONAL HEALTH AND SAFETY ACT, 1993 (ACT NO 85 OF 1993)**

The signatory for the company that is the Contractor in terms of the above-mentioned Contract and the Mandatory in terms of the above-mentioned Act shall confirm his or her authority thereto by attaching to this page a duly signed and dated copy of the relevant resolution of the board of directors.

**EXAMPLE OF CONTENT OF THE LETTER**

By resolution of the board of directors passed at a meeting held on \_\_\_\_\_ 20 \_\_\_\_\_,

Mr//Ms \_\_\_\_\_ whose signature

appears below, has been duly authorised to sign the AGREEMENT IN TERMS OF THE

OCCUPATIONAL HEALTH AND SAFETY ACT, 1993 (ACT 85 OF 1993) on behalf of

**SIGNED ON BEHALF OF THE COMPANY :** \_\_\_\_\_

**IN HIS/HER CAPACITY AS** : \_\_\_\_\_

**DATE** : \_\_\_\_\_

**SIGNATURE OF SIGNATORY** : \_\_\_\_\_

**WITNESS:** \_\_\_\_\_ **WITNESS:** \_\_\_\_\_

**NAME (in capitals):** \_\_\_\_\_ **NAME:** \_\_\_\_\_

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

FORM G

**OCCUPATIONAL HEALTH AND SAFETY AGREEMENT /PLAN (WHERE APPLICABLE)**

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

FORM H

CERTIFIED COPY OF ID DOCUMENT/S OF OWNERS/MEMBERS/SHAREHOLDERS

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

FORM I

**CURRENT CERTIFICATE OF GOOD STANDING FROM COMPENSATION COMMISSIONER**

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2



FORM J

**PROGRAMME OF WORKS**  
**(Not Applicable)**

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

**FORM K**

**EXPERTISE OF THE KEY PERSONNEL**

1. **Personnel / Individual adequacy:** Portfolio of evidence (CV) should be provided. Indicating similar projects / jobs completed or undertaken by the personnel stated below.
2. **Qualifications:** Portfolio of evidence should be provided for the key staff with supporting Qualifications (SAQA, QCTO etc. accredited) and detailed organogram.
3. **Pro-Forma CV:** A pro-forma curriculum vitae shall be filled in full on the below given forms.

KEY STAFF EXPERIENCE					
Position on this Contract	Full Name	ID No.	Qualifications	No. of Relevant Years of Experience	Professional Registration number
Project Manager					
Lead Engineer Professional Electrical Engineer Min NQF Level 7 (Registered ECSA)					
Installation Electrician					
Installation Instrumentation Mechanician					
Installation Instrumentation Technician					

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

### **PRO-FORMA CURRICULUM VITAE OF KEY PERSONNEL/STAFF**

This form should be completed for each key person listed in the functionality criterion

<b>Responsibility or role on the project (as per list in form k)</b>		<b>PROJECT MANAGER</b>	
<b>Name:</b>		<b>Date of Birth:</b>	
<b>Profession:</b>		<b>Nationality:</b>	
<b>Qualifications( Attach Proof of Qualification) :</b>			
<b>Professional Membership (If any):</b>			
<b>Name of Employer (Firm) :</b>			
<b>Current Position :</b>		<b>Years with firm:</b>	
<b>Employment record: (List of chronological order starting with earliest work experience)</b>			
<b>Experience record pertinent to required service:</b>			
<b>Certification:</b>  I, the undersigned, certify that to the best of my knowledge and belief, this data correctly describes me, my qualification and my experience and that I will be available to execute the work for which I have been nominated.			
_____ <b>(Signature of Person named in Schedule) Date</b>			

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

This form should be completed for each key person listed in the functionality criterion

<b>Responsibility or role on the project (as per list in form k)</b>	<b>LEAD ENGINEER PROFETIONAL ELECTRICAL ENGINEER Min NQF Level 7 (REGISTERED ECSA)</b>
<b>Name:</b>	<b>Date of Birth:</b>
<b>Profession:</b>	<b>Nationality:</b>
<b>Qualifications ( Attach Proof of Qualification) :</b>	
<b>Professional Membership (if any):</b>	
<b>Name of Employer (Firm) :</b>	
<b>Current Position :</b>	<b>Years with firm:</b>
<b>Employment record: (List of chronological order starting with earliest work experience)</b>	
<b>Experience record pertinent to required service:</b>	
<b>Certification:</b> I, the undersigned, certify that to the best of my knowledge and belief, this data correctly describes me, my qualification and my experience and that I will be available to execute the work for which I have been nominated.	
_____ <b>(Signature of Person named in Schedule) Date</b>	

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

This form should be completed for each key person listed in the functionality criterion

<b>Responsibility or role on the project (as per list in form k)</b>	<b>INSTALLATION ELECTRICIAN</b>
<b>Name:</b>	<b>Date of Birth:</b>
<b>Profession:</b>	<b>Nationality:</b>
<b>Qualifications ( Attach Proof of Qualification) :</b>	
<b>Professional Membership (if any):</b>	
<b>Name of Employer (Firm) :</b>	
<b>Current Position :</b>	<b>Years with firm:</b>
<b>Employment record: (List of chronological order starting with earliest work experience)</b>	
<b>Experience record pertinent to required service:</b>	
<b>Certification:</b> <p>I, the undersigned, certify that to the best of my knowledge and belief, this data correctly describes me, my qualification and my experience and that I will be available to execute the work for which I have been nominated.</p>	
<b>(Signature of Person named in Schedule) Date</b>	

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

This form should be completed for each key person listed in the functionality criterion

<b>Responsibility or role on the project (as per list in form k)</b>		<b>INSTALLATION INSTRUMENTATION TECHNICIAN</b>	
<b>Name:</b>		<b>Date of Birth:</b>	
<b>Profession:</b>		<b>Nationality:</b>	
<b>Qualifications ( Attach Proof of Qualification) :</b>			
<b>Professional Membership (if any):</b>			
<b>Name of Employer (Firm) :</b>			
<b>Current Position :</b>		<b>Years with firm:</b>	
<b>Employment record: (List of chronological order starting with earliest work experience)</b>			
<b>Experience record pertinent to required service:</b>			
<b>Certification:</b> I, the undersigned, certify that to the best of my knowledge and belief, this data correctly describes me, my qualification and my experience and that I will be available to execute the work for which I have been nominated.			
_____ <b>(Signature of Person named in Schedule) Date</b>			

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

This form should be completed for each key person listed in the functionality criterion

<b>Responsibility or role on the project (as per list in form k)</b>		<b>INSTALLATION INSTRUMENTATION MECHANICIAN</b>	
<b>Name:</b>		<b>Date of Birth:</b>	
<b>Profession:</b>		<b>Nationality:</b>	
<b>Qualifications ( Attach Proof of Qualification) :</b>			
<b>Professional Membership (if any):</b>			
<b>Name of Employer (Firm) :</b>			
<b>Current Position :</b>		<b>Years with firm:</b>	
<b>Employment record: (List of chronological order starting with earliest work experience)</b>			
<b>Experience record pertinent to required service:</b>			
<b>Certification:</b> I, the undersigned, certify that to the best of my knowledge and belief, this data correctly describes me, my qualification and my experience and that I will be available to execute the work for which I have been nominated.			
_____ <b>(Signature of Person named in Schedule) Date</b>			

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

**FORM L**

**PROOF OF RELEVANT REGULATORY CERTIFICATION OR OTHER REQUIREMENTS IN  
TERMS OF THE REQUIRED REGULATORY AUTHORITY AS SET OUT IN THE SCOPE OF  
WORKS**

BIDDERS MUST HAVE A MINIMUM CIDB GRADING OF 7 EP TO QUALIFY FOR EVALUATION.

*Contractor*

*Witness 1*

*Witness 2*

*Employer*

*Witness 1*

*Witness 2*



**FORM M**

**LETTER OF INTENT TO SUBMIT THIRD PARTY LIABILITY INSURANCE AND ALL RISK CONTRACTORS' INSURANCE TO COVER THIS CONTRACT**

Not Applicable when submitting the bid, only required when the project has commenced

Bidders are required to ensure the safekeeping and insurance of items in place until such time that the works/goods or services are handed over to ERWAT and ERWAT has signed off thereon.

*Contractor*

*Witness 1*

*Witness 2*

*Employer*

*Witness 1*

*Witness 2*

**FORM N**

**INCLUDE THE FOLLOWING DOCUMENTS IN THE SUPPORTING DOCUMENTS  
FILE TO BE SUBMITTED WITH THE ORIGINAL BIDDING DOCUMENT**

**1. FOR CLOSED CORPORATIONS**

CK1 or CK2 as applicable (Founding Statement).

**2. FOR COMPANIES**

- A copy of the Certificate of Incorporation
- Certified Copies of the ID's of the Directors and
- The shareholders' register.

**3. FOR JOINT VENTURE AGREEMENTS**

- Copy of the Joint Venture Agreement between all the parties,
- As well as the documents in (1) or (2) and (6) of each Joint Venture member.

**4. FOR PARTNERSHIP**

- Certified Copies of the ID's of the partners

**5. ONE-PERSON BUSINESS / SOLE TRADER/SOLE PROPRIETOR**

- Certified Copy of ID

*Contractor*

*Witness 1*

*Witness 2*

*Employer*

*Witness 1*


*Witness 2*

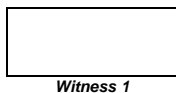
**FORM O**

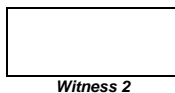
**BACKGROUND AND WORK EXPERIENCE**

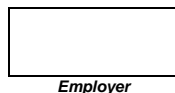
Briefly summarize the Company's experience with regard to MCC Panels installations in industrial plants/ and/ or municipal wastewater treatment plants as bidders would have provided under the Functionality criteria. Attach a Certificate of Completion and/ or Reference Letter.

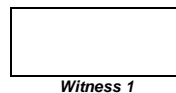
	EMPLOYER	EMPLOYER'S REPRESENTATIVE (NAME, TEL, E-MAIL)	PROJECT TITLE AND DESCRIPTION OF WORK Inc. CAPACITY OF THE WORKS	VALUE OF WORK (R- Rand)	COMPLETION DATE
PROJECT 1					
PROJECT 2					
PROJECT 3					
PROJECT 4					
PROJECT 5					

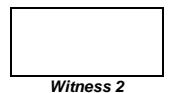
  
Contractor

  
Witness 1

  
Witness 2

  
Employer

  
Witness 1

  
Witness 2

**FORM P**

**POPIA CONSENT FORM**

**PROTECTION OF PERSONAL INFORMATION ACT, 4 OF 2013**

By signing this referral form:

- a) I/we hereby grant my/our voluntary consent that my/our personal information may be processed, collected, used and disclosed in compliance with the Protection of Personal Information Act, 4 of 2013.
- b) I/we furthermore agree that my/our personal information may be used for the lawful and reasonable purposes in as far as the ERWAT (responsible party) must use my/our information in the performance of its public legal duty.
- c) I/we understand that my/our personal information may be disclosed to a third party in as far as the ERWAT must fulfil its public legal duty.
- d) I/we furthermore understand that there are instances in terms of abovementioned Act where my express consent is not necessary to permit the processing of personal information, which may be related to litigation or when the information is publicly available. Further details are available on the ERWAT website.

Company name: \_\_\_\_\_

Company address: \_\_\_\_\_  
\_\_\_\_\_

Name& Surname of Representative: \_\_\_\_\_

Signature Of Bidder: \_\_\_\_\_

Designation: \_\_\_\_\_

Date: \_\_\_\_\_

*Contractor*

*Witness 1*

*Witness 2*

*Employer*

*Witness 1*

*Witness 2*



**PROJECT NO: ERW2311/01**

**APPOINTMENT OF PANEL SERVICE PROVIDER/S IN A FRAMEWORK CONTRACT FOR THE SUPPLY, INSTALLATION AND COMMISSIONING OF ELECTRICAL DISTRIBUTION SWITCHBOARD AND MOTOR CONTROL CENTRES FOR VARIOUS SITES AT EKURHULENI WATER CARE WORKS ON 'AS AND WHEN REQUIRED' BASIS FOR A PERIOD OF THIRTY-SIX (36) MONTHS**

**C1 AGREEMENTS AND CONTRACT DATA**

**Part C1: Agreements and Contract Data**

- C1.1 Form of Offer and Acceptance
- C1.2 Contract Data
- C1.3 Form of Guarantee
- C1.4 Occupational Health and Safety
- C1.5 Corporate Governance Breach Clause

*Contractor*

*Witness 1*

*Witness 2*

*Employer*

*Witness 1*

*Witness 2*

**C1.1 FORM OF OFFER AND ACCEPTANCE**

**OFFER**

The Employer, identified in the Acceptance signature block, has solicited offers to enter in contract in respect of the following works: **PROJECT NO: ERW2311/01 APPOINTMENT OF PANEL SERVICE PROVIDER/S IN A FRAMEWORK CONTRACT FOR THE SUPPLY, INSTALLATION AND COMMISSIONING OF ELECTRICAL DISTRIBUTION SWITCHBOARD AND MOTOR CONTROL CENTRES FOR VARIOUS SITES AT EKURHULENI WATER CARE WORKS ON 'AS AND WHEN REQUIRED' BASIS FOR A PERIOD OF (36) MONTHS**

The Bidder, identified in the Offer signature block below, has examined the documents listed in the Tender Data and addenda thereto as listed in the Tender Schedules, and by submitting this Offer has accepted the Conditions of Tender.

By the representative of the Bidder, deemed to be duly authorised, signing this part of this Form of Offer and Acceptance, the Bidder offers to perform all of the obligations and liabilities of the Contractor under the Contract including compliance with all its terms and conditions according to their true intent and meaning for an amount to be determined in accordance with the Conditions of Contract identified in the Contract Data.

**THE OFFERED RATES FOR THE GOODS, AS SET OUT IN THE PRICING SCHEDULE/BILL OF QUANTITIES (THE PRICES INCLUSIVE OF VALUE ADDED TAX), IS HEREBY CONFIRMED FOR THE PERIOD OF THE CONTRACT PERIOD INCLUDING THE PROVISIONS FOR THE ANNUAL ESCALATIONS (WHERE APPLICABLE)**

This Offer may be accepted by the Employer by signing the Acceptance part of this Form of Offer and Acceptance and returning one copy of this document to the Bidder before the end of the period of validity stated in the Tender Data, whereupon the Bidder becomes the party named as the Contractor in the Conditions of Contract identified in the Contract Data.

Signature(s) .....

Name(s) .....

Capacity .....

For the Bidder .....  
(Name and address of organisation)

Name & Signature

Of Witness .....  
Name Date

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

## ACCEPTANCE

By signing this part of this Form of Offer and Acceptance, the Employer identified below accepts the Bidder's Offer. In consideration thereof, the Employer shall pay the Contractor the amount due in accordance with the Conditions of Contract identified in the Contract Data. Acceptance of the Bidder's Offer shall form an agreement between the Employer and the Bidder upon the terms and conditions contained in this Agreement and in the Contract that is the subject of this Agreement.

The terms of the contract are contained in:

- Agreements and Contract Data (which includes this Agreement)
- Pricing Data
- Scope of Work
- Site information

And drawings and documents or parts thereof, which may be incorporated by reference into above stated terms.

Deviations from and amendments to the documents listed in the Tender Data and any addenda thereto listed in the Tender Schedules as well as any changes to the terms of the Offer agreed by the Bidder and the Employer during this process of offer and acceptance, are contained in the Schedule of Deviations attached to and forming part of this Agreement. No amendments to or deviations from said documents are valid unless contained in this Schedule, which must be duly signed by the authorised representative(s) of both parties.

The Bidder shall within two weeks after receiving a completed copy of this Agreement, including the Schedule of Deviations (if any), contact the Employer (whose details are given in the Contract Data) to arrange the delivery of any bonds, guarantees, proof of insurance and any other documentation to be provided in terms of the Conditions of Contract identified in the Contract Data at or just after the date this Agreement comes into effect. Failure to fulfil any of these obligations in accordance with those terms shall constitute a repudiation of this Agreement.

Notwithstanding anything contained herein, this Agreement comes into effect on the date when the Bidder receives one fully completed original copy of this document, including the Schedule of Deviations (if any). Unless the Bidder (now Contractor) within five days of the date of such receipt notifies the Employer in writing of any reason why he cannot accept the contents of this Agreement, this Agreement shall constitute a binding contract between the parties.

Signature(s) .....

Name(s) .....

Capacity .....

For the Employer .....  
(Name and address of organisation)

Name & Signature

Of Witness .....  
Name Date

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

## **SCHEDULE OF DEVIATIONS**

### **Notes:**

1. The extent of deviations from the tender documents issued by the Employer prior to the tender closing date is limited to those permitted in terms of the Conditions of Tender.
2. A Bidder's covering letter shall not be included in the final contract document. Should any matter in such letter, which constitutes a deviation as aforesaid becomes the subject of agreements reached during the process of Offer and Acceptance; the outcome of such agreement shall be recorded here.
3. Any other matter arising from the process of offer and acceptance either as a confirmation, clarification or change to the Tender documents and which it is agreed by the Parties becomes an obligation of the contract, shall also be recorded here.
4. Any change or addition to the tender documents arising from the above agreements and recorded here shall also be incorporated into the final draft of the Contract.

**1 Subject .....**

Details .....

.....

**2 Subject .....**

Details .....

.....

**3 Subject .....**

Details .....

.....

**4 Subject .....**

Details .....

.....

**5 Subject .....**

Details .....

.....

By the duly authorised representatives signing this Schedule of Deviations, the Employer and the Bidder agree to and accept the foregoing Schedule of Deviations as the only deviations from and amendments to the documents listed in the Tender Data and addenda thereto as listed in the Tender Schedules, as well as any confirmation, clarification or change to the terms of the Offer agreed by the Bidder and the Employer during this process of Offer and Acceptance.

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2



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

**FOR THE BIDDER:**

Signature(s) .....

Name(s) .....

Capacity .....

For the Bidder .....  
(Name and address of organisation)

Name & Signature

Of Witness .....  
Name Date

**FOR THE EMPLOYER**

Signature(s) .....

Name(s) .....

Capacity .....

For the Employer .....  
(Name and address of organisation)

Name & Signature

Of Witness .....  
Name Date

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

## C1.2 CONTRACT DATA

### GENERAL CONDITIONS OF CONTRACT

This Contract will be based on the "General Conditions of Contract for Construction Works *General Conditions of Contract 2015 (GCC 2015, Third Edition)*

Documents can be ordered from SAICE who can be contacted through their website [www.saice.org.za](http://www.saice.org.za). Physical address: SAICE House, Block 9, Thornhill Office Park, Bekker Street, Midrand, Johannesburg. Telephone number: (011) 805 5947.

It is agreed that the only variations from the General Conditions of Contract 2015 are those set out hereafter under "Special Conditions of Contract".

### SPECIAL CONDITIONS OF CONTRACT

These Special Conditions of Contract (SCC) form an integral part of the Contract. The Special Conditions of Contract shall amplify, modify or supersede, as the case may be, the General Conditions of Contract 2015 to the extent specified below, and shall take precedence and shall govern.

The clauses of the Special Conditions hereafter are numbered "SCC" followed in each case by the number of the applicable clause or subclause in the General Conditions of Contract 2015, and the applicable heading, or (where a new special condition that has no relation to the existing clauses is introduced) by a number that follows after the last clause number in the General Conditions, and an appropriate heading.

### AMENDMENTS TO THE GENERAL CONDITIONS OF CONTRACT

#### DATA PROVIDED BY THE EMPLOYER

Clause	Data
	<b>Definitions</b>  The definitions contained in Clause 1.1 are hereby amended and/or supplemented as follows:
<b>SCC 1.1.1.7</b>	<b>Contract</b> <b>Add the following:</b> <b>Contract Documents</b>  The Service Level Agreement, Bid document and related attachments shall constitute the complete contract agreement.  This is a CIDB Contract, and the CIDB Board has initiated a BULD Programme which focuses on Targeted Enterprise Development and/or Skills Development. This contract is affected by CIDB B.U.I.L.D Programme for Skills Development, therefore, the CIDB standard for Developing Skills through Infrastructure Contracts (Government gazette 28 April 2023) which forms part of the B.U.I.L.D Programme Standards shall form part of the contract. This standard requirement as well as any other regulatory or legislative requirements will be included during the Service Level Agreement (SLA) stage.

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

Clause	Data
	<b>It should be noted that all ERWAT contracts are subject to the Municipal Financial Management Act (MFMA Act 56 of 2003), therefore in the event that there is any contradiction between the MFMA (Act 56 of 2003) and the GCC or any other applicable contractual agreement, the MFMA (Act 56 of 2003) and its applicable regulations shall take precedence.</b>
<b>SCC 1.1.1.13</b>	The Defects Liability Period is <b>12</b> months from the date of the Certificate of Completion. The Defects Liability Period is <b>12</b> months from the date of the Certificate of Completion per installation
<b>SCC 1.1.1.14</b>	The Works shall be completed within <b>36</b> months from the commencement date on an "as and when required basis".  The Purchase Orders of the Works shall be placed within <b>36</b> months from the commencement date on an "as and when required basis".
<b>SCC 1.1.1.15 1.2.1.2</b>	The Name of the Employer is <b>ERWAT</b>  The address of the Employer is:  The Managing Director Hartebeestfontein Office Park R25 (Bapsfontein/Bronkhorstspuit) Kempton Park  Telephone: 011 929 7000
<b>SCC 3.2.3</b>	<b>Add the following:</b>  Approval of the Employer is required for:  i). Cessions – issuing of cessions by the Contractor is expressly prohibited except if and when prior written approval of the Employer under the signature of the Accounting Officer for the issue of the cession has been requested and obtained ii). Use of contingencies – for all items for which rates have not been approved in terms the contract. iii). Extension of Time – extension of time can only be granted by the Employer.
<b>SCC 4.1.2</b>	<b>Add the following:</b>  "When completed, the parts of the works designed by the Contractor, to the extent specified in the Contract, shall be fit for the purposes for which the Works are intended"
<b>SCC 4.4.1</b>	<b>Add the following:</b>  The Contractor is to submit to the Employer in writing a request for appointment of a particular sub-contractor. Accompanying this request is to be the full detail of the sub-contractor, including:  <ul style="list-style-type: none"> <li>▪ Previous experience</li> <li>▪ Work which will be sub-contracted to him/her</li> <li>▪ Approximate value of the work to be sub-contracted</li> </ul>

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

Clause	Data
	<p>Before the Employer in terms of Clause 6.10 hereof issues any certificate that includes any payment in respect of work done or goods supplied by any sub-contractor appointed in accordance with the provisions of Clause 4.4 of the General Conditions of Contract for Construction works (2015, Third Edition), he shall be entitled to call upon the Contractor to furnish reasonable proof that all payments (less retention moneys) included in previous certificates in respect of the work or goods of such sub-contractors have been made or discharged by the Contractor, in default of which, unless the Contractor:</p> <ul style="list-style-type: none"> <li>▪ Informs the Employer in writing that he has reasonable cause for withholding or refusing such payment; and</li> <li>▪ Submits to the Employer reasonable proof that he has so informed such sub-contractor in writing.</li> </ul>
<b>SCC 4.9.1</b>	<p><b>Add the following:</b></p> <p>"All equipment on site shall be in a good working order, and is to be in such a condition that it can achieve production rates which are typical of the industry standards.</p> <p>Should any equipment, in the opinion of the Employer, be substandard or breaks down frequently to such an extent that it affects the progress on the project, the Employer may instruct the Contractor to replace such equipment."</p>
<b>SCC 5.3.1</b>	<p><b>Add the following to 5.3.1:</b></p> <p>The documentation required before Commencement of the Works are:</p> <ul style="list-style-type: none"> <li>• Health &amp; Safety Plan (Refer to Cl. 4.3 of GCC 3<sup>rd</sup> Ed 2015)</li> <li>• Initial Programme (Refer to Cl. 5.6 of GCC 3<sup>rd</sup> Ed 2015)</li> <li>• Security (Deed of Guarantee) (refer to Cl. 6.2 of GCC 3<sup>rd</sup> Ed 2015)</li> <li>• Insurances (Refer to Cl. 8.6 of GCC 3<sup>rd</sup> Ed 2015)</li> </ul>
<b>SCC 5.3.3</b>	<p><b>Add the following:</b></p> <p>The time to the documentation required before Commencement of the Works execution is <b>28</b> days</p>
<b>SCC 5.4.1</b>	<p><b>Add the following:</b></p> <p>The Commencement Date shall be the date the contractor is given possession of site.</p>
<b>SCC 5.8.1</b>	<p><b>Add the following:</b></p> <p>The special non-working days are the official builder's holiday plus all statutory public holidays.</p>
<b>SCC 5.12</b>	<p><b>Add the following:</b></p> <p>A delay caused by inclement weather conditions will be regarded as a delay only if, in the opinion of the Employer, all progress on an item or items of work on the critical path of the working programme of the contractor has been brought to a halt.</p> <p>Delays on working days only (based on a five-day working week) will be taken into account for the extension of time, but the Contractor shall make provision in his programme of work</p>

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

Clause	Data
	<p>for an expected delay of "n" working days caused by normal rainy weather, for which he will not receive any extension of time, where "n" equals 5 days.</p> <p>Extension of time during working days will be granted to the degree to which actual delays, as defined above, exceed the number of "n" workings days.</p>
<b>SCC 5.12.2.1</b>	<p><b>Add the following:</b></p> <p>Extensions of time in respect of clause 5.12 in respect of abnormal rainfall shall be calculated using the following formula for each calendar month or part thereof:</p> $V = (Nw - Nn) + \frac{(Rw - Rn)}{X}$ <p>Where:</p> <p>V = Extension of time in calendar days in respect of the calendar month under consideration.</p> <p>Nw = Actual number of days during the calendar month on which a rainfall of 10 mm or more has been recorded.</p> <p>Nn = Average number of days in the relevant calendar month, as derived from existing rainfall records, on which a rainfall of 20mm or more has been recorded for the calendar month.</p> <p>Rw = Actual average rainfall in mm recorded for the calendar month under consideration.</p> <p>Rn = Average rainfall in mm for the calendar month as derived from existing rainfall records as stated in the Site Information.</p> <p>For purposes of the Contract Nn, Rn, X and Y shall have those values assigned to them in the South African Weather Service's rainfall records of the nearest station to the site.</p> <p>If V is negative and its absolute value exceeds Nn, then V shall be taken as equal to minus Nn.</p> <p>The total extension of time shall be the algebraic sum of all monthly totals for the period under consideration, but if the total is negative the time for completion shall not be reduced due to subnormal rainfall. Extensions of time for part of a month shall be calculated using pro rata values of Nn and Rn.</p> <p>This formula does not take account flood damage which could cause further or concurrent delays and will be treated separately as far as extension of time is concerned.</p> <p>The factor (Nw – Nn) shall be considered to represent a fair allowance for variations from the average in the number of days during which rainfall exceeds 10 mm. The factor (Rw-Rn) shall be considered to represent a fair allowance for variations from the average in the number of days during which the rainfall did not exceed 10 mm but wet conditions prevented or disrupted work.</p> <p>For the purpose of applying the formula, accurate rain gauging shall be taken at a suitable point on the Site and the Contractor shall at his own expense, take all necessary precautions to ensure that rain gauges cannot be interfered with by unauthorized persons.</p>

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

Clause	Data
<b>SCC 5.13.1</b>	<p><b>Add the following:</b></p> <p>The penalty for failing to complete the works is shall be calculated as follows; Purchase Order value multiply 0.5% per day</p>
<b>SCC 6.2.1</b>	<p><b>Add the following:</b></p> <p>The Security to be provided by the Contractor shall be the Performance guarantee liability of <b>10 %</b> of the Purchase Order. This guarantee shall be delivered within 21 days of the Commencement Date.</p>
<b>SCC 6.2.2</b>	<p><b>Add the following:</b></p> <p>The Form of Guarantee is to contain the wording of the pro-forma document included in the General Conditions of Contract (Pro-forma included in section C1.3 to this document).</p> <p>Form of Guarantee: construction guarantee: the successful bidder will be required to submit a construction guarantee that is equal to 10% of the total contract value all-inclusive and must be submitted to the SCM office within 10 working days from date of appointment. Only original guarantees issued by an accredited and registered financial institution will be accepted and will only be released on final completion of works. “</p>
<b>SCC 6.9.1</b>	<p>All materials shall comply with the requirements of the South African Bureau of Standards, and shall bear the official standardization mark. Where SABS standard does not exist for a certain material, or a material does not bear the official standardization mark, the Client's Representatives approval of such material must be gained before use thereof.</p>
<b>SCC 6.10.1.5</b>	<p><b>Add the following:</b></p> <p>The percentage advance on materials not yet built into the Permanent Works but received on site is <b>80 %</b>.</p>
<b>SCC 6.10.3</b>	<p><b>Add the following:</b></p> <p>The <b>5%</b> retention of the purchase order value will be released upon completion of the works and the remaining <b>5%</b> retention amount shall be released at the end of <b>12 months</b> defects liability period</p>
<b>SCC 6.10.3</b>	<p><b>Add the following:</b></p> <p>The limit of retention money is <b>10 %</b> of the purchase order value.</p>
<b>SCC 7.2.1</b>	<p><b>Add the following:</b></p> <p>All materials shall comply with the requirements of the South African Bureau of Standards, and shall bear the official standardization mark. Where SABS/SANS/ISO standard does not exist for a certain material, or a material does not bear the official standardization mark, the Employers approval of such material must be gained before use thereof.</p>
<b>SCC 8.6.1.1.2</b>	<p><b>Add the following:</b></p> <p>The value of the materials supplied by the Employer to be included in the insurance sum is nil.</p>

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

Clause	Data
<b>SCC 8.6.1.1.3</b>	<b>Add the following:</b>  The required insured amount to cover professional fees for repairing damaged infrastructure and equipment and loss of time on the construction schedule is to be 15% of the Purchase Order value.
<b>SCC 8.6.1.3</b>	<b>Add the following:</b>  The limit of indemnity for liability insurance is 10 % of Purchase Order value. This will be finalized at Service Level Agreement (SLA)stage
<b>SCC 1.1.1.8</b>	<b>Add the following:</b>  This is a framework contract where a separate quote will be requested for each order. The request will be based on the site requirement from which a load list, cable list and IO list will be complied.
<b>SCC 1.1.1.8</b>	<b>Add the following:</b>  The rotation of the request for quotation will be done as follows. The bidders appointed on the panel will be divided into groups based on the number of successful bidders. The requested will rotated between the groups.

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

**PART 2: DATA PROVIDED BY THE CONTRACTOR**

Sub-Clause	Data
1.1.17	<p>The Contractor is:</p> <p>Name: .....</p> <p>The Address of the Contractor is:</p> <p>Address (physical): .....</p> <p>.....</p> <p>.....</p> <p>Address (postal): .....</p> <p>.....</p> <p>Telephone: .....</p> <p>Facsimile: .....</p> <p>E-mail: .....</p>
1.1.22	<p>Contractors Representative</p> <p>Name: .....</p> <p>Telephone: .....</p> <p>Facsimile: .....</p> <p>E-mail: .....</p>

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2



**C1.3 FORM OF GUARANTEE**

**PROJECT NO: ERW2311/01**

**APPOINTMENT OF PANEL SERVICE PROVIDER/S IN A FRAMEWORK CONTRACT FOR THE SUPPLY, INSTALLATION AND COMMISSIONING OF ELECTRICAL DISTRIBUTION SWITCHBOARD AND MOTOR CONTROL CENTRES FOR VARIOUS SITES AT EKURHULENI WATER CARE WORKS ON 'AS AND WHEN REQUIRED' BASIS FOR A PERIOD OF THIRTY-SIX (36) MONTHS**

WHEREAS .....

at .....

*(Hereinafter referred to as "the Employer")*

Entered into, on the..... day of ..... 20....., at .....

a Contract with .....

at .....

*(Hereinafter referred to as "the Contractor")*

for the construction of .....

AND WHEREAS it is provided by such Contract that the Contractor shall provide the Employer with security by way of surety ship for the due and faithful fulfilment of such Contract by the Contractor;

AND WHEREAS .....

has/ have at the request of the Contractor, agreed to give such security;

NOW THEREFORE WE, ..... hereby guarantee and bind ourselves jointly and severally as Sureties and Co-Principal Debtors to the Employer under renunciation of the benefits of division and excursion for the due and faithful performance by the Contractor of all the terms and conditions of the said Contract, subject to the following conditions.

1. The Employer shall, without reference and/or notice to us, have complete liberty of action to act in any manner authorised and/or contemplated by the terms of the said contract, and/or to agree to any modifications, variations, alterations, directions or extensions of the Due Completion Date of the Works under the said Contract, and that its rights under this guarantee shall in no way be prejudiced nor our liability hereunder be affected by reason of any steps which the Employer may take under such Contract, or of any modification, variation, alterations of the Due Completion Date which the Employer may make, give, concede or agree to under the said Contract.
2. The Employer shall be entitled, without reference to us, to release any securities held by it, and to give time to or compound or make any other arrangement with the Contractor.
3. This guarantee shall remain in full force and effect until the issue of the Certificate of Completion in terms of the Contract, unless we are advised in writing by the Employer before the issue of the said Certificate of his intention to institute claims, and the particulars thereof, in which event this guarantee shall remain in full force and effect until all such claims have been paid or liquidated.

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

4. Our total liability hereunder shall not exceed the sum of (R.....).

5. We hereby choose *domicilium citandi et executandi* for all purposes arising hereof at

IN WITNESS WHEREOF this guarantee has been executed by us at ..... on this .....

day of ... 20.....

As witnesses:

1. .... Signature

2. .... Signature

Duly authorised to sign on behalf of .....

Address

.....

.....

.....

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

## C1.4 OCCUPATIONAL HEALTH AND SAFETY

### **AGREEMENT IN TERMS OF THE OCCUPATIONAL HEALTH AND SAFETY ACT, 1993 (ACT NO 85 OF 1993)**

THIS AGREEMENT IS made at .....

on the ..... day of ..... in the year .....

Between EKURHULENI WATER CARE COMPANY (ERWAT) (hereinafter called "the Employer") of the one

part, herein represented by .....

In his capacity as .....

and delegate of the Employer in terms of the Employer's standard powers of delegation pursuant to the provisions of Act No 7 of 1998,

and .....

(hereinafter called "the Mandatory") of the other part, herein represented by .....

.....

in his capacity as .....

and being duly authorized by virtue of a resolution appended hereto as Annexure A;

WHEREAS the Employer requires certain works be constructed, viz APPOINTMENT OF PANEL SERVICE PROVIDER/S IN A FRAMEWORK CONTRACT FOR THE SUPPLY, INSTALLATION AND COMMISSIONING OF ELECTRICAL DISTRIBUTION SWITCHBOARD AND MOTOR CONTROL CENTRES FOR VARIOUS SITES AT EKURHULENI WATER CARE WORKS ON 'AS AND WHEN REQUIRED' BASIS (NO. 36) COMMISSIONS and has accepted a Bid by the Mandatory for the construction, completion and maintenance of such Works and whereas the Employer and the Mandatory have agreed to certain arrangements and procedures to be followed in order to ensure compliance by the Mandatory with the provisions of the Occupational Health and Safety Act, 1993 (Act 85 of 1993).

NOW THEREFORE THIS AGREEMENT WITNESSED AS FOLLOWS:

- 1 The Mandatory shall execute the work in accordance with the Contract Documents pertaining to this Contract.
- 2 This Agreement shall hold good from its Commencement Date, which shall be the date of a written notice from the Employer or engineer requiring him to commence the execution of the Works, to either –
  - (a) the date of the Final Approval Certificate issued in terms of Clause 5.16 of the General Conditions of Contract for construction works 2015 (hereinafter referred to as "the GCC"), as contained in the Contract Documents pertaining to this Contract, or
  - (b) The date of termination of the Contract in terms of Clauses 9.1, 9.2, 9.3 of the GCC 2015.

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

- 3 The Mandatory declares himself to be conversant with the following:
- (a) All the requirements, regulations and standards of the Occupational Health and Safety Act (Act 85 of 1993), hereinafter referred to as "The Act", together with its amendments and with special reference to the following Sections of the Act:
    - (i) Section 8 : General duties of Employers to their employees
    - (ii) Section 9 : General duties of Employers and self-employed persons to persons other than employees
    - (iii) Section 37: Acts or omissions by employees or mandatories
    - (iv) Sub-section 37(2) relating to the purpose and meaning of this Agreement
  - (b) The procedures and safety rules of the Employer as pertaining to the Mandatory and to all his subcontractors.
- 4 In addition to the requirements of Clause 8.4 of the GCC 2015 (as amended by Special Condition of Contract) and all relevant requirements of the above-mentioned Volume, the Mandatory agrees to execute all the Works forming part of this Contract and to operate and utilize all machinery, Plant and equipment in accordance with the Act.
- 5 The Mandatory is responsible for the compliance with the Act; the safety procedures and rules of the employer by all his subcontractors, whether or not selected and/or approved by the Employer.
6. The Mandatory warrants that all his and his subcontractors' workmen are covered in terms of the Compensation for Occupational Injuries and Diseases Act, 1993 (Act No 130 of 1993), which cover, shall remain in force whilst any such workmen are present on site. A letter of good standing from the Compensation Commissioner to this effect must be produced to the Employer upon signature of the agreement.
7. The Mandatory undertakes to ensure that he and/or subcontractors and/or their respective employers will at all times comply with the following conditions:
- a) The Mandatory shall assume the responsibility in terms of Section 16.1 of the Act. The Mandatory shall not delegate any duty in terms of Section 16.2 of this Act without the prior written approval of the Employer. If the Mandatory obtains such approval and delegates any duty in terms of section 16.2 a copy of such written delegation shall immediately be forwarded to the Employer.
  - b) All incidents referred to in the Act shall be reported by the Mandatory to the Department of Labour as well as to the Employer. The Employer will further be provided with copies of all written documentation relating to any incident.
  - c) The Employer hereby obtains an interest in the issue of any formal enquiry conducted in terms of section 32 of the Act into any incident involving the Mandatory and/or his employees and/or his subcontractors.

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

In witness hereof the parties are to set their signatures hereon in the presence of the subscribing witnesses:

SIGNED FOR AND ON BEHALF OF THE EMPLOYER : .....

Witness .....

Witness .....

(Name) .....  
(Print)

(Name) .....  
(Print)

SIGNED FOR AND ON BEHALF OF THE MANDATORY..... :

Witness .....

Witness .....

(Name) .....  
(Print)

(Name) .....  
(Print)

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

## ANNEXURE A

### **CERTIFICATE OF AUTHORITY FOR SIGNATORY TO AGREEMENT IN TERMS OF OCCUPATIONAL HEALTH AND SAFETY ACT, 1993 (ACT NO 85 OF 1993)**

The signatory for the company that is the Contractor in terms of the above-mentioned Contract and the Mandatory in terms of the above-mentioned Act shall confirm his or her authority thereto by attaching to this page a duly signed and dated copy of the relevant resolution of the board of directors.

By resolution of the board of directors passed at a meeting held on ..... 20.....,

Mr//Ms ..... whose signature

Appears below, has been duly authorised to sign the AGREEMENT IN TERMS OF THE

OCCUPATIONAL HEALTH AND SAFETY ACT, 1993 (ACT 85 OF 1993) on behalf of .....

.....

SIGNED ON BEHALF OF THE COMPANY : .....


IN HIS/HER CAPACITY AS : .....


DATE : .....


SIGNATURE OF SIGNATORY : .....


WITNESS : ..... WITNESS : .....


NAME (in capitals): ..... NAME .....:


  
Contractor

  
Witness 1

  
Witness 2

  
Employer

  
Witness 1

  
Witness 2

### C1.5 CORPORATE GOVERNANCE BREACH CLAUSE

1. Ekurhuleni Water Care Company ("ERWAT") requires [insert name of company] ("the Company") to comply, mutatis mutandis with the Code contained in the King III Report and Code of Good Corporate Governance (below "the Code") for the term of this Agreement and any extension thereof.
2. The Company irrevocably undertakes and agrees that it will, mutatis mutandis, comply with the Code for the term of this Agreement and any extensions thereof.
3. The Company acknowledges and agrees that:
  - 3.1 It is essential that the Company complies with the Code, in order to discharge all of its obligations under and in terms of the Agreement in a proper, efficient and professional manner, and
  - 3.2 ERWAT will be prejudiced and may suffer damages in the event of the Company failing to comply with the Code.
4. The Company shall be required, within seven (7) days of the end of each calendar month during the term of this Agreement (and any extensions thereof), to furnish ERWAT with a written certificate, signed by the directors of the Company [alternatively members of the Close Corporation], certifying that the Company has complied with the provisions of the Code during the preceding months.
5. ERWAT shall have the right, without assigning any reason therefore and at any time, to appoint either the Institute of Directors of South Africa or a firm of chartered accountants or attorneys, to conduct an audit of the business and affairs of the Company in order to ascertain whether the Company is indeed complying with the terms of the Code.

To this end, the Company irrevocably undertakes and agrees to co-operate fully with the party conducting such investigation for and on behalf of ERWAT and to make available to such party all such documentation and all such information as the investigation party may require to fully discharge its obligations under and in terms hereof and to report fully to ERWAT.

In the event of it being found that the Company is not complying with the Code, then ERWAT shall be entitled to (a) regard this as a breach of the agreement and (b) recover the costs of the investigation, on an attorney and client basis, from the Company. In the event of it being found that the Company is, in fact, discharging its obligations under and in terms of the Code, then ERWAT shall bear the costs incurred in such investigation. In either of the foregoing events, the Company shall be entitled to receive a copy of the written report once same has been concluded by the investigating party.

6. In the event of the Code being replaced with another Code (or similar document), then such replacement document shall replace the Code and a reference to the Code shall be deemed to be a reference to such replacement document. The reference to the Code shall be deemed to include any statutory codification of directors' obligations and duties which may be enacted in the Republic of South Africa at any time in the future.
7. In entering into this Agreement, the Company represents and warrants to ERWAT that it is familiar with the Code, that it fully understands and appreciates the rights, obligations and recommendations therein contained and agrees to be bound thereby as herein recorded.

Initial: \_\_\_\_\_

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2



**PROJECT NO: ERW2311/01**

**APPOINTMENT OF PANEL SERVICE PROVIDER/S IN A FRAMEWORK  
CONTRACT FOR THE SUPPLY, INSTALLATION AND COMMISSIONING  
OF ELECTRICAL DISTRIBUTION SWITCHBOARD AND MOTOR  
CONTROL CENTRES FOR VARIOUS SITES AT EKURHULENI WATER  
CARE WORKS ON 'AS AND WHEN REQUIRED' BASIS FOR A PERIOD  
OF (36) MONTHS**

**C2 PRICING DATA**

- C2.1 Instructions
- C2.2 Bill of quantities

*Contractor*

*Witness 1*

*Witness 2*

*Employer*

*Witness 1*

*Witness 2*





**PROJECT NO: ERW2311/01**

**APPOINTMENT OF PANEL SERVICE PROVIDER/S IN A FRAMEWORK  
CONTRACT FOR THE SUPPLY, INSTALLATION AND COMMISSIONING  
OF ELECTRICAL DISTRIBUTION SWITCHBOARD AND MOTOR  
CONTROL CENTRES FOR VARIOUS SITES AT EKURHULENI WATER  
CARE WORKS ON 'AS AND WHEN REQUIRED' BASIS FOR A PERIOD  
OF (36) MONTHS**

**C2.1 PRICING INSTRUCTIONS**

*Contractor*

*Witness 1*

*Witness 2*

*Employer*

*Witness 1*

*Witness 2*

### **PRICING INSTRUCTIONS:**

1. This Contract is a Framework Agreement and shall be solely used to provide services on as-instructed basis, the Service Provider shall only tender rates against each item given in the Schedule of Rates so that as-and when the employer requires services scoped as per this contract; the Service Provider is in position, without delay, to render such services.
2. As per the provisions of section C 3.1.3, item No 2 of the scope of works, the current electrical infrastructure in the 19 Water Care Works operates mainly on certain types of Technologies, and it is critical to consider the compatibility of technologies during the implementation of the contract. The Pricing Schedule is therefore designed to mirror the provisions of the Scope of Work i.e., the bid is designed around the existing technologies and alternative technologies that are similar or compatible with the existing technologies.
3. The Service Provider shall tender his rates considering that the employer does not commit itself to offer the Service Provider any minimum or maximum volume and or value of work during the term of the Framework Agreement.
4. The Service Provider shall ensure that a rate/amount is entered against each item in the Schedule of Rates. An item against which no rate or amount is entered shall be deemed grounds for a partially completed bid document and will lead to disqualification.
5. The rates/amounts tendered in the Schedule of Rates shall be the full inclusive rates/amounts to the Employer for the work described under the several items. Such rates/amounts shall cover all the costs and expenses that may be required in and for the construction of the work described, and shall cover the costs of all general risks, profits, overhead charges, taxes (including value-added tax), liabilities and obligations set forth or implied in the documents on which the Tender is based. The Service Provider shall ensure that all inserted rates are reasonable as these shall be used during bid evaluation and shall become the basis for payment of all work that will be carried out during the Term of the Framework Agreement.
6. The applicable Conditions of Contract, the Contract Data, the Specifications (including the Project Specifications) and the Drawings (where attached) shall be read in conjunction with the Schedule of Rates.
7. Descriptions in the Schedule of Rates are abbreviated and may differ from those in the Standardized and Project Specifications. No consideration will be given to any claim by the Contractor submitted on such a basis.
8. Unless stated to the contrary, items are measured net in accordance with the Drawings without any allowance having been made for waste.
9. For the purposes of this Schedule of Rates, the following words shall have the meanings hereby assigned to them:

Unit	:	The unit of measurement for each item of work as defined in the Standardized, Project or Particular Specifications
Quantity	:	The number of units of work for each item
Rate	:	The payment per unit of work at which the Bidder Tenders to do the work
Amount	:	The quantity of an item multiplied by the tendered rate of the (same) item

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

Sum : An amount tendered for an item, the extent of which is described in the Schedule of Rates, the Specifications or elsewhere, but of which the quantity of work is not measured in units

10. The units of measurement indicated in the Schedule of Rates are metric units. The following abbreviations may appear in the Schedule of Rates:

mm	=	millimetre
m	=	metre
km	=	kilometre
km-pass	=	kilometre-pass
m <sup>2</sup>	=	square metre
m <sup>2</sup> -pass	=	square metre-pass
ha	=	hectare
m <sup>3</sup>	=	cubic metre
m <sup>3</sup> -km	=	cubic metre-kilometre
kW	=	kilowatt
kN	=	kilo Newton
kg	=	kilogram
t	=	ton (1 000 kg)
%	=	per cent
MN	=	mega Newton
MN-m	=	mega Newton-metre
PC Sum	=	Prime Cost Sum
Prov Sum	=	Provisional Sum

11. Payment for items which are designated to be constructed labour-intensively (either in this schedule or in the Scope of Works) will not be made unless they are constructed using labour-intensive methods. Any unauthorised use of plant to carry out work which was to be done labour-intensively will not be condoned and any works so constructed will not be certified for payment.

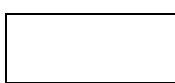
12. Mistakes made by the Bidder in completion of the Schedule of Rates shall not be erased or covered with correcting fluid. A line shall be drawn through the incorrect entry and the correct entry shall be written above the deletion and initialled by the Bidder. Failure to observe this Condition will lead to the Tender being disqualified.

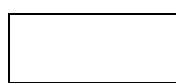
13. **This is a Rates based contract developed under an indicative scope of work and therefore there are no quantities or Totals set out in the pricing schedule, Work Orders will only be generated on “as and when” required basis according to the rates tendered by the service provider as contained in the Schedule of Rates.**

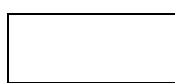
14. Work Orders generated on “as and when” basis shall contain estimate quantities for the proposed Works. The actual quantities of work/services rendered as finally measured and accepted and certified for payment in accordance with the applicable Conditions of Contract, and not the estimate quantities set out in the Bill of Quantities for the Works Order, will be used to determine payments to the Contractor. The validity of the Contract shall in no way be affected by differences between the quantities in the Bill of Quantities for the generated Works Order and the quantities certified for payment.

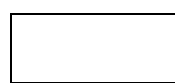
15. The successful bidder will be required to submit a quote for the works required prior to being issued an official order and will be limited to the rates as set out herein.

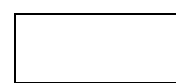
16. Evaluation for price scoring will be done by calculating the line items in the table below to an indicative sum to determine the highest scoring bidder as provided for in the PPPFA Regulation 2022.

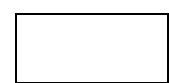
  
Contractor

  
Witness 1

  
Witness 2

  
Employer

  
Witness 1

  
Witness 2

17. The effect of changes in prices or law on the amounts due shall be adjusted on the following basis:

- a) No price adjustment over the first 12-month period of the Contract.
- b) On the 12-month anniversary date of the signing of the agreement, the rates shall be adjusted by a twelve-month year on year CPI index (as published in the monthly bulletin PO141.1 of statistics South Africa) ruling on the 12-month anniversary date of the signing of the contract.

18. It is the Main Contractor's responsibility to make sure their offered Rates are market-related such that they can in turn pay market-related Rates to subcontractors. Should there be a deficit between the Main Contractor's rates and the Subcontractor's tendered or negotiated Rates, the main Contractor will have to cover for such difference.

19. The Contractor's monthly invoice shall be accompanied by confirmation from the Engineer or his duly authorised representative that items listed for payment have been successfully executed and/or delivered as required. Failure to obtain such confirmation from the Engineer or his duly authorised representative shall result in non-payment of the Contractor's invoice until the default has been corrected or the deemed incomplete items are excluded from the invoice.

20. The Contractor shall note that payment shall only be made for Works activities successfully (delivering the end result) executed, complying with the quality requirements and provided to the Engineer or his duly authorised representative.

21. The Provisional Sums and Tendered amounts/prices shall be applicable per Works Order or IPW issued, and should not be deemed to represent the maximum available budget for the entire Framework Contract.

22. Bidders are **not permitted** to add any additional pricing to ERWAT's pricing schedule nor attach their own pricing schedule to this bid.

23. Bidders must complete the pricing schedule on the official ERWAT bid document issued.

24. Failure to adhere hereto will result in bidders' submission being disqualified.

*The price should be inclusive of all direct and indirect costs (including transport, labour and other applicable fees).*

*Bidders are required to complete the pricing schedule in full. Failure to complete the pricing in full will result in disqualification.*

**The following will be accepted to be a fully completed pricing schedule:**

**Bidders to indicate accurately:**

*A price is written/typed in Ink. No pencil or tippex will be accepted. Please note that where bidders opt to type in the prices, the original bid document will be accepted by ERWAT. The document is not to be retyped and no additional pricing schedule in the bidder's format will be accepted. In the event that there are two pricing schedules submitted by the bidder, the original issued document from ERWAT will prevail.*

*Bidders are not allowed to STRIKE THROUGH the BOQ and only the abbreviations as stated below, will be accepted:*

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

*No charge = N/C*  
*Included = Incl*  
*R0 will be accepted as no charge.*

*If pricing is left blank, or the bidder indicated N/A, it will be accepted to be an incomplete and non-responsive bid.*

Contractor

Witness 1

Witness 2

Employer

Witness 1

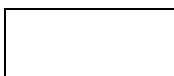
Witness 2

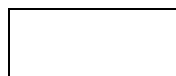


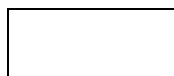
**PROJECT NO: ERW2311/01**

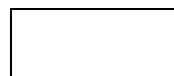
**APPOINTMENT OF PANEL SERVICE PROVIDER/S IN A FRAMEWORK  
CONTRACT FOR THE SUPPLY, INSTALLATION AND COMMISSIONING  
OF ELECTRICAL DISTRIBUTION SWITCHBOARD AND MOTOR  
CONTROL CENTRES FOR VARIOUS SITES AT EKURHULENI WATER  
CARE WORKS ON 'AS AND WHEN REQUIRED' BASIS FOR A PERIOD  
OF (36) MONTHS**

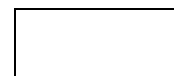
**C2.2 SCHEDULE OF RATES**

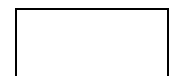
  
*Contractor*

  
*Witness 1*

  
*Witness 2*

  
*Employer*

  
*Witness 1*

  
*Witness 2*

## 1. SECTION A: PRELIMINARY AND GENERAL FOR VARIOUS EKURHULENI WATER CARE WORKS

### a) OCCUPATIONAL HEALTH AND SAFETY REQUIREMENTS

ITEM	DESCRIPTION	UNIT	QTY	RATE (VAT INCLUSIVE) R
1	<b>Provision for Health &amp; Safety Cost</b> (Occupation Health and Safety Act)	Prov.Sum	1	R 600 000.00

ITEM	DESCRIPTION	UNIT	QTY	RATE (VAT INCLUSIVE) R
1	Electrical Certificate of Compliance	Each	1	R

### b) PLANNING, EXECUTION AND QUALITY REQUIREMENTS FOR VARIOUS SITES

ITEM	DESCRIPTION	UNIT	QTY	RATE (VAT INCLUSIVE) R
1	The removal of the existing equipment. ERWAT will tend to the disposal thereof.	sum	1	R
2	Disposal of rubble and transportation to the nearest approved local authority transfer station or land fill site	km	Per km	R
3	Tracing existing cabling(fibre optic, lighting, small feeder circuits, extend, re-route and reconnect same onto new Distribution Board/MCC Panel)	m	1	R
4	Labelling of all circuits and draw boxes with permanent screw on type labels as described in Project Detailed Specifications.	sum	1	R
5	General arrangement drawings, wiring diagrams, terminal strip wiring diagrams, panel layout drawings, auxiliary wiring diagrams, Installation details, Cash Flow Projections, Bi-Weekly Progress Reports for the duration of the Contract and 4x Close-Out Report with O & M Manual, SOPs and testing procedure and termination schedules (soft copies and A3 hardcopies in PDF and AutoCAD format)	sum	1	R
6	Pre-inspection and Factory Acceptance Testing of all equipment covered by this contract including quality control plan (including accommodation or transportation to and from location where such testing / pre-inspection is to occur should it be outside the radius of 80km from related plant or head office for 3 of ERWAT's representatives.)	each	1	R
7	Allow for testing, balancing of Phases and commissioning of the whole electrical installation including lighting and power	Sum	1	R

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

8	Commissioning and Hand Over Activities (including Commissioning Report)	each	1	R
9	40 Hours Training for MCC Panels: Design, Operations, and Maintenance for Plant Personnel recognised within the SAQA National Qualification Framework	each	1	R
10	Supply and install 35mm locally manufactured padlocks and locking devices as well as master keys.(3 sets) with purpose-made PVC labels to lock and unlock all DB's, SDB's and lockable draw boxes.	Sum	1	R

**c) EQUIPMENT PLANT HIRE (WET RATE) FOR VARIOUS SITES**

ITEM	DESCRIPTION	UNIT	QTY	RATE (VAT INCLUSIVE) R
1	LDV (Light Duty Vehicle)	Day	1	R
2	Scaffolding	Day	1	R
3	1000 KVA Standby Diesel Generator System(wet rate)	Day	1	R
4	800 KVA Standby Diesel Generator System(wet rate)	Day	1	R
5	630 KVA Standby Diesel Generator System(wet rate)	Day	1	R
6	400 KVA Standby Diesel Generator System(wet rate)	Day	1	R
8	200 KVA Standby Diesel Generator System(wet rate)	Day	1	R
9	Truck, with 4 Ton Capacity Crane	Day	1	R
10	6m <sup>3</sup> Tipper Truck	Day	1	R
11	10m <sup>3</sup> Tipper Truck	Day	1	R
12	Bobcat	Day	1	R
13	Standard Size TLB	Day	1	R
14	Excavator (0.1kW per tined width of bucket)	Day	1	R
15	Compactor (Vibrating Plate)	Day	1	R

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2



16	4" Trash Pump	Day	1	R
17	6" Mobile Diesel Pump & Auxiliaries (Including Layflats)	Day	1	R
18	Combination Super Sucker Truck (with High Pressure Jetting Capabilities)	Day	1	R
19	Lifting Equipment (8 Ton Crane) & Accessories	Day	1	R
20	Lifting Equipment (20 Ton Crane) & Accessories	Day	1	R
21	Lifting Equipment (25 Ton Crane) & Accessories	Day	1	R
22	Lifting Equipment (35 Ton Crane) & Accessories	Day	1	R
23	Lifting Equipment (55 Ton Crane) & Accessories	Day	1	R
24	Lifting Equipment (90 Ton Crane) & Accessories	Day	1	R
25	Lifting Equipment (110 Ton Crane) & Accessories	Day	1	R
26	Lifting Equipment (220 Ton Crane) & Accessories	Day	1	R
27	Lifting Equipment (275 Ton Crane) & Accessories	Day	1	R
28	18m Working Height Cherry Picker (230kg SWL)	Day	1	R
29	28m Working Height Cherry Picker (230kg SWL)	Day	1	R
30	43m Working Height Cherry Picker (272kg SWL)	Day	1	R
31	Artisan Fitter's Toolbox	Day	1	R
32	Electrician's Toolbox	Day	1	R
33	Mechanician's Toolbox	Day	1	R
34	Standard Welding Equipment (Complete Set)	Day	1	R
35	Standard Cutting Torch (Complete Set)	Day	1	R
36	Standard Grinder 9"	Day	1	R

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

d) CIVIL WORKS

ITEM	DESCRIPTION	UNIT	QTY	RATE (VAT INCLUSIVE) R
1	Concrete foundation for MCC panels complete with excavation, steel reinforcing, foundation bolts and template set, back fill and compacting etc.	metre/square	1	R
2	Soil bearing pressure test certificates	each	1	R
3	Test certificates for concrete 10/30/40 days for plinth foundation	each	1	R
4	Trenching by hand for LV cable / sleeve, 400 mm wide x 700 mm deep, including backfilling and compaction (for power, signal and fibre cables) ( <b>Pickable ground</b> )	m	1	R
5	Trenching by hand for LV cable / sleeve, 400 mm wide x 700 mm deep, including backfilling and compaction (for power, signal and fibre cables) ( <b>Clay ground</b> )	m	1	R
6	Trenching by hand for LV cable / sleeve, 400 mm wide x 700 mm deep, including backfilling and compaction (for power, signal and fibre cables) ( <b>Hard ground</b> )	m	1	R
7	Soil bearing pressure test certificates	each	1	R
8	Disposal of surplus or unsuitable material including haulage up to 10 km from site.	/km	1	R
9	Break-up and re-instate paving along cable route after installation of sleeve.	metre/square	1	R
10	Install concrete manhole (900mm dia ) with cover	Per ring	1	R

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

e) **INSTALLATION PERSONNEL FOR VARIOUS SITES**

PERSONNEL FOR VARIOUS SITES				
ITEM	DESCRIPTION	UNIT	QTY	RATE (Incl. VAT)
1.	Project Manager (Pr. SACPCMP)	hr	1	
2.	Lead Engineer (Pr. Eng)	hr	1	
3.	Electrical Engineer	hr	1	
4.	Electrical Technologist	hr	1	
5.	Structural/ Civil Engineer ( Pr. Eng)	hr	1	
6.	Structural/ Civil Technologist (Pr. Tech)	hr	1	
7.	Environmental Officer	hr	1	
8.	Health & Safety Officer (Pr. SACPCMP)	hr	1	
9.	Installation Fitter	hr	1	
10.	Installation Electrician	hr	1	
11.	Installation Instrumentation Technician	hr	1	
12.	Instrumentation Mechanician's Toolbox	hr	1	
13.	Installation Rigger	hr	1	
14.	Draughtsperson	hr	1	
15.	Semi-Skilled Worker (Trade Aid Assistant)	hr	1	
16.	General Worker	hr	1	

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

## 2. SECTION B: SCHEDULE OF RATES FOR EXISTING TECHNOLOGIES

Supply, delivery and install - mcc panel including door mount louvers, extraction fans, double handling if stored, pre- installation activities, quality assurance, and modifications and providing required certification as per this contract (Tenderers to price each control / equipment cubicle separately in accordance with the typical items of equipment to be installed inside, same as indicated in the Specification. Allowance shall be made for all busbars, wiring, cut-outs, etc required)

### 2.1. SCHNEIDER TECHNOLOGY: ELECTRICAL DISTRIBUTION SWITCHBOARD AND MOTOR CONTROL CENTRES (MCC PANELS, ELECTRICAL WORK)

#### 2.1.1. Control cubicles:

Supply, delivery and installation of typical Incomer compartment cubicle, incl. kWh meter complete with power analyser, surge arrestors, bus bars, etc. with both main incoming and generator MCB's rated as indicated in the table below;

Item	Description	Unit Of Measure	Qty	Rate (VAT INCLUSIVE) R
1	60A @ 10 kA	each	1	R
2	100A @ 15 kA	each	1	R
3	150A @ 15 kA	each	1	R
4	250A @ 25 kA	each	1	R
5	300A @ 25 kA	each	1	R
6	60A @ 10 kA	each	1	R
7	300 to 630A @ 50 kA	each	1	R
8	Supply and delivery of panel door mount louvers and extraction fans	each	1	R
9	Supply and delivery of MCC room ventilation system including wall mount louvers and extraction fans (including civil and installation works)	each	1	R

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

2.1.2. Supply, delivery and installation of Single pump control compartment complete with typical control gear, alarm / status indicator lamps, telemetry I/O, etc as specified, excl. pump motor drive VSD Starters ratings in the table below:

Item	Description	Unit Of Measure	Qty	Rate (VAT INCLUSIVE) R
1	3 kW pump	each	1	R
2	5.5 KW pump	each	1	R
3	7,5 kW pump	each	1	R
4	11 kW pump	each	1	R
5	15 kW pump	each	1	R
6	30 kW pump	each	1	R
7	37 kW pump	each	1	R
8	45 kW pump	each	1	R
9	55 kW pump	each	1	R
10	75 kW pump	each	1	R
11	90 kW pump	each	1	R
12	132 kW pump	each	1	R
13	315 kW pump	each	1	R

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

2.1.3. Supply, delivery and installation of Single pump control compartment complete with typical control gear, alarm / status indicator lamps, telemetry I/O, etc as specified, excl. pump motor drive Soft Starters ratings in the table below:

Item	Description	Unit Of Measure	Qty	Rate (VAT INCLUSIVE) R
1	3 kW pump	each	1	R
2	5.5 KW pump	each	1	R
3	7,5 kW pump	each	1	R
4	11 kW pump	each	1	R
5	15 kW pump	each	1	R
6	30 kW pump	each	1	R
7	37 kW pump	each	1	R
8	45 kW pump	each	1	R
9	55 kW pump	each	1	R
10	75 kW pump	each	1	R
11	90 kW pump	each	1	R
12	132 kW pump	each	1	R
13	315 kW pump	each	1	R

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

2.1.4. Supply, delivery and installation of Single mixer control compartment complete with typical control gear, alarm / status indicator lamps, telemetry I/O, etc as specified, but excluding pump motor drive VSD starters ratings in the table below:

Item	Description	Unit Of Measure	Qty	Rate (VAT INCLUSIVE) R
1	1.1 kW mixer	each	1	R
2	1.5 kW mixer	each	1	R
3	2.2 kW mixer	each	1	R
4	3 kW mixer	each	1	R
5	7.5 kW mixer	each	1	R
6	15 kW mixer	each	1	R

2.1.5. Supply, delivery and installation of Single mixer control compartment complete with typical control gear, alarm / status indicator lamps, telemetry I/O, etc as specified, but excl pump motor drive Soft Starters ratings in the table below:

Item	Description	Unit Of Measure	Qty	Rate (VAT INCLUSIVE) R
1	1.1 kW mixer	each	1	R
2	1.5 kW mixer	each	1	R
3	2.2 kW mixer	each	1	R
4	3 kW mixer	each	1	R
5	7.5 kW mixer	each	1	R
6	15 kW mixer	each	1	R

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

- 2.1.6. Supply, delivery and installation of Single mixer control compartment complete with typical control gear, alarm / status indicator lamps, telemetry I/O, etc as specified, but excl mixer motor drive VSD starters ratings in the table below:

Item	Description	Unit Of Measure	Qty	Rate (VAT INCLUSIVE) R
1	1.1 kW mixer	each	1	R
2	3 kW mixer	each	1	R

- 2.1.7. Supply, delivery and installation of Single mixer control compartment complete with typical control gear, alarm / status indicator lamps, telemetry I/O, etc as specified, but excl mixer motor drive soft starters ratings in the table below:

Item	Description	Unit Of Measure	Qty	Rate (VAT INCLUSIVE) R
1	1.1 kW mixer	each	1	R
2	3 kW mixer	each	1	R

- 2.1.8. Supply, delivery and installation of Single mechanical screen control compartment complete with typical control gear, alarm / status indicator lamps, telemetry I/O, etc as specified, but excl screen motor drive VSD starters ratings in the table below:

Item	Description	Unit Of Measure	Qty	Rate (VAT INCLUSIVE) R
1	0.55 kW Screen	each	1	R
2	0.75 kW Screen	each	1	R
3	1.1 kW Screen	each	1	R
4	3 kW Screen	each	1	R

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2



2.1.9. Supply, delivery and installation of Single mechanical screen control compartment complete with typical control gear, alarm / status indicator lamps, telemetry I/O, etc as specified, but excluding screen motor drive soft starters ratings in the table below:

Item	Description	Unit Of Measure	Qty	Rate (VAT INCLUSIVE) R
1	0.55 kW Screen	each	1	R
2	0.75 kW Screen	each	1	R
3	1.1 kW Screen	each	1	R
4	3 kW Screen	each	1	R

2.1.10. Supply, delivery and installation of Single screw conveyor screen control compartment complete with typical control gear, alarm / status indicator lamps, telemetry I/O, etc as specified, but excluding motor drive VSD starters ratings in the table below:

Item	Description	Unit Of Measure	Qty	Rate (VAT INCLUSIVE) R
1	0.75 kW screw conveyor	each	1	R
2	1.1 kW screw conveyor	each	1	R
3	2.2 kW screw conveyor	each	1	R
4	3 kW screw conveyor	each	1	R
5	4 kW screw conveyor	each	1	R

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

2.1.11. Supply, delivery and installation of Single screw conveyor screen control compartment complete with typical control gear, alarm / status indicator lamps, telemetry I/O, etc as specified, but excluding motor drive soft starters ratings in the table below:

Item	Description	Unit Of Measure	Qty	Rate (VAT INCLUSIVE) R
1	0.75 kW screw conveyor	each	1	R
2	1.1 kW screw conveyor	each	1	R
3	2.2 kW screw conveyor	each	1	R
4	3 kW screw conveyor	each	1	R
5	4 kW screw conveyor	each	1	R

2.1.12. Supply, delivery and installation of Single Blower control compartment complete with typical control gear, alarm / status indicator lamps, telemetry I/O, etc as specified, but excluding motor drive VSD starters ratings in the table below:

Item	Description	Unit Of Measure	Qty	Rate (VAT INCLUSIVE) R
1	1.5 kW Blower	each	1	R
2	7.5 kW Blower	each	1	R
3	11 kW Blower	each	1	R
4	15 kW Blower	each	1	R
5	400 kW Blower	each	1	R

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

2.1.13. Supply, delivery and installation of Single Blower control compartment complete with typical control gear, alarm / status indicator lamps, telemetry I/O, etc as specified, but excl motor drive soft starters ratings in the table below:

Item	Description	Unit Of Measure	Qty	Rate (VAT INCLUSIVE) R
1	1.5 kW Blower	each	1	R
2	7.5 kW Blower	each	1	R
3	11 kW Blower	each	1	R
4	15 kW Blower	each	1	R
5	400 kW Blower	each	1	R

2.1.14. Supply, delivery and installation of Single Compressors control compartment complete with typical control gear, alarm / status indicator lamps, telemetry I/O, etc as specified, but excl. motor drive DOL starters ratings in the table below:

Item	Description	Unit Of Measure	Qty	Rate (VAT INCLUSIVE) R
1	5.5 kW Compressor	each	1	R
2	7.5 kW Compressor	each	1	R
3	15 kW Compressor	each	1	R
4	30 kW Compressor	each	1	R

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

2.1.15. Supply, delivery and installation of Single Compressors control compartment complete with typical control gear, alarm / status indicator lamps, telemetry I/O, etc as specified, but excl. motor drive VSD starters ratings in the table below:

Item	Description	Unit Of Measure	Qty	Rate (VAT INCLUSIVE) R
1	5.5 kW Compressor	each	1	R
2	7.5 kW Compressor	each	1	R
3	15 kW Compressor	each	1	R
4	30 kW Compressor	each	1	R

2.1.16. Supply, delivery and installation of Single Compressors control compartment complete with typical control gear, alarm / status indicator lamps, telemetry I/O, etc as specified, but excl. motor drive soft starters ratings in the table below:

Item	Description	Unit Of Measure	Qty	Rate (VAT INCLUSIVE) R
1	5.5 kW Compressor	each	1	R
2	7.5 kW Compressor	each	1	R
3	15 kW Compressor	each	1	R
4	30 kW Compressor	each	1	R

2.1.17. Supply, delivery and installation of Single Sediment Tank control compartment complete with typical control gear, alarm / status indicator lamps, telemetry I/O, etc as specified, but excl. motor drive DOL starters ratings in the table below:

Item	Description	Unit Of Measure	Qty	Rate (VAT INCLUSIVE) R
1	0.55 kW Motor	each	1	R
2	0.75 kW Motor	each	1	R

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

2.1.18. Supply, delivery and installation of Single Sediment Tank control compartment complete with typical control gear, alarm / status indicator lamps, telemetry I/O, etc as specified, but excl. motor drive VSD starters ratings in the table below:

Item	Description	Unit Of Measure	Qty	Rate (VAT INCLUSIVE) R
1	0.55 kW Motor	each	1	R
2	0.75 kW Motor	each	1	R

2.1.19. Supply, delivery and installation of Single Sediment Tank control compartment complete with typical control gear, alarm / status indicator lamps, telemetry I/O, etc as specified, but excl. motor drive soft starters ratings in the table below:

Item	Description	Unit Of Measure	Qty	Rate (VAT INCLUSIVE) R
1	0.55 kW Motor	each	1	R
2	0.75 kW Motor	each	1	R

2.1.20. Supply, delivery and installation of Single Grid removal control compartment complete with typical control gear, alarm / status indicator lamps, telemetry I/O, etc as specified, but excl. motor drive DOL starters ratings in the table below:

Item	Description	Unit Of Measure	Qty	Rate (VAT INCLUSIVE) R
1	0.55 kW Motor	each	1	R
2	0.75 kW Motor	each	1	R

2.1.21. Supply, delivery and installation of Single Grid removal control compartment complete with typical control gear, alarm / status indicator lamps, telemetry I/O, etc as specified, but excl. motor drive VSD starters ratings in the table below:

Item	Description	Unit Of Measure	Qty	Rate (VAT INCLUSIVE) R
1	0.55 kW Motor	each	1	R
2	0.75 kW Motor	each	1	R

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

2.1.22. Supply, delivery and installation of Single Grid removal control compartment complete with typical control gear, alarm / status indicator lamps, telemetry I/O, etc as specified, but excl. motor drive soft starters ratings in the table below:

Item	Description	Unit Of Measure	Qty	Rate (VAT INCLUSIVE) R
1	0.55 kW Motor	each	1	R
2	0.75 kW Motor	each	1	R

2.1.23. Supply, delivery and installation of Single Aerator control compartment complete with typical control gear, alarm / status indicator lamps, telemetry I/O, etc as specified, but excl. motor drive DOL starters ratings in the table below:

Item	Description	Unit Of Measure	Qty	Rate (VAT INCLUSIVE) R
2	37 kW Motor	Sum	1	R
3	55 kW Motor	Sum	1	R
4	75 kW Motor	Sum	1	R

2.1.24. Supply, delivery and installation of Single Aerator control compartment complete with typical control gear, alarm / status indicator lamps, telemetry I/O, etc as specified, but excl. motor drive VSD starters ratings in the table below:

Item	Description	Unit Of Measure	Qty	Rate (VAT INCLUSIVE) R
2	37 kW Motor	Sum	1	R
3	55 kW Motor	Sum	1	R
4	75 kW Motor	Sum	1	R

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

2.1.25. Supply, delivery and installation of Single Aerator control compartment complete with typical control gear, alarm / status indicator lamps, telemetry I/O, etc as specified, but excl. motor drive soft starters ratings in the table below:

Item	Description	Unit Of Measure	Qty	Rate (VAT INCLUSIVE) R
2	37 kW Motor	Sum	1	R
3	55 kW Motor	Sum	1	R
4	75 kW Motor	Sum	1	R

2.1.26. Supply, delivery and installation VSD inside new Motor Control Panel cubicles for ratings in the table below:

Item	Description	Unit Of Measure	Qty	Rate (VAT INCLUSIVE) R
1	0.18 kW Motor	each	1	R
2	0.5 kW Motor	each	1	R
3	0.55 kW Motor	each	1	R
4	0.75 kW Motor	each	1	R
5	1.1 kW Motor	each	1	R
6	1.5 kW Motor	each	1	R
7	2.2 kW Motor	each	1	R
8	3 kW Motor	each	1	R
9	4 kW Motor	each	1	R
10	5.5 KW Motor	each	1	R
11	7,5 kW Motor	each	1	R
12	8.5 kW Motor	each	1	R

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

13	11 kW Motor	each	1	R
14	12 kW Motor	each	1	R
15	15 kW Motor	each	1	R
16	18.5 kW Motor	each	1	R
17	22 kW Motor	each	1	R
18	30 kW Motor	each	1	R
19	37 kW Motor	each	1	R
20	45 kW Motor	each	1	R
21	55 kW Motor	each	1	R
22	75 kW Motor	each	1	R
23	90 kW Motor	each	1	R
24	132 kW Motor	each	1	R
25	315 kW Motor	each	1	R
26	400 kW Motor	each	1	R

Contractor

Witness 1

Witness 2

Employer

Witness 1


Witness 2





2.1.27. Supply, delivery and installation of input reactor (choke) for VSD inside new Motor Control Panel cubicles for ratings in the table below:


Item	Description	Unit Of Measure	Qty	Rate (VAT INCLUSIVE) R
1	0.18 kW Motor	each	1	R
2	0.5 kW Motor	each	1	R
3	0.55 kW Motor	each	1	R
4	0.75 kW Motor	each	1	R
5	1.1 kW Motor	each	1	R
6	1.5 kW Motor	each	1	R
7	2.2 kW Motor	each	1	R
8	3 kW Motor	each	1	R
9	4 kW Motor	each	1	R
10	5.5 KW Motor	each	1	R
11	7,5 kW Motor	each	1	R
12	8.5 kW Motor	each	1	R
13	11 kW Motor	each	1	R
14	12 kW Motor	each	1	R
15	15 kW Motor	each	1	R
16	18.5 kW Motor	each	1	R
17	22 kW Motor	each	1	R
18	30 kW Motor	each	1	R


  
Contractor

  
Witness 1

  
Witness 2

  
Employer

  
Witness 1

  
Witness 2

19	37 kW Motor	each	1	R
20	45 kW Motor	each	1	R
21	55 kW Motor	each	1	R
22	75 kW Motor	each	1	R
23	90 kW Motor	each	1	R
24	132 kW Motor	each	1	R
25	315 kW Motor	each	1	R
26	400 kW Motor	each	1	R

2.1.28. Supply, delivery and installation of Output reactor (choke) for VSD inside new Motor Control Panel cubicles for ratings in the table below:

Item	Description	Unit Of Measure	Qty	Rate (VAT INCLUSIVE) R
1	0.18 kW Motor	each	1	R
2	0.5 kW Motor	each	1	R
3	0.55 kW Motor	each	1	R
4	0.75 kW Motor	each	1	R
5	1.1 kW Motor	each	1	R
6	1.5 kW Motor	each	1	R
7	2.2 kW Motor	each	1	R
8	3 kW Motor	each	1	R
9	4 kW Motor	each	1	R

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

10	5.5 KW Motor	each	1	R
11	7,5 kW Motor	each	1	R
12	8.5 kW Motor	each	1	R
13	11 kW Motor	each	1	R
14	12 kW Motor	each	1	R
15	15 kW Motor	each	1	R
16	18.5 kW Motor	each	1	R
17	22 kW Motor	each	1	R
18	30 kW Motor	each	1	R
19	37 kW Motor	each	1	R
20	45 kW Motor	each	1	R
21	55 kW Motor	each	1	R
22	75 kW Motor	each	1	R
23	90 kW Motor	each	1	R
24	132 kW Motor	each	1	R
25	315 kW Motor	each	1	R
26	400 kW Motor	each	1	R

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

2.1.29. Supply, delivery and installation for soft starter equipment type inside new Motor Control Panel cubicles for ratings in the table below:

Item	Description	Unit Of Measure	Qty	Rate (VAT INCLUSIVE) R
1	3 kW motor	each	1	R
2	7.5 kW motor	each	1	R
3	15 kW motor	each	1	R
4	30 kW motor	each	1	R
5	37 kW motor	each	1	R
6	55 kW motor	each	1	R
7	75 kW motor	each	1	R
8	90 kW motor	each	1	R
9	132 kW motor	each	1	R
10	260 kW motor	each	1	R

2.1.30. Supply and delivery set of three ultra-rapid fuses for all VSD / Soft Starter equipment installed in MCC panel ratings in the table below:

Item	Description	Unit Of Measure	Qty	Rate (VAT INCLUSIVE) R
1	0.18 kW Motor	each	1	R
2	0.5 kW Motor	each	1	R
3	0.55 kW Motor	each	1	R
4	0.75 kW Motor	each	1	R
5	1.1 kW Motor	each	1	R

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

6	1.5 kW Motor	each	1	R
7	2.2 kW Motor	each	1	R
8	3 kW Motor	each	1	R
9	4 kW Motor	each	1	R
10	5.5 kW Motor	each	1	R
11	7,5 kW Motor	each	1	R
12	8.5 kW Motor	each	1	R
13	11 kW Motor	each	1	R
14	12 kW Motor	each	1	R
15	15 kW Motor	each	1	R
16	18.5 kW Motor	each	1	R
17	22 kW Motor	each	1	R
18	30 kW Motor	each	1	R
19	37 kW Motor	each	1	R
20	45 kW Motor	each	1	R
21	55 kW Motor	each	1	R
22	75 kW Motor	each	1	R
23	90 kW Motor	each	1	R
24	132 kW Motor	each	1	R
25	315 kW Motor	each	1	R
26	400 kW Motor	each	1	R

Contractor

Witness 1

Witness 2


Employer


Witness 1


Witness 2


2.1.31. Supply, delivery and installation of Moulded case circuit breaker complete with interconnecting tails, etc. installed inside MCC Panel, kiosk, etc ratings in the table below:


Item	Description	Unit Of Measure	Qty	Rate (VAT INCLUSIVE) R
1	300 to 630A 3 Pole 50kA Circuit Breaker.	each	1	R
2	300A 3 Pole 25kA Circuit Breaker.	each	1	R
3	250A 3 Pole 25kA Circuit Breaker.	each	1	R
4	150A 3 Pole 15kA Circuit Breaker.	each	1	R
5	100A 3 Pole 10kA Circuit Breaker.	each	1	R
6	80A 3 Pole 10kA Circuit Breaker.	each	1	R
7	63A 3 Pole 10kA Circuit Breaker.	each	1	R
8	40A 3 Pole 10kA Circuit Breaker.	each	1	R
9	40A 2 Pole 10kA Circuit Breaker.	each	1	R
10	20A 3 Pole 10kA Circuit Breaker.	each	1	R
11	20A 2 Pole 10kA Circuit Breaker.	each	1	R
12	80A 3 Pole 10kA Circuit Breaker.	each	1	R
13	63A 2 Pole 10kA Circuit Breaker.	each	1	R
14	20A 1 Pole 6kA Circuit Breaker.	each	1	R
15	16A 1 Pole 6kA Circuit Breaker.	each	1	R
16	10A 1 Pole 6kA Circuit Breaker.	each	1	R
17	3 Phase + N Class 2 surge protection (Dehn guard & Dehn Gap)	each	1	R
18	63A E/L Unit ( 3P + N )	each	1	R
19	63A E/L Unit ( 1P + N )	each	1	R


  
Contractor

  
Witness 1

  
Witness 2

  
Employer

  
Witness 1

  
Witness 2

2.1.32. Supply, delivery and installation Single PLC / HMI control compartment complete with Delta type PLC and HMI equipment, I/O and communication cards, etc as specified with sufficient I/O modules as listed below:

Item	Description	Unit Of Measure	Qty	Supply And Deliver Rate (Including VAT)
1	Main Power supply (230VAC-24 VDC)	each	1	R
2	Main Power supply (24 VDC-24 VDC)	each	1	R
3	CPU Modbus Ethernet	each	1	R
4	Communication Module Ethernet Device Scanning	each	1	R
5	4 slot Backplane	each	1	R
6	6 slot Backplane	each	1	R
7	8 slot Backplane	each	1	R
8	12 slot Backplane	each	1	R
9	4-20 mA Ethernet Converter	each	1	R
10	Ethernet Manageable Switch 2 Fibre and 6 Copper	each	1	R
11	Ethernet Manageable Switch 2 Fibre and 24 Copper	each	1	R
12	Termination box- IP 20 rated polyester enclosures with hinged door and enough space to allow for a 25% extension	each	1	R
13	3.5" Touch Screen Panel HMI	each	1	R
14	12" Touch Screen Panel HMI	each	1	R
15	8 Channels AI	each	1	R
16	8 Channels AO	each	1	R

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

17	8 Channels DI	each	1	R
18	8 Channels DO	each	1	R
19	16 Channels AI	each	1	R
20	16 Channels AO	each	1	R
21	16 Channels DI	each	1	R
22	16 Channels DO	each	1	R
23	32 Channels AI	each	1	R
24	32 Channels AO	each	1	R
25	32 Channels DI	each	1	R
26	32 Channels DO	each	1	R
27	64 Channels DI	each	1	R
28	64 Channels DO	each	1	R
29	All PLC and auxiliary software	each	1	R
30	Certified system integrator training for one person	each	1	R

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2



## 2.2. SIEMENS TECHNOLOGY: ELECTRICAL DISTRIBUTION SWITCHBOARD AND MOTOR CONTROL CENTRES (MCC PANELS, ELECTRICAL WORK)

Supply, delivery and install - mcc panel including door mount louvers, extraction fans, double handling if stored, pre- installation activities, quality assurance, and modifications and providing required certification as per this contract (Tenderers to price each control / equipment cubicle separately in accordance with the typical items of equipment to be installed inside, same as indicated in the Specification. Allowance shall be made for all busbars, wiring, cut-outs, etc required)

### 2.2.1. SIEMENS TECHNOLOGY: ELECTRICAL DISTRIBUTION SWITCHBOARD AND MOTOR CONTROL CENTRES (MCC PANELS, ELECTRICAL WORK)

#### 2.2.2. Control cubicles:

Supply, delivery and installation of typical Incomer compartment cubicle, incl. kWh meter complete with power analyser, surge arrestors, bus bars, etc. with both main incoming and generator MCB's rated as indicated in the table below;

Item	Description	Unit Of Measure	Qty	Rate (VAT INCLUSIVE) R
1	60A @ 10 kA	each	1	R
2	100A @ 15 kA	each	1	R
3	150A @ 15 kA	each	1	R
4	250A @ 25 kA	each	1	R
5	300A @ 25 kA	each	1	R
6	60A @ 10 kA	each	1	R
7	300 to 630A @ 50 kA	each	1	R
8	Supply and delivery of panel door mount louvers and extraction fans	each	1	R
9	Supply and delivery of MCC room ventilation system including wall mount louvers and extraction fans (including civil and installation works)	each	1	R

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

2.2.3. Supply, delivery and installation of Single pump control compartment complete with typical control gear, alarm / status indicator lamps, telemetry I/O, etc as specified, excl. pump motor drive VSD Starters ratings in the table below:

Item	Description	Unit Of Measure	Qty	Rate (VAT INCLUSIVE) R
1	3 kW pump	each	1	R
2	5.5 KW pump	each	1	R
3	7,5 kW pump	each	1	R
4	11 kW pump	each	1	R
5	15 kW pump	each	1	R
6	30 kW pump	each	1	R
7	37 kW pump	each	1	R
8	45 kW pump	each	1	R
9	55 kW pump	each	1	R
10	75 kW pump	each	1	R
11	90 kW pump	each	1	R
12	132 kW pump	each	1	R
13	315 kW pump	each	1	R

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

2.2.4. Supply, delivery and installation of Single pump control compartment complete with typical control gear, alarm / status indicator lamps, telemetry I/O, etc as specified, excl. pump motor drive Soft Starters ratings in the table below:

Item	Description	Unit Of Measure	Qty	Rate (VAT INCLUSIVE) R
1	3 kW pump	each	1	R
2	5.5 KW pump	each	1	R
3	7,5 kW pump	each	1	R
4	11 kW pump	each	1	R
5	15 kW pump	each	1	R
6	30 kW pump	each	1	R
7	37 kW pump	each	1	R
8	45 kW pump	each	1	R
9	55 kW pump	each	1	R
10	75 kW pump	each	1	R
11	90 kW pump	each	1	R
12	132 kW pump	each	1	R
13	315 kW pump	each	1	R

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

2.2.5. Supply, delivery and installation of Single mixer control compartment complete with typical control gear, alarm / status indicator lamps, telemetry I/O, etc as specified, but excl pump motor drive VSD starters ratings in the table below:

Item	Description	Unit Of Measure	Qty	Rate (VAT INCLUSIVE) R
1	1.1 kW mixer	each	1	R
2	1.5 kW mixer	each	1	R
3	2.2 kW mixer	each	1	R
4	3 kW mixer	each	1	R
5	7.5 kW mixer	each	1	R
6	15 kW mixer	each	1	R

2.2.6. Supply, delivery and installation of Single mixer control compartment complete with typical control gear, alarm / status indicator lamps, telemetry I/O, etc as specified, but excl pump motor drive Soft Starters ratings in the table below:

Item	Description	Unit Of Measure	Qty	Rate (VAT INCLUSIVE) R
1	1.1 kW mixer	each	1	R
2	1.5 kW mixer	each	1	R
3	2.2 kW mixer	each	1	R
4	3 kW mixer	each	1	R
5	7.5 kW mixer	each	1	R
6	15 kW mixer	each	1	R

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

2.2.7. Supply, delivery and installation of Single mixer control compartment complete with typical control gear, alarm / status indicator lamps, telemetry I/O, etc as specified, but excl mixer motor drive VSD starters ratings in the table below:

Item	Description	Unit Of Measure	Qty	Rate (VAT INCLUSIVE) R
1	1.1 kW mixer	each	1	R
2	3 kW mixer	each	1	R

2.2.8. Supply, delivery and installation of Single mixer control compartment complete with typical control gear, alarm / status indicator lamps, telemetry I/O, etc as specified, but excl mixer motor drive soft starters ratings in the table below:

Item	Description	Unit Of Measure	Qty	Rate (VAT INCLUSIVE) R
1	1.1 kW mixer	each	1	R
2	3 kW mixer	each	1	R

2.2.9. Supply, delivery and installation of Single mechanical screen control compartment complete with typical control gear, alarm / status indicator lamps, telemetry I/O, etc as specified, but excl screen motor drive VSD starters ratings in the table below:

Item	Description	Unit Of Measure	Qty	Rate (VAT INCLUSIVE) R
1	0.55 kW Screen	each	1	R
2	0.75 kW Screen	each	1	R
3	1.1 kW Screen	each	1	R
4	3 kW Screen	each	1	R

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

2.2.10. Supply, delivery and installation of Single mechanical screen control compartment complete with typical control gear, alarm / status indicator lamps, telemetry I/O, etc as specified, but excl screen motor drive soft starters ratings in the table below:

Item	Description	Unit Of Measure	Qty	Rate (VAT INCLUSIVE) R
1	0.55 kW Screen	each	1	R
2	0.75 kW Screen	each	1	R
3	1.1 kW Screen	each	1	R
4	3 kW Screen	each	1	R

2.2.11. Supply, delivery and installation of Single screw conveyor screen control compartment complete with typical control gear, alarm / status indicator lamps, telemetry I/O, etc as specified, but excl motor drive VSD starters ratings in the table below:

Item	Description	Unit Of Measure	Qty	Rate (VAT INCLUSIVE) R
1	0.75 kW screw conveyor	each	1	R
2	1.1 kW screw conveyor	each	1	R
3	2.2 kW screw conveyor	each	1	R
4	3 kW screw conveyor	each	1	R
5	4 kW screw conveyor	each	1	R

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

2.2.12. Supply, delivery and installation of Single screw conveyor screen control compartment complete with typical control gear, alarm / status indicator lamps, telemetry I/O, etc as specified, but excl motor drive soft starters ratings in the table below:

Item	Description	Unit Of Measure	Qty	Rate (VAT INCLUSIVE) R
1	0.75 kW screw conveyor	each	1	R
2	1.1 kW screw conveyor	each	1	R
3	2.2 kW screw conveyor	each	1	R
4	3 kW screw conveyor	each	1	R
5	4 kW screw conveyor	each	1	R

2.2.13. Supply, delivery and installation of Single Blower control compartment complete with typical control gear, alarm / status indicator lamps, telemetry I/O, etc as specified, but excl motor drive VSD starters ratings in the table below:

Item	Description	Unit Of Measure	Qty	Rate (VAT INCLUSIVE) R
1	1.5 kW Blower	each	1	R
2	7.5 kW Blower	each	1	R
3	11 kW Blower	each	1	R
4	15 kW Blower	each	1	R
5	400 kW Blower	each	1	R

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

2.2.14. Supply, delivery and installation of Single Blower control compartment complete with typical control gear, alarm / status indicator lamps, telemetry I/O, etc as specified, but excl motor drive soft starters ratings in the table below:

Item	Description	Unit Of Measure	Qty	Rate (VAT INCLUSIVE) R
1	1.5 kW Blower	each	1	R
2	7.5 kW Blower	each	1	R
3	11 kW Blower	each	1	R
4	15 kW Blower	each	1	R
5	400 kW Blower	each	1	R

2.2.15. Supply, delivery and installation of Single Compressors control compartment complete with typical control gear, alarm / status indicator lamps, telemetry I/O, etc as specified, but excl motor drive DOL starters ratings in the table below:

Item	Description	Unit Of Measure	Qty	Rate (VAT INCLUSIVE) R
1	5.5 kW Compressor	each	1	R
2	7.5 kW Compressor	each	1	R
3	15 kW Compressor	each	1	R
4	30 kW Compressor	each	1	R

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2



2.2.16. Supply, delivery and installation of Single Compressors control compartment complete with typical control gear, alarm / status indicator lamps, telemetry I/O, etc as specified, but excl motor drive VSD starters ratings in the table below:

Item	Description	Unit Of Measure	Qty	Rate (VAT INCLUSIVE) R
1	5.5 kW Compressor	each	1	R
2	7.5 kW Compressor	each	1	R
3	15 kW Compressor	each	1	R
4	30 kW Compressor	each	1	R

2.2.17. Supply, delivery and installation of Single Compressors control compartment complete with typical control gear, alarm / status indicator lamps, telemetry I/O, etc as specified, but excl motor drive soft starters ratings in the table below:

Item	Description	Unit Of Measure	Qty	Rate (VAT INCLUSIVE) R
1	5.5 kW Compressor	each	1	R
2	7.5 kW Compressor	each	1	R
3	15 kW Compressor	each	1	R
4	30 kW Compressor	each	1	R

2.2.18. Supply, delivery and installation of Single Sediment Tank control compartment complete with typical control gear, alarm / status indicator lamps, telemetry I/O, etc as specified, but excl. motor drive DOL starters ratings in the table below:

Item	Description	Unit Of Measure	Qty	Rate (VAT INCLUSIVE) R
1	0.55 kW Motor	each	1	R
2	0.75 kW Motor	each	1	R

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

2.2.19. Supply, delivery and installation of Single Sediment Tank control compartment complete with typical control gear, alarm / status indicator lamps, telemetry I/O, etc as specified, but excl. motor drive VSD starters ratings in the table below:

Item	Description	Unit Of Measure	Qty	Rate (VAT INCLUSIVE) R
1	0.55 kW Motor	each	1	R
2	0.75 kW Motor	each	1	R

2.2.20. Supply, delivery and installation of Single Sediment Tank control compartment complete with typical control gear, alarm / status indicator lamps, telemetry I/O, etc as specified, but excl. motor drive soft starters ratings in the table below:

Item	Description	Unit Of Measure	Qty	Rate (VAT INCLUSIVE) R
1	0.55 kW Motor	each	1	R
2	0.75 kW Motor	each	1	R

2.2.21. Supply, delivery and installation of Single Grid removal control compartment complete with typical control gear, alarm / status indicator lamps, telemetry I/O, etc as specified, but excl. motor drive DOL starters ratings in the table below:

Item	Description	Unit Of Measure	Qty	Rate (VAT INCLUSIVE) R
1	0.55 kW Motor	each	1	R
2	0.75 kW Motor	each	1	R

2.2.22. Supply, delivery and installation of Single Grid removal control compartment complete with typical control gear, alarm / status indicator lamps, telemetry I/O, etc as specified, but excl. motor drive VSD starters ratings in the table below:

Item	Description	Unit Of Measure	Qty	Rate (VAT INCLUSIVE) R
1	0.55 kW Motor	each	1	R
2	0.75 kW Motor	each	1	R

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

2.2.23. Supply, delivery and installation of Single Grid removal control compartment complete with typical control gear, alarm / status indicator lamps, telemetry I/O, etc as specified, but excl. motor drive soft starters ratings in the table below:

Item	Description	Unit Of Measure	Qty	Rate (VAT INCLUSIVE) R
1	0.55 kW Motor	each	1	R
2	0.75 kW Motor	each	1	R

2.2.24. Supply, delivery and installation of Single Aerator control compartment complete with typical control gear, alarm / status indicator lamps, telemetry I/O, etc as specified, but excl. motor drive DOL starters ratings in the table below:

Item	Description	Unit Of Measure	Qty	Rate (VAT INCLUSIVE) R
2	37 kW Motor	Sum	1	R
3	55 kW Motor	Sum	1	R
4	75 kW Motor	Sum	1	R

2.2.25. Supply, delivery and installation of Single Aerator control compartment complete with typical control gear, alarm / status indicator lamps, telemetry I/O, etc as specified, but excl. motor drive VSD starters ratings in the table below:

Item	Description	Unit Of Measure	Qty	Rate (VAT INCLUSIVE) R
2	37 kW Motor	Sum	1	R
3	55 kW Motor	Sum	1	R
4	75 kW Motor	Sum	1	R

2.2.26. Supply, delivery and installation of Single Aerator control compartment complete with typical control gear, alarm / status indicator lamps, telemetry I/O, etc as specified, but excl. motor drive soft starters ratings in the table below:

Item	Description	Unit Of Measure	Qty	Rate (VAT INCLUSIVE) R
2	37 kW Motor	Sum	1	R
3	55 kW Motor	Sum	1	R
4	75 kW Motor	Sum	1	R

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

2.2.27. Supply, delivery and installation VSD inside new Motor Control Panel cubicles for ratings in the table below:

Item	Description	Unit Of Measure	Qty	Rate (VAT INCLUSIVE) R
1	0.18 kW Motor	each	1	R
2	0.5 kW Motor	each	1	R
3	0.55 kW Motor	each	1	R
4	0.75 kW Motor	each	1	R
5	1.1 kW Motor	each	1	R
6	1.5 kW Motor	each	1	R
7	2.2 kW Motor	each	1	R
8	3 kW Motor	each	1	R
9	4 kW Motor	each	1	R
10	5.5 kW Motor	each	1	R
11	7.5 kW Motor	each	1	R
12	8.5 kW Motor	each	1	R
13	11 kW Motor	each	1	R
14	12 kW Motor	each	1	R
15	15 kW Motor	each	1	R
16	18.5 kW Motor	each	1	R
17	22 kW Motor	each	1	R
18	30 kW Motor	each	1	R

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

19	37 kW Motor	each	1	R
20	45 kW Motor	each	1	R
21	55 kW Motor	each	1	R
22	75 kW Motor	each	1	R
23	90 kW Motor	each	1	R
24	132 kW Motor	each	1	R
25	315 kW Motor	each	1	R
26	400 kW Motor	each	1	R

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

2.2.28. Supply, delivery and installation of input reactor (choke) for VSD inside new Motor Control Panel cubicles for ratings in the table below:

Item	Description	Unit Of Measure	Qty	Rate (VAT INCLUSIVE) R
1	0.18 kW Motor	each	1	R
2	0.5 kW Motor	each	1	R
3	0.55 kW Motor	each	1	R
4	0.75 kW Motor	each	1	R
5	1.1 kW Motor	each	1	R
6	1.5 kW Motor	each	1	R
7	2.2 kW Motor	each	1	R
8	3 kW Motor	each	1	R
9	4 kW Motor	each	1	R
10	5.5 KW Motor	each	1	R
11	7,5 kW Motor	each	1	R
12	8.5 kW Motor	each	1	R
13	11 kW Motor	each	1	R
14	12 kW Motor	each	1	R
15	15 kW Motor	each	1	R
16	18.5 kW Motor	each	1	R
17	22 kW Motor	each	1	R
18	30 kW Motor	each	1	R

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

19	37 kW Motor	each	1	R
20	45 kW Motor	each	1	R
21	55 kW Motor	each	1	R
22	75 kW Motor	each	1	R
23	90 kW Motor	each	1	R
24	132 kW Motor	each	1	R
25	315 kW Motor	each	1	R
26	400 kW Motor	each	1	R

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

2.2.29. Supply, delivery and installation of Output reactor (choke) for VSD inside new Motor Control Panel cubicles for ratings in the table below:

Item	Description	Unit Of Measure	Qty	Rate (VAT INCLUSIVE) R
1	0.18 kW Motor	each	1	R
2	0.5 kW Motor	each	1	R
3	0.55 kW Motor	each	1	R
4	0.75 kW Motor	each	1	R
5	1.1 kW Motor	each	1	R
6	1.5 kW Motor	each	1	R
7	2.2 kW Motor	each	1	R
8	3 kW Motor	each	1	R
9	4 kW Motor	each	1	R
10	5.5 kW Motor	each	1	R
11	7.5 kW Motor	each	1	R
12	8.5 kW Motor	each	1	R
13	11 kW Motor	each	1	R
14	12 kW Motor	each	1	R
15	15 kW Motor	each	1	R
16	18.5 kW Motor	each	1	R
17	22 kW Motor	each	1	R
18	30 kW Motor	each	1	R

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2



19	37 kW Motor	each	1	R
20	45 kW Motor	each	1	R
21	55 kW Motor	each	1	R
22	75 kW Motor	each	1	R
23	90 kW Motor	each	1	R
24	132 kW Motor	each	1	R
25	315 kW Motor	each	1	R
26	400 kW Motor	each	1	R

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

2.2.30. Supply, delivery and installation for soft starter equipment type inside new Motor Control Panel cubicles for ratings in the table below:

Item	Description	Unit Of Measure	Qty	Rate (VAT INCLUSIVE) R
1	3 kW motor	each	1	R
2	7.5 kW motor	each	1	R
3	15 kW motor	each	1	R
4	30 kW motor	each	1	R
5	37 kW motor	each	1	R
6	55 kW motor	each	1	R
7	75 kW motor	each	1	R
8	90 kW motor	each	1	R
9	132 kW motor	each	1	R
10	260 kW motor	each	1	R

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

2.2.31. Supply and delivery set of three ultra-rapid fuses for all VSD / Soft Starter equipment installed in MCC panel ratings in the table below:

Item	Description	Unit Of Measure	Qty	Rate (VAT INCLUSIVE) R
1	0.18 kW Motor	each	1	R
2	0.5 kW Motor	each	1	R
3	0.55 kW Motor	each	1	R
4	0.75 kW Motor	each	1	R
5	1.1 kW Motor	each	1	R
6	1.5 kW Motor	each	1	R
7	2.2 kW Motor	each	1	R
8	3 kW Motor	each	1	R
9	4 kW Motor	each	1	R
10	5.5 KW Motor	each	1	R
11	7,5 kW Motor	each	1	R
12	8.5 kW Motor	each	1	R
13	11 kW Motor	each	1	R
14	12 kW Motor	each	1	R
15	15 kW Motor	each	1	R
16	18.5 kW Motor	each	1	R
17	22 kW Motor	each	1	R
18	30 kW Motor	each	1	R

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

19	37 kW Motor	each	1	R
20	45 kW Motor	each	1	R
21	55 kW Motor	each	1	R
22	75 kW Motor	each	1	R
23	90 kW Motor	each	1	R
24	132 kW Motor	each	1	R
25	315 kW Motor	each	1	R
26	400 kW Motor	each	1	R

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

2.2.32. Supply, delivery and installation of Moulded case circuit breaker complete with interconnecting tails, etc. installed inside MCC Panel, kiosk, etc ratings in the table below:

Item	Description	Unit Of Measure	Qty	Rate (VAT INCLUSIVE) R
1	300 to 630A 3 Pole 50kA Circuit Breaker.	each	1	R
2	300A 3 Pole 25kA Circuit Breaker.	each	1	R
3	250A 3 Pole 25kA Circuit Breaker.	each	1	R
4	150A 3 Pole 15kA Circuit Breaker.	each	1	R
5	100A 3 Pole 10kA Circuit Breaker.	each	1	R
6	80A 3 Pole 10kA Circuit Breaker.	each	1	R
7	63A 3 Pole 10kA Circuit Breaker.	each	1	R
8	40A 3 Pole 10kA Circuit Breaker.	each	1	R
9	40A 2 Pole 10kA Circuit Breaker.	each	1	R
10	20A 3 Pole 10kA Circuit Breaker.	each	1	R
11	20A 2 Pole 10kA Circuit Breaker.	each	1	R
12	80A 3 Pole 10kA Circuit Breaker.	each	1	R
13	63A 2 Pole 10kA Circuit Breaker.	each	1	R
14	20A 1 Pole 6kA Circuit Breaker.	each	1	R
15	16A 1 Pole 6kA Circuit Breaker.	each	1	R
16	10A 1 Pole 6kA Circuit Breaker.	each	1	R
17	3 Phase + N Class 2 surge protection (Dehn guard & Dehn Gap)	each	1	R
18	63A E/L Unit ( 3P + N )	each	1	R
19	63A E/L Unit ( 1P + N )	each	1	R

Contractor

Witness 1

Witness 2


Employer


Witness 1


Witness 2


2.2.33. Supply, delivery and installation Single PLC / HMI control compartment complete with Delta type PLC and HMI equipment, I/O and communication cards, etc as specified with sufficient I/O modules as listed below:


Item	Description	Unit Of Measure	Qty	Supply And Deliver Rate (Including VAT)
1	Main Power supply (230VAC-24 VDC)	each	1	R
2	Main Power supply (24 VDC-24 VDC)	each	1	R
3	CPU Modbus Ethernet	each	1	R
4	Communication Module Ethernet Device Scanning	each	1	R
5	4 slot Backplane	each	1	R
6	6 slot Backplane	each	1	R
7	8 slot Backplane	each	1	R
8	12 slot Backplane	each	1	R
9	4-20 mA Ethernet Converter	each	1	R
10	Ethernet Manageable Switch 2 Fibre and 6 Copper	each	1	R
11	Ethernet Manageable Switch 2 Fibre and 24 Copper	each	1	R
12	Termination box- IP 20 rated polyester enclosures with hinged door and enough space to allow for a 25% extension	each	1	R
13	3.5" Touch Screen Panel HMI	each	1	R
14	12" Touch Screen Panel HMI	each	1	R
15	8 Channels AI	each	1	R
16	8 Channels AO	each	1	R
17	8 Channels DI	each	1	R


  
Contractor

  
Witness 1

  
Witness 2

  
Employer

  
Witness 1

  
Witness 2

18	8 Channels DO	each	1	R
19	16 Channels AI	each	1	R
20	16 Channels AO	each	1	R
21	16 Channels DI	each	1	R
22	16 Channels DO	each	1	R
23	32 Channels AI	each	1	R
24	32 Channels AO	each	1	R
25	32 Channels DI	each	1	R
26	32 Channels DO	each	1	R
27	64 Channels DI	each	1	R
28	64 Channels DO	each	1	R
29	All PLC and auxiliary software	each	1	R
30	Certified system integrator training for one person	each	1	R

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

**3.1. ELECTRICAL DISTRIBUTION SWITCHBOARD AND MOTOR CONTROL CENTRES – ANY SIMILAR ALTERNATIVE EQUIPMENT MANUFACTURER: ELECTRICAL DISTRIBUTION SWITCHBOARD AND MOTOR CONTROL CENTRES (MCC PANELS, ELECTRICAL WORK)**

Supply, delivery and install - mcc panel including door mount louvers, extraction fans, double handling if stored, pre- installation activities, quality assurance, and modifications and providing required certification as per this contract (Tenderers to price each control / equipment cubicle separately in accordance with the typical items of equipment to be installed inside, same as indicated in the Specification. Allowance shall be made for all busbars, wiring, cut-outs, etc required)

**3.1.1. ANY SIMILAR ALTERNATIVE TECHNOLOGY: ELECTRICAL DISTRIBUTION SWITCHBOARD AND MOTOR CONTROL CENTRES (MCC PANELS, ELECTRICAL WORK)**

**3.1.2. Control cubicles:**

Supply, delivery and installation of typical Incomer compartment cubicle, incl. kWh meter complete with power analyser, surge arrestors, bus bars, etc. with both main incoming and generator MCB's rated as indicated in the table below;

Item	Description	Unit Of Measure	Qty	Rate (VAT INCLUSIVE) R
1	60A @ 10 kA	each	1	R
2	100A @ 15 kA	each	1	R
3	150A @ 15 kA	each	1	R
4	250A @ 25 kA	each	1	R
5	300A @ 25 kA	each	1	R
6	60A @ 10 kA	each	1	R
7	300 to 630A @ 50 kA	each	1	R
8	Supply and delivery of panel door mount louvers and extraction fans	each	1	R
9	Supply and delivery of MCC room ventilation system including wall mount louvers and extraction fans (including civil and installation works)	each	1	R

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2



**3.1.3. Supply, delivery and installation of Single pump control compartment complete with typical control gear, alarm / status indicator lamps, telemetry I/O, etc as specified, excl. pump motor drive VSD Starters ratings in the table below:**

Item	Description	Unit Of Measure	Qty	Rate (VAT INCLUSIVE) R
1	3 kW pump	each	1	R
2	5.5 KW pump	each	1	R
3	7,5 kW pump	each	1	R
4	11 kW pump	each	1	R
5	15 kW pump	each	1	R
6	30 kW pump	each	1	R
7	37 kW pump	each	1	R
8	45 kW pump	each	1	R
9	55 kW pump	each	1	R
10	75 kW pump	each	1	R
11	90 kW pump	each	1	R
12	132 kW pump	each	1	R
13	315 kW pump	each	1	R

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

3.1.4. **Supply, delivery and installation of Single pump control compartment complete with typical control gear, alarm / status indicator lamps, telemetry I/O, etc as specified, excl. pump motor drive Soft Starters ratings in the table below:**

Item	Description	Unit Of Measure	Qty	Rate (VAT INCLUSIVE) R
1	3 kW pump	each	1	R
2	5.5 KW pump	each	1	R
3	7,5 kW pump	each	1	R
4	11 kW pump	each	1	R
5	15 kW pump	each	1	R
6	30 kW pump	each	1	R
7	37 kW pump	each	1	R
8	45 kW pump	each	1	R
9	55 kW pump	each	1	R
10	75 kW pump	each	1	R
11	90 kW pump	each	1	R
12	132 kW pump	each	1	R
13	315 kW pump	each	1	R

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

**3.1.5. Supply, delivery and installation of Single mixer control compartment complete with typical control gear, alarm / status indicator lamps, telemetry I/O, etc as specified, but excl pump motor drive VSD starters ratings in the table below:**

Item	Description	Unit Of Measure	Qty	Rate (VAT INCLUSIVE) R
1	1.1 kW mixer	each	1	R
2	1.5 kW mixer	each	1	R
3	2.2 kW mixer	each	1	R
4	3 kW mixer	each	1	R
5	7.5 kW mixer	each	1	R
6	15 kW mixer	each	1	R

**3.1.6. Supply, delivery and installation of Single mixer control compartment complete with typical control gear, alarm / status indicator lamps, telemetry I/O, etc as specified, but excl pump motor drive Soft Starters ratings in the table below:**

Item	Description	Unit Of Measure	Qty	Rate (VAT INCLUSIVE) R
1	1.1 kW mixer	each	1	R
2	1.5 kW mixer	each	1	R
3	2.2 kW mixer	each	1	R
4	3 kW mixer	each	1	R
5	7.5 kW mixer	each	1	R
6	15 kW mixer	each	1	R

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

- 3.1.7. **Supply, delivery and installation of Single mixer control compartment complete with typical control gear, alarm / status indicator lamps, telemetry I/O, etc as specified, but excl mixer motor drive VSD starters ratings in the table below:**

Item	Description	Unit Of Measure	Qty	Rate (VAT INCLUSIVE) R
1	1.1 kW mixer	each	1	R
2	3 kW mixer	each	1	R

- 3.1.8. **Supply, delivery and installation of Single mixer control compartment complete with typical control gear, alarm / status indicator lamps, telemetry I/O, etc as specified, but excl mixer motor drive soft starters ratings in the table below:**

Item	Description	Unit Of Measure	Qty	Rate (VAT INCLUSIVE) R
1	1.1 kW mixer	each	1	R
2	3 kW mixer	each	1	R

- 3.1.9. **Supply, delivery and installation of Single mechanical screen control compartment complete with typical control gear, alarm / status indicator lamps, telemetry I/O, etc as specified, but excl screen motor drive VSD starters ratings in the table below:**

Item	Description	Unit Of Measure	Qty	Rate (VAT INCLUSIVE) R
1	0.55 kW Screen	each	1	R
2	0.75 kW Screen	each	1	R
3	1.1 kW Screen	each	1	R
4	3 kW Screen	each	1	R

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

3.1.10. Supply, delivery and installation of Single mechanical screen control compartment complete with typical control gear, alarm / status indicator lamps, telemetry I/O, etc as specified, but excl screen motor drive soft starters ratings in the table below:

Item	Description	Unit Of Measure	Qty	Rate (VAT INCLUSIVE) R
1	0.55 kW Screen	each	1	R
2	0.75 kW Screen	each	1	R
3	1.1 kW Screen	each	1	R
4	3 kW Screen	each	1	R

3.1.11. Supply, delivery and installation of Single screw conveyor screen control compartment complete with typical control gear, alarm / status indicator lamps, telemetry I/O, etc as specified, but excl motor drive VSD starters ratings in the table below:

Item	Description	Unit Of Measure	Qty	Rate (VAT INCLUSIVE) R
1	0.75 kW screw conveyor	each	1	R
2	1.1 kW screw conveyor	each	1	R
3	2.2 kW screw conveyor	each	1	R
4	3 kW screw conveyor	each	1	R
5	4 kW screw conveyor	each	1	R

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

3.1.12. Supply, delivery and installation of Single screw conveyor screen control compartment complete with typical control gear, alarm / status indicator lamps, telemetry I/O, etc as specified, but excl motor drive soft starters ratings in the table below:

Item	Description	Unit Of Measure	Qty	Rate (VAT INCLUSIVE) R
1	0.75 kW screw conveyor	each	1	R
2	1.1 kW screw conveyor	each	1	R
3	2.2 kW screw conveyor	each	1	R
4	3 kW screw conveyor	each	1	R
5	4 kW screw conveyor	each	1	R

3.1.13. **Supply, delivery and installation of Single Blower control compartment complete with typical control gear, alarm / status indicator lamps, telemetry I/O, etc as specified, but excl motor drive VSD starters ratings in the table below:**

Item	Description	Unit Of Measure	Qty	Rate (VAT INCLUSIVE) R
1	1.5 kW Blower	each	1	R
2	7.5 kW Blower	each	1	R
3	11 kW Blower	each	1	R
4	15 kW Blower	each	1	R
5	400 kW Blower	each	1	R

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

3.1.14. Supply, delivery and installation of Single Blower control compartment complete with typical control gear, alarm / status indicator lamps, telemetry I/O, etc as specified, but excl motor drive soft starters ratings in the table below:

Item	Description	Unit Of Measure	Qty	Rate (VAT INCLUSIVE) R
1	1.5 kW Blower	each	1	R
2	7.5 kW Blower	each	1	R
3	11 kW Blower	each	1	R
4	15 kW Blower	each	1	R
5	400 kW Blower	each	1	R

3.1.15. Supply, delivery and installation of Single Compressors control compartment complete with typical control gear, alarm / status indicator lamps, telemetry I/O, etc as specified, but excl motor drive DOL starters ratings in the table below:

Item	Description	Unit Of Measure	Qty	Rate (VAT INCLUSIVE) R
1	5.5 kW Compressor	each	1	R
2	7.5 kW Compressor	each	1	R
3	15 kW Compressor	each	1	R
4	30 kW Compressor	each	1	R

3.1.16. Supply, delivery and installation of Single Compressors control compartment complete with typical control gear, alarm / status indicator lamps, telemetry I/O, etc as specified, but excl motor drive VSD starters ratings in the table below:

Item	Description	Unit Of Measure	Qty	Rate (VAT INCLUSIVE) R
1	5.5 kW Compressor	each	1	R
2	7.5 kW Compressor	each	1	R
3	15 kW Compressor	each	1	R
4	30 kW Compressor	each	1	R

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

3.1.17. Supply, delivery and installation of Single Compressors control compartment complete with typical control gear, alarm / status indicator lamps, telemetry I/O, etc as specified, but excl motor drive soft starters ratings in the table below:

Item	Description	Unit Of Measure	Qty	Rate (VAT INCLUSIVE) R
1	5.5 kW Compressor	each	1	R
2	7.5 kW Compressor	each	1	R
3	15 kW Compressor	each	1	R
4	30 kW Compressor	each	1	R

3.1.18. Supply, delivery and installation of Single Sediment Tank control compartment complete with typical control gear, alarm / status indicator lamps, telemetry I/O, etc as specified, but excl. motor drive DOL starters ratings in the table below:

Item	Description	Unit Of Measure	Qty	Rate (VAT INCLUSIVE) R
1	0.55 kW Motor	each	1	R
2	0.75 kW Motor	each	1	R

3.1.19. Supply, delivery and installation of Single Sediment Tank control compartment complete with typical control gear, alarm / status indicator lamps, telemetry I/O, etc as specified, but excl. motor drive VSD starters ratings in the table below:

Item	Description	Unit Of Measure	Qty	Rate (VAT INCLUSIVE) R
1	0.55 kW Motor	each	1	R
2	0.75 kW Motor	each	1	R

3.1.20. Supply, delivery and installation of Single Sediment Tank control compartment complete with typical control gear, alarm / status indicator lamps, telemetry I/O, etc as specified, but excl. motor drive soft starters ratings in the table below:

Item	Description	Unit Of Measure	Qty	Rate (VAT INCLUSIVE) R
1	0.55 kW Motor	each	1	R
2	0.75 kW Motor	each	1	R

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2



3.1.21. Supply, delivery and installation of Single Grid removal control compartment complete with typical control gear, alarm / status indicator lamps, telemetry I/O, etc as specified, but excl. motor drive DOL starters ratings in the table below:

Item	Description	Unit Of Measure	Qty	Rate (VAT INCLUSIVE) R
1	0.55 kW Motor	each	1	R
2	0.75 kW Motor	each	1	R

3.1.22. Supply, delivery and installation of Single Grid removal control compartment complete with typical control gear, alarm / status indicator lamps, telemetry I/O, etc as specified, but excl. motor drive VSD starters ratings in the table below:

Item	Description	Unit Of Measure	Qty	Rate (VAT INCLUSIVE) R
1	0.55 kW Motor	each	1	R
2	0.75 kW Motor	each	1	R

3.1.23. **Supply, delivery and installation of Single Grid removal control compartment complete with typical control gear, alarm / status indicator lamps, telemetry I/O, etc as specified, but excl. motor drive soft starters ratings in the table below:**

Item	Description	Unit Of Measure	Qty	Rate (VAT INCLUSIVE) R
1	0.55 kW Motor	each	1	R
2	0.75 kW Motor	each	1	R

3.1.24. Supply, delivery and installation of Single Aerator control compartment complete with typical control gear, alarm / status indicator lamps, telemetry I/O, etc as specified, but excl. motor drive DOL starters ratings in the table below:

Item	Description	Unit Of Measure	Qty	Rate (VAT INCLUSIVE) R
2	37 kW Motor	Sum	1	R
3	55 kW Motor	Sum	1	R
4	75 kW Motor	Sum	1	R

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

3.1.25. Supply, delivery and installation of Single Aerator control compartment complete with typical control gear, alarm / status indicator lamps, telemetry I/O, etc as specified, but excl. motor drive VSD starters ratings in the table below:

Item	Description	Unit Of Measure	Qty	Rate (VAT INCLUSIVE) R
2	37 kW Motor	Sum	1	R
3	55 kW Motor	Sum	1	R
4	75 kW Motor	Sum	1	R

3.1.26. Supply, delivery and installation of Single Aerator control compartment complete with typical control gear, alarm / status indicator lamps, telemetry I/O, etc as specified, but excl. motor drive soft starters ratings in the table below:

Item	Description	Unit Of Measure	Qty	Rate (VAT INCLUSIVE) R
2	37 kW Motor	Sum	1	R
3	55 kW Motor	Sum	1	R
4	75 kW Motor	Sum	1	R

3.1.27. Supply, delivery and installation VSD inside new Motor Control Panel cubicles for ratings in the table below:

Item	Description	Unit Of Measure	Qty	Rate (VAT INCLUSIVE) R
1	0.18 kW Motor	each	1	R
2	0.5 kW Motor	each	1	R
3	0.55 kW Motor	each	1	R
4	0.75 kW Motor	each	1	R
5	1.1 kW Motor	each	1	R
6	1.5 kW Motor	each	1	R

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

7	2.2 kW Motor	each	1	R
8	3 kW Motor	each	1	R
9	4 kW Motor	each	1	R
10	5.5 KW Motor	each	1	R
11	7,5 kW Motor	each	1	R
12	8.5 kW Motor	each	1	R
13	11 kW Motor	each	1	R
14	12 kW Motor	each	1	R
15	15 kW Motor	each	1	R
16	18.5 kW Motor	each	1	R
17	22 kW Motor	each	1	R
18	30 kW Motor	each	1	R
19	37 kW Motor	each	1	R
20	45 kW Motor	each	1	R
21	55 kW Motor	each	1	R
22	75 kW Motor	each	1	R
23	90 kW Motor	each	1	R
24	132 kW Motor	each	1	R
25	315 kW Motor	each	1	R
26	400 kW Motor	each	1	R

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

3.1.28. Supply, delivery and installation of input reactor (choke) for VSD inside new Motor Control Panel cubicles for ratings in the table below:

Item	Description	Unit Of Measure	Qty	Rate (VAT INCLUSIVE) R
1	0.18 kW Motor	each	1	R
2	0.5 kW Motor	each	1	R
3	0.55 kW Motor	each	1	R
4	0.75 kW Motor	each	1	R
5	1.1 kW Motor	each	1	R
6	1.5 kW Motor	each	1	R
7	2.2 kW Motor	each	1	R
8	3 kW Motor	each	1	R
9	4 kW Motor	each	1	R
10	5.5 KW Motor	each	1	R
11	7,5 kW Motor	each	1	R
12	8.5 kW Motor	each	1	R
13	11 kW Motor	each	1	R
14	12 kW Motor	each	1	R
15	15 kW Motor	each	1	R
16	18.5 kW Motor	each	1	R
17	22 kW Motor	each	1	R
18	30 kW Motor	each	1	R

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

19	37 kW Motor	each	1	R
20	45 kW Motor	each	1	R
21	55 kW Motor	each	1	R
22	75 kW Motor	each	1	R
23	90 kW Motor	each	1	R
24	132 kW Motor	each	1	R
25	315 kW Motor	each	1	R
26	400 kW Motor	each	1	R

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

3.1.29. Supply, delivery and installation of Output reactor (choke) for VSD inside new Motor Control Panel cubicles for ratings in the table below:

Item	Description	Unit Of Measure	Qty	Rate (VAT INCLUSIVE) R
1	0.18 kW Motor	each	1	R
2	0.5 kW Motor	each	1	R
3	0.55 kW Motor	each	1	R
4	0.75 kW Motor	each	1	R
5	1.1 kW Motor	each	1	R
6	1.5 kW Motor	each	1	R
7	2.2 kW Motor	each	1	R
8	3 kW Motor	each	1	R
9	4 kW Motor	each	1	R
10	5.5 KW Motor	each	1	R
11	7,5 kW Motor	each	1	R
12	8.5 kW Motor	each	1	R
13	11 kW Motor	each	1	R
14	12 kW Motor	each	1	R
15	15 kW Motor	each	1	R
16	18.5 kW Motor	each	1	R
17	22 kW Motor	each	1	R
18	30 kW Motor	each	1	R

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

19	37 kW Motor	each	1	R
20	45 kW Motor	each	1	R
21	55 kW Motor	each	1	R
22	75 kW Motor	each	1	R
23	90 kW Motor	each	1	R
24	132 kW Motor	each	1	R
25	315 kW Motor	each	1	R
26	400 kW Motor	each	1	R

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

3.1.30. Supply, delivery and installation for soft starter equipment type inside new Motor Control Panel cubicles for ratings in the table below:

Item	Description	Unit Of Measure	Qty	Rate (VAT INCLUSIVE) R
1	3 kW motor	each	1	R
2	7.5 kW motor	each	1	R
3	15 kW motor	each	1	R
4	30 kW motor	each	1	R
5	37 kW motor	each	1	R
6	55 kW motor	each	1	R
7	75 kW motor	each	1	R
8	90 kW motor	each	1	R
9	132 kW motor	each	1	R
10	260 kW motor	each	1	R

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2



3.1.31. Supply and delivery set of three ultra-rapid fuses for all VSD / Soft Starter equipment installed in MCC panel ratings in the table below:

Item	Description	Unit Of Measure	Qty	Rate (VAT INCLUSIVE) R
1	0.18 kW Motor	each	1	R
2	0.5 kW Motor	each	1	R
3	0.55 kW Motor	each	1	R
4	0.75 kW Motor	each	1	R
5	1.1 kW Motor	each	1	R
6	1.5 kW Motor	each	1	R
7	2.2 kW Motor	each	1	R
8	3 kW Motor	each	1	R
9	4 kW Motor	each	1	R
10	5.5 KW Motor	each	1	R
11	7,5 kW Motor	each	1	R
12	8.5 kW Motor	each	1	R
13	11 kW Motor	each	1	R
14	12 kW Motor	each	1	R
15	15 kW Motor	each	1	R
16	18.5 kW Motor	each	1	R
17	22 kW Motor	each	1	R
18	30 kW Motor	each	1	R

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

19	37 kW Motor	each	1	R
20	45 kW Motor	each	1	R
21	55 kW Motor	each	1	R
22	75 kW Motor	each	1	R
23	90 kW Motor	each	1	R
24	132 kW Motor	each	1	R
25	315 kW Motor	each	1	R
26	400 kW Motor	each	1	R

Contractor

Witness 1

Witness 2


Employer


Witness 1


Witness 2


3.1.32. Supply, delivery and installation of Moulded case circuit breaker complete with interconnecting tails, etc. installed inside MCC Panel, kiosk, etc ratings in the table below:


Item	Description	Unit Of Measure	Qty	Rate (VAT INCLUSIVE) R
1	300 to 630A 3 Pole 50kA Circuit Breaker.	each	1	R
2	300A 3 Pole 25kA Circuit Breaker.	each	1	R
3	250A 3 Pole 25kA Circuit Breaker.	each	1	R
4	150A 3 Pole 15kA Circuit Breaker.	each	1	R
5	100A 3 Pole 10kA Circuit Breaker.	each	1	R
6	80A 3 Pole 10kA Circuit Breaker.	each	1	R
7	63A 3 Pole 10kA Circuit Breaker.	each	1	R
8	40A 3 Pole 10kA Circuit Breaker.	each	1	R
9	40A 2 Pole 10kA Circuit Breaker.	each	1	R
10	20A 3 Pole 10kA Circuit Breaker.	each	1	R
11	20A 2 Pole 10kA Circuit Breaker.	each	1	R
12	80A 3 Pole 10kA Circuit Breaker.	each	1	R
13	63A 2 Pole 10kA Circuit Breaker.	each	1	R
14	20A 1 Pole 6kA Circuit Breaker.	each	1	R
15	16A 1 Pole 6kA Circuit Breaker.	each	1	R
16	10A 1 Pole 6kA Circuit Breaker.	each	1	R
17	3 Phase + N Class 2 surge protection (Dehn guard & Dehn Gap)	each	1	R
18	63A E/L Unit ( 3P + N )	each	1	R
19	63A E/L Unit ( 1P + N )	each	1	R


  
Contractor

  
Witness 1

  
Witness 2

  
Employer

  
Witness 1

  
Witness 2

3.1.33. Supply, delivery and installation Single PLC / HMI control compartment complete with Delta type PLC and HMI equipment, I/O and communication cards, etc as specified with sufficient I/O modules as listed below:

Item	Description	Unit Of Measure	Qty	Supply And Deliver Rate (Including VAT)
1	Main Power supply (230VAC-24 VDC)	each	1	R
2	Main Power supply (24 VDC-24 VDC)	each	1	R
3	CPU Modbus Ethernet	each	1	R
4	Communication Module Ethernet Device Scanning	each	1	R
5	4 slot Backplane	each	1	R
6	6 slot Backplane	each	1	R
7	8 slot Backplane	each	1	R
8	12 slot Backplane	each	1	R
9	4-20 mA Ethernet Converter	each	1	R
10	Ethernet Manageable Switch 2 Fibre and 6 Copper	each	1	R
11	Ethernet Manageable Switch 2 Fibre and 24 Copper	each	1	R
12	Termination box- IP 20 rated polyester enclosures with hinged door and enough space to allow for a 25% extension	each	1	R
13	3.5" Touch Screen Panel HMI	each	1	R
14	12" Touch Screen Panel HMI	each	1	R
15	8 Channels AI	each	1	R
16	8 Channels AO	each	1	R

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

17	8 Channels DI	each	1	R
18	8 Channels DO	each	1	R
19	16 Channels AI	each	1	R
20	16 Channels AO	each	1	R
21	16 Channels DI	each	1	R
22	16 Channels DO	each	1	R
23	32 Channels AI	each	1	R
24	32 Channels AO	each	1	R
25	32 Channels DI	each	1	R
26	32 Channels DO	each	1	R
27	64 Channels DI	each	1	R
28	64 Channels DO	each	1	R
29	All PLC and auxiliary software	each	1	R
30	Certified system integrator training for one person	each	1	R

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

#### 4. AUXILIARY ELECTRICAL EQUIPMENT

##### 4.1. Supply, delivery and installation of LV, PVCAS cable in trench or sleeve or cable tray ratings and sizes listed in the table below:

Item	Description	Unit Of Measure	Qty	Supply And Deliver Rate (Including VAT)
1	120 mm <sup>2</sup> Cu x 4 Core cable.	m	1	R
2	95 mm <sup>2</sup> Cu x 4 Core cable.	m	1	R
3	70 mm <sup>2</sup> Cu x 4 Core cable.	m	1	R
4	70 mm <sup>2</sup> Single core insulated (Black) earth conductor	m	1	R
5	70 mm <sup>2</sup> Insulated Earth conductor for above	m	1	R
6	50 mm <sup>2</sup> Cu x 4 Core cable.	m	1	R
7	50 mm <sup>2</sup> Single core insulated (Black) earth conductor	m	1	R
8	50 mm <sup>2</sup> Insulated Earth conductor for above	m	1	R
9	50 mm <sup>2</sup> Single core insulated (Black) earth conductor	m	1	R
10	50 mm <sup>2</sup> 3 Core Copper cable.	m	1	R
11	35 mm <sup>2</sup> Cu x 4 Core cable.	m	1	R
12	25 mm <sup>2</sup> Cu x 4 Core cable.	m	1	R
13	25 mm <sup>2</sup> Insulated Earth conductor for above	m	1	R
14	25 mm <sup>2</sup> Single core insulated (Black) earth conductor	m	1	R
15	25 mm <sup>2</sup> 3 Core Copper cable.	m	1	R
16	16 mm <sup>2</sup> Cu x 4 Core cable.	m	1	R
17	16 mm <sup>2</sup> Insulated Earth conductor for above	m	1	R

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

18	10 mm <sup>2</sup> Cu x 4 Core cable.	m	1	R
19	4.1.1. 10 mm <sup>2</sup> Insulated Earth conductor for above	m	1	R
20	10 mm <sup>2</sup> 3 Core Copper cable.	m	1	R
21	6 mm <sup>2</sup> Cu x 4 Core cable.	m	1	R
22	6 mm <sup>2</sup> Insulated Earth conductor for above	m	1	R
23	4 mm <sup>2</sup> Cu x 4 Core cable.	m	1	R
24	4 mm <sup>2</sup> Insulated Earth conductor for above	m	1	R
25	4 mm <sup>2</sup> 3 Core Copper cable.	m	1	R
26	2, 5 mm <sup>2</sup> Cu x 4 Core cable.	m	1	R
27	2,5 mm <sup>2</sup> Insulated Earth conductor for above	m	1	R
28	2, 5 mm <sup>2</sup> 3 Core Copper cable.	m	1	R
29	2, 5 mm <sup>2</sup> 2 Core Copper cable.	m	1	R
30	1, 5 mm <sup>2</sup> Cu x 4 Core cable.	m	1	R
31	1,5 mm <sup>2</sup> Insulated Earth conductor for above	m	1	R
32	1, 5 mm <sup>2</sup> 3 Core Copper cable.	m	1	R
33	1, 5 mm <sup>2</sup> 2 Core Copper cable.	m	1	R
34	Make provision for the scan of concrete floor slabs and walls for cable routes (2 Full Days)	day	2	R
35	Make provision for the re-routing of existing cables	m	1	R

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

4.2. Supply, delivery and installation of Dura cast resin through joint in LV, PVCAS cable ratings and sizes listed in the table below:

Item	Description	Unit Of Measure	Qty	Supply And Deliver Rate (Including VAT)
1	120 mm <sup>2</sup> Cu x 4 Core cable.	m	1	R
2	95 mm <sup>2</sup> Cu x 4 Core cable.	m	1	R
3	70 mm <sup>2</sup> Cu x 4 Core cable.	m	1	R
4	70 mm <sup>2</sup> Insulated Earth conductor for above	m	1	R
5	50 mm <sup>2</sup> Cu x 4 Core cable.	m	1	R
6	50 mm <sup>2</sup> Insulated Earth conductor for above	m	1	R
7	50 mm <sup>2</sup> Single core insulated (Black) earth conductor	m	1	R
8	50 mm <sup>2</sup> 3 Core Copper cable.	m	1	R
9	35 mm <sup>2</sup> Cu x 4 Core cable.	m	1	R
10	25 mm <sup>2</sup> Cu x 4 Core cable.	m	1	R
11	25 mm <sup>2</sup> Insulated Earth conductor for above	m	1	R
12	25 mm <sup>2</sup> Single core insulated (Black) earth conductor	m	1	R
13	25 mm <sup>2</sup> 3 Core Copper cable.	m	1	R
14	16 mm <sup>2</sup> Cu x 4 Core cable.	m	1	R
15	16 mm <sup>2</sup> Insulated Earth conductor for above	m	1	R
16	10 mm <sup>2</sup> Cu x 4 Core cable.	m	1	R
17	10 mm <sup>2</sup> Insulated Earth conductor for above	m	1	R
18	10 mm <sup>2</sup> 3 Core Copper cable.	m	1	R
19	6 mm <sup>2</sup> Cu x 4 Core cable.	m	1	R
20	6 mm <sup>2</sup> Insulated Earth conductor for above	m	1	R
21	4 mm <sup>2</sup> Cu x 4 Core cable.	m	1	R
22	4 mm <sup>2</sup> Insulated Earth conductor for above	m	1	R

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2



23	4 mm <sup>2</sup> 3 Core Copper cable.	m	1	R
24	2, 5 mm <sup>2</sup> Cu x 4 Core cable.	m	1	R
25	2,5 mm <sup>2</sup> Insulated Earth conductor for above	m	1	R
26	2, 5 mm <sup>2</sup> 3 Core Copper cable.	m	1	R
27	2, 5 mm <sup>2</sup> 2 Core Copper cable.	m	1	R
28	1, 5 mm <sup>2</sup> Cu x 4 Core cable.	m	1	R
29	1,5 mm <sup>2</sup> Insulated Earth conductor for above	m	1	R
30	1, 5 mm <sup>2</sup> 3 Core Copper cable.	m	1	R
31	1, 5 mm <sup>2</sup> 2 Core Copper cable.	m	1	R

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

4.3. Supply, delivery and installation of cable terminations and connections for LV, PVCAS cables at kiosk /MCC panel / motors / equipment using brass cable gland, brass locknut, neoprene rubber shroud and crimp lugs in line with applicable legislation and industrial good practices. Ratings and sizes listed in the table below:

Item	Description	Unit Of Measure	Qty	Supply And Deliver Rate (Including VAT)
1	120 mm <sup>2</sup> Cu x 4 Core cable (Indoor)	m	1	R
2	95 mm <sup>2</sup> Cu x 4 Core cable. (Indoor)	m	1	R
3	70 mm <sup>2</sup> Cu x 4 Core cable. (Indoor)	m	1	R
4	70 mm <sup>2</sup> Insulated Earth conductor for above(Indoor)	m	1	R
5	50 mm <sup>2</sup> Cu x 4 Core cable. (Indoor)	m	1	R
6	50 mm <sup>2</sup> Insulated Earth conductor for above(Indoor)	m	1	R
7	50 mm <sup>2</sup> Single core insulated (Black) earth conductor(Indoor)	m	1	R
8	50 mm <sup>2</sup> 3 Core Copper cable. (Indoor)	m	1	R
9	35 mm <sup>2</sup> Cu x 4 Core cable. (Indoor)	m	1	R
10	25 mm <sup>2</sup> Cu x 4 Core cable. (Indoor)	m	1	R
11	25 mm <sup>2</sup> Insulated Earth conductor for above(Indoor)	m	1	R
12	25 mm <sup>2</sup> Single core insulated (Black) earth conductor(Indoor)	m	1	R
13	25 mm <sup>2</sup> 3 Core Copper cable. (Indoor)	m	1	R
14	16 mm <sup>2</sup> Cu x 4 Core cable. (Indoor)	m	1	R
15	16 mm <sup>2</sup> Insulated Earth conductor for above(Indoor)	m	1	R
16	10 mm <sup>2</sup> Cu x 4 Core cable. (Indoor)	m	1	R

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

17	10 mm <sup>2</sup> Insulated Earth conductor for above(Indoor)	m	1	R
18	10 mm <sup>2</sup> 3 Core Copper cable. (Indoor)	m	1	R
19	6 mm <sup>2</sup> Cu x 4 Core cable. (Indoor)	m	1	R
20	6 mm <sup>2</sup> Insulated Earth conductor for above(Indoor)	m	1	R
21	4 mm <sup>2</sup> Cu x 4 Core cable. (Indoor)	m	1	R
22	4 mm <sup>2</sup> Insulated Earth conductor for above(Indoor)	m	1	R
23	4 mm <sup>2</sup> 3 Core Copper cable. (Indoor)	m	1	R
24	2, 5 mm <sup>2</sup> Cu x 4 Core cable. (Indoor)	m	1	R
25	2,5 mm <sup>2</sup> Insulated Earth conductor for above(Indoor)	m	1	R
26	2, 5 mm <sup>2</sup> 3 Core Copper cable. (Indoor)	m	1	R
27	2, 5 mm <sup>2</sup> 2 Core Copper cable. (Indoor)	m	1	R
28	1, 5 mm <sup>2</sup> Cu 4 Core cable. (Indoor)	m	1	R
29	1,5 mm <sup>2</sup> Insulated Earth conductor for above(Indoor)	m	1	R
30	1, 5 mm <sup>2</sup> 3 Core Copper cable. (Indoor)	m	1	R
31	1, 5 mm <sup>2</sup> 2 Core Copper cable. (Indoor)	m	1	R

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

4.4. Supply, delivery and installation of cable terminations and connections for overall screened, steel wire armoured, twisted pair type instrumentation cables at MCC panel / equipment / remote E-stop stations /Pratley or termination box using brass cable gland, brass locknut, neoprene rubber shroud and crimp lugs in line with applicable legislation and industrial good practices. Ratings and sizes listed in the table below:

Item	Description	Unit Of Measure	Qty	Supply And Deliver Rate (Including VAT)
1	1, 5 mm <sup>2</sup> X 1 pair	m	1	R
2	1, 5 mm <sup>2</sup> X 4 pair	m	1	R
3	1, 5 mm <sup>2</sup> X 8 pair	m	1	R
4	Terminate and connect instrumentation cables supplied with pressure / flow sensors, no flow / float Switches, PT 100 sensors, etc at MCC panel / junction box using compression type glands and crimp lugs.	sum	1	R

4.5. Supply, delivery and installation of cable terminations and connections for hard drawn (HD) bare copper earth wire laid in trench / sleeve /cable tray in line with applicable legislation and industrial good practices. Ratings and sizes listed in the table below:

Item	Description	Unit Of Measure	Qty	Supply And Deliver Rate (Including VAT)
1	50 mm <sup>2</sup>	m	1	R
2	35 mm <sup>2</sup>	m	1	R
3	25 mm <sup>2</sup>	m	1	R
4	16 mm <sup>2</sup>	m	1	R
5	6 mm <sup>2</sup>	m	1	R
6	4 mm <sup>2</sup>	m	1	R

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

4.6. Supply, delivery and installation of cable terminations and connections for Hard drawn (HD) bare copper earth wire terminated at kiosk / MCC panel / pump motor / Pratley or termination box in line with applicable legislation and industrial good practices. Ratings and sizes listed in the table below:

Item	Description	Unit Of Measure	Qty	Supply And Deliver Rate (Including VAT)
1	50 mm <sup>2</sup>	m	1	R
2	35 mm <sup>2</sup>	m	1	R
3	25 mm <sup>2</sup>	m	1	R
4	16 mm <sup>2</sup>	m	1	R
5	6 mm <sup>2</sup>	m	1	R
6	4 mm <sup>2</sup>	m	1	R
7	Main AMF / MCC earth consisting of approx 30 metre length of 70mm <sup>2</sup> PVC bare copper conductor installed in trench, 2 x 4,5 metre long earth spikes and 2 x earth spike markers.	Sum	1	R

4.7. Supply, delivery and installation of steel conduit with support fixings (saddles/couplings/adaptors), cast in concrete, surface bed screed, fixed to wood, roof members suspended ceiling, steel, etc., run in roof space chased and/or fixed in brickwork including bend in line with applicable legislation and industrial good practices details and sizes listed in the table below:

Item	Description	Unit Of Measure	Qty	Supply And Deliver Rate (Including VAT)
1	40 mm Ø	m	1	R
2	32 mm Ø	m	1	R
3	25 mm Ø	m	1	R
4	20 mm Ø	m	1	R

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

4.8. Supply, delivery and installation of PVC conduit with support fixings (saddles/couplings/adaptors), cast in concrete, surface bed screed, fixed to wood, roof members suspended ceiling, steel, etc., run in roof space chased and/or fixed in brickwork including bend in line with applicable legislation and industrial good practices details and sizes listed in the table below:

Item	Description	Unit Of Measure	Qty	Supply And Deliver Rate (Including VAT)
1	75 mm Ø	m	1	R
2	50 mm Ø	m	1	R
3	40 mm Ø	m	1	R
4	32 mm Ø	m	1	R
5	25 mm Ø	m	1	R
6	20 mm Ø	m	1	R

4.9. Supply, delivery and installation of steel conduit accessories, outlet boxes and cover plate to suit number, size or type of entries, fixed onto conduit and including fixing screws in line with applicable legislation and industrial good practices details and sizes listed in the table below:

Item	Description	Unit Of Measure	Qty	Supply And Deliver Rate (Including VAT)
1	100mm x 100mm x 50mm deep box (Flush)	each	1	R
2	100mm x 100mm x 50mm deep box (Surface)	each	1	R
3	100mm x 50mm x 50mm deep box (Flush)	each	1	R
4	100mm x 50mm x 50mm deep box (Surface)	each	1	R
5	65mm Round steel box	each	1	R
6	85mm x 130mm Fibreglass IP54 York box	each	1	R

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

4.10. Supply, delivery and installation, (Reticulation – Sleeves / Man Holes) PVC Sleeves including short lengths and jointing, laid in trench (trenching and backfilling measured elsewhere). PVC fittings with "Safe lock" seal ring joints in line with applicable legislation and industrial good practices details and sizes listed in the table below:

Item	Description	Unit Of Measure	Qty	Supply And Deliver Rate (Including VAT)
1	110 mm Diameter PVC sleeve [ flush mount]	m	1	R
2	50 mm Diameter PVC sleeve [ flush mount]	m	1	R

4.11. Supply, delivery and installation of surface mounted, weather and vandal proof instrumentation junction boxes rated IP 65 minimum, complete with all terminals, connectors, etc for all cable / conduit terminations in line with applicable legislation and industrial good practices details and sizes listed in the table below:

Item	Description	Unit Of Measure	Qty	Supply And Deliver Rate (Including VAT)
1	Typical pump ( i.e. flow switch, PT 100's, Klinox, etc	each	1	R
2	Typical Mixer ( seal fail, Klinox, etc)	each	1	R
3	Typical Screen ( over torque, etc )	each	1	R
4	Sump ( ultrasonic sensor, float switches, etc )	each	1	R
5	Three way, IP 68 EZE-FIT Ex n Pratley No. 0 Instrumentation cable box, complete with Kwikblok mountings, Kwikblocks, etc. or similar	each	1	R

4.12. Supply, delivery and installation of 600 / 1000 V PVC insulated copper conductors wiring drawn into conduit / cable tray, including terminations, etc in line with applicable legislation and industrial good practices details and sizes listed in the table below:

Item	Description	Unit Of Measure	Qty	Supply And Deliver Rate (Including VAT)
1	4 mm <sup>2</sup>	m	1	R
2	2,5 mm <sup>2</sup>	m	1	R

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

4.13. Supply, delivery and installation of weatherproof light switches and socket outlets in line with applicable legislation and industrial good practices details and sizes listed in the table below:

Item	Description	Unit Of Measure	Qty	Supply And Deliver Rate (Including VAT)
1	One way light switch	each	1	R
2	Two way light switch	each	1	R
3	One way socket outlet old standards 16 Amp 3-pin including new SANS 164-2-ZA Plug	each	1	R
4	Two way One way socket outlet old standards 16 Amp 3-pin including new SANS 164-2-ZA Plug	each	1	R

4.14. Supply, delivery and installation of indoor light switches and socket outlets in line with applicable legislation and industrial good practices details and sizes listed in the table below:

Item	Description	Unit Of Measure	Qty	Supply And Deliver Rate (Including VAT)
1	One way light switch	each	1	R
2	Two way light switch	each	1	R
3	One way socket outlet old standards 16 Amp 3-pin including new SANS 164-2-ZA Plug	each	1	R
4	Two way One way socket outlet old standards 16 Amp 3-pin including new SANS 164-2-ZA Plug	each	1	R

4.15. Supply, delivery and installation of trunking/cable tray complete with fixings, example hangers, caddy clips, nuts, washers, rivets, splices, Tee- pieces, 4 way cross overs, elbows, clamps, anchors in line with applicable legislation and industrial good practices details and sizes listed in the table below:

Item	Description	Unit Of Measure	Qty	Supply And Deliver Rate (Including VAT)
1	16 x 16mm PVC white compact mini-trunking.	Per meter	1	R
2	40 x 25mm PVC white compact mini-trunking.	Per meter	1	R

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2





4.16. Supply, delivery and installation of Cable Tray - Hot dipped galvanised steel mesh cable tray installed against wall / floor. Item to include all brackets, stainless steel mounting screws / bolts in line with applicable legislation and industrial good practices details and sizes listed in the table below:


Item	Description	Unit Of Measure	Qty	Supply And Deliver Rate (Including VAT)
1	400mm wide	m	1	R
2	200mm wide	m	1	R
3	100mm wide	m	1	R
4	50mm wide	m	1	R
5	Stainless steel cable marking tags minimum size 9.5 mm wide. With a minimum of 25 characters per tag	Each	1	R


4.17. Supply, delivery and installation of Fibre Optic, Data cables and auxiliary equipment in line with applicable legislation and industrial good practices details and sizes listed in the table below:


Item	Description	Unit Of Measure	Qty	Supply And Deliver Rate (Including VAT)
1	4-Core Fibre Optic Cable (Multi Mode)	m	1	R
2	Splicing of 4-Core Fibre Optic Cable (Multi Mode)	each	1	R
3	4-Core Fibre Optic Cable (Single Mode)	m	1	R
4	Splicing of 4-Core Fibre Optic Cable (Single Mode)	each	1	R
5	Cat5 networking cable, including splicing etc.	m	1	R
6	Cut off old RJ45 module in existing power skirting and re-install (Crimp) new RJ45 module in new power skirting. Complete	each	1	R
7	Remove data, communication, power cables and wires from Power skirting and re-install in new power skirting (Measured per m power skirting).	m	1	R
8	Re-commission entire data installation to ensure all the data points is in a working condition.	Sum	1	R
9	Re-label entire data installation to ensure all the data points are labelled.	each	1	R


  
Contractor

  
Witness 1

  
Witness 2

  
Employer

  
Witness 1

  
Witness 2

4.18. Supply, delivery and installation of light fittings and auxiliary equipment in line with applicable legislation and industrial good practices details and sizes listed in the table below:

Item	Description	Unit Of Measure	Qty	Supply And Deliver Rate (Including VAT)
1	1200 x 600mm Recessed	each	1	R
2	Recessed downlighter	each	1	R
3	Cove Lighting (strip light c/w splices, etc.)	m	1	R
4	Spot light (on surface mounted track)	each	1	R
5	Wall mounted Bulkhead	each	1	R
6	Footlight (300mm AFFL)	each	1	R
7	Open channel 2 tube fluorescent fitting	each	1	R
8	Ceiling mounted fitting	each	1	R
9	Flood light	each	1	R
10	Bollard light	each	1	R
11	Open channel 1 tube fluorescent fitting	each	1	R
12	Emergency Exit fitting	each	1	R
13	Motion Detection Sensors	each	1	R
14	230V surface mounted track c/w splices, brackets, etc.	m	1	R
15	IP 65, enclosed fluorescent type luminaire similar or approved equal to the Lascon Corolite 10N type with 2x 58W lamps or similar	each	1	R
16	150 W HPS luminaires with internal eyelids, glass diffusers and decorative skirt similar or approved equal to Bekanova type or similar.	each	1	R
17	Supply, delivery and installation of a Photo cell	each	1	R

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

4.19. Supply, delivery and installation of, main earthing system including earthing & lightning Protection as well as all auxiliary equipment and sundry materials in line with applicable legislation and industrial good practices details and sizes listed in the table below:

Item	Description	Unit Of Measure	Qty	Supply And Deliver Rate (Including VAT)
1	70 mm <sup>2</sup> earth wire	m	1	R
2	70 mm <sup>2</sup> earth wire ends lugged	each	1	R
3	70 mm <sup>2</sup> earth wire ends clamped at earth rods	each	1	R
4	1,83 m. long earth electrodes	each	1	R
5	Earth test points, incl. Copper to aluminium joints	each	1	R
6	CADWELD conductor joints	each	1	R
7	Bond earth wire to building reinforcement	each	1	R
8	500 x 50 x 3mm earth bar c/w accessories	each	1	R
9	300 x 50 x 3mm earth bar c/w accessories	each	1	R

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

4.20. Supply, delivery and installation of, fire detection system as well as all auxiliary equipment and sundry materials in line with applicable legislation and industrial good practices details and sizes listed in the table below:

Item	Description	Unit Of Measure	Qty	Supply And Deliver Rate (Including VAT)
1	Supply and install Addressable Fire Control Panel( 1 loop) 230V, EN54 approved	each	1	R
2	Analogue Addressable - 2 loop analogue control panel, 230V, EN54 approved	each		R
3	Analogue Addressable - 4 loop analogue control panel, 230V, EN54 approved	each		R
4	Supply and install System Passive mimic diagram (A4 framed)	each	1	R
5	Supply and install 12VDC 9Ah Battery	each	1	R
6	Supply and install Optical Smoke Detectors	each	1	R
7	Supply and install Optical Heat Detectors	each	1	R
8	Supply and install Multi-criteria: -Heat and smoke combination Detector	each	1	R
9	Supply and install Optical Flame Detectors		1	R
10	Supply and install manual call points	each	1	R
11	Addressable Beacon/Sounder Inc. Base	each	1	R
12	Supply and install Loop 24VDC Strobe Siren combination/ beacon.	each	1	R
13	Supply and install Emergency break glass unit/manual call point	each	1	R
14	Fire resistant cable- PH120 (Rated for 120 minutes) and accessories	m	1	R
15	Supply and install Input-Output unit (I/O unit)	each	1	R
16	24VDC 2A Power Supply - Complete	each	1	R
17	25mm 4 way round box complete with lid	each	1	R
18	Supply and install 5kg CO2 fire extinguisher ( with accessories)	each	1	R

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

19	Test and Commission the complete Fire Detection installation	Sum	1	R
20	Labelling of complete Fire Detection system	each	1	R
21	System Wiring Diagrams	each	1	R
22	System Logbook and Holder	each	1	R
23	System Zone and Layout Diagrams	each	1	R
24	Independent Inspection and test - CoC	each	1	R
25	12 Month Guarantee	each	1	R

4.21. Test and commissioning in line with applicable legislation and industrial good practices details and sizes listed in the table below:

Item	Description	Unit Of Measure	Qty	Supply And Deliver Rate (Including VAT)
1	Complete installation, programming and commissioning of MCC panels for all equipment supplied (including panel mount ventilating unit, level meters, PLC and VSD's as specified on data sheet and cable connections) and incorporating nearby distribution boards into new MCC panel	sum	1	R
2	Maintenance and servicing of equipment during defects liability period (12 Months)	each	1	R

<b>*Provisional Sum subject to approval</b>	<b>R9 000 000</b>
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*\* Provisional sum has been included in the pricing schedule and will only be applicable where related goods are required that are not catered for in the line items in the pricing schedule, including quality verification of products. Additional items required will be on an as and when required basis subject to prior approval of the items being required.*

*The awarded Service Provider/s must obtain quotations to be approved in writing by the relevant ERWAT Project Manager. ERWAT reserves the right to request three quotations to be submitted before proceeding with relevant goods and services outside of contractual scope. The quotations received should be market related and may be subject to review by ERWAT.*

*Payments for additional services will be on actuals with supporting documentation to be submitted with the invoice. The provisional sum value is valid for the total contract period.*

**NB. Warranty will take effect from the date of handover.**

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

I, the undersigned, the authorised designated signatory, undertake to carry out the works in accordance with the conditions of contract, the specifications for the tender sum as indicated and within the time for completion as specified in the Contract.

BIDDER'S name: \_\_\_\_\_

BIDDER'S signature: \_\_\_\_\_ Date: \_\_\_\_\_

Name of Firm: \_\_\_\_\_

Address \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Telephone number: \_\_\_\_\_

Fax Number: \_\_\_\_\_

Cellular number: \_\_\_\_\_

E Mail Address: \_\_\_\_\_

\_\_\_\_\_  
Contractor

\_\_\_\_\_  
Witness 1

\_\_\_\_\_  
Witness 2

\_\_\_\_\_  
Employer

\_\_\_\_\_  
Witness 1

\_\_\_\_\_  
Witness 2

**LIST OF IMPORTED ITEMS**

Contractors to list all items which are not solely South African manufactured.

ITEM	DESCRIPTION	R VALUE	ROE
1			
2			
3			
4			
5			
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20			

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2



### C3

## SCOPE OF WORK

**APPOINTMENT OF PANEL SERVICE PROVIDER/S IN A  
FRAMEWORK CONTRACT FOR THE SUPPLY,  
INSTALLATION AND COMMISSIONING OF ELECTRICAL  
DISTRIBUTION SWITCHBOARD AND MOTOR CONTROL  
CENTRES FOR VARIOUS SITES AT EKURHULENI  
WATER CARE WORKS ON 'AS AND WHEN REQUIRED'  
BASIS FOR A PERIOD OF (36) MONTHS**

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2



## DETAILED CONTENTS (VOLUME 3)

### PART C3 SCOPE OF WORKS

<b>C3.1</b>	<b>Description of works</b>
	C3.1.1 Background
	C3.1.2 General and Mandatory Requirements (includes Staff Compliment)
	C3.1.3 Extent of the Works
	C3.1.4 Datasheet
<b>C3.2</b>	<b>Engineering</b>
<b>C3.3</b>	<b>Construction</b>
<b>C3.4</b>	<b>Management of the works</b>
<b>C3.5</b>	<b>Health and Safety</b>
<b>C3.6</b>	<b>Environmental Management during Construction</b>

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

### C3.1 DESCRIPTION OF THE WORKS IS DIVIDED INTO TWO SECTIONS

#### C3.1.1 BACKGROUND

The Ekurhuleni Water Care Company (ERWAT) manages 19 water care works which receive both domestic and industrial wastewater. The design average dry weather capacity of the individual works varies from 1 Mℓ/day to as high as 170 Mℓ/day. The Electrical infrastructure in the Water Care Works require continuous maintenance, replacement and improvement in order to provide reliable and optimum operation of the Water Care Works; therefore ERWAT is seeking to establish a Framework Agreement with service providers that have extensive experience in the design, manufacturing, installation, and maintenance of Electrical Distribution Switchboard and Motor Control Centres, that can deliver a high-quality and reliable solution for ERWAT on an “as and when” basis for a period of thirty-six months.

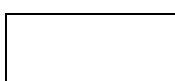
The Framework Agreement shall follow the standard definition and conditions of Framework Agreements as contained in the National Treasury documents for Infrastructure Procurement and Delivery Management (SIPDM). The Employer does not bind itself to the Service Providers to issue a minimum or maximum quantum of work/services or fee value of work/services during the term of the Framework Agreement, therefore when the Framework Agreement is awarded or concluded it shall have a zero-contract price or zero-volume of specified works/services attached. The Service Provider shall note that the intention of the Employer is to set up a Framework Agreement for a specific contract term to ensure that as-and-when the Employer requires services scoped per this contract; the Service Provider is in position, without delay to render such services.

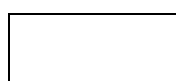
This tender will also be dependent on the availability of the Capital Budget, note should be taken that only the tendered rates which have been agreed between ERWAT and Service Provider shall constitute the award.

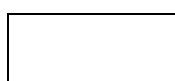
#### C3.1.2 GENERAL AND MANDATORY REQUIREMENTS

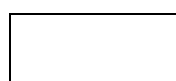
##### C3.1.2.1 GENERAL REQUIREMENT

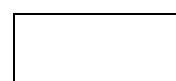
- i. Site induction training has to be completed before any work can be undertaken. (both general and site specific)
- ii. The contractor must comply with the ERWAT Permit to Work and Safe operation procedures.
- iii. All the relevant work permits and authorization has to be obtained before any work can be undertaken.
- iv. All work done and equipment supplied has to be in accordance with the applicable standards as listed in this document.
- v. No work shall be undertaken without an official purchase order or written confirmation via e-mail in case of an emergency from the designated ERWAT representative.
- vi. No equipment may be removed from site without written permission from the relevant plant manager.
- vii. The installation of any equipment shall include the putting back into operation, testing, special testing (if required) and adjustments on the equipment.
- viii. A project and quality control plan will be required for any installation of equipment.
- ix. All the required tools, consumables, testing facilities, and other requirements to perform the work as per the Contract shall be provided by the contractor.
- x. ERWAT reserves the right to hold the contractor responsible for any equipment that will be damaged due to the contractor's negligence or poor workmanship.
- xi. ERWAT reserves the right to award this contract to one or more bidders.
- xii. The Contract is for a duration of **Thirty-Six 36 (No.) Calendar Months**.

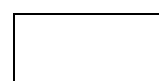
  
Contractor

  
Witness 1

  
Witness 2

  
Employer

  
Witness 1

  
Witness 2

- xiii. Prices shall be **FIXED and FIRM** for the first 12 months of the Contract. Price increments will be based on **CPI** annually on the anniversary of this tender
- xiv. All new equipment and newly supplied parts shall carry a **minimum** twelve (12 No.) calendar months **WARRANTY** from date of acceptance by ERWAT representative
- xv. Key staff complement

Staff Complement			
Bidding companies are required to have the following staff complement available for the duration of this contract with a minimum of three years' experience from date of qualification per staff member.			
NO	STAFF MEMBER	QUALIFICATION	BIDDERS TO PROVIDE PROOF OF QUALIFICATION WHERE THEY COMPLY. SUPPORTING DOCUMENTS
1.	Project Manager	National Diploma: Electrical Engineering	Certified copy of Diploma
2.	Electrical Engineer	Electrical Engineering Professional Registration (ECSA)	Certified copy of Certificate
3.	Instrumentation Mechanician	Trade Tested as an Artisan	Certified copy of trade test certificate
4.	Instrumentation Technician	National Diploma	Certified copy of certificate
5.	Electrician	Trade Tested as an Electrician, registered as a installation or master installation electrician	Certified copy of trade test and installation electrician registration certificate

**N.B. Please note that the majority of exiting equipment bases comprised of the two manufacturers listed, Schneider electric and Siemens. To ensure connectivity operability and maintainability all sites with exiting equipment must be supplied with the same as exiting equipment. The similar alternative equipment will be considered where this requirement is not applicable.**

**Also note. In relation to the SANS 10142-1 system components can only be replaced with identical type and rated components any deviation must be approved by original equipment manufacturers.**

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

### C3.1.3 EXTENT OF THE WORKS

#### 1. INTRODUCTION

The main focus of the scope is to install new Motor Control Centres, Programmable Logic Controllers (PLC), Variable Speed Drives (VSD), fibre optic network, Supervisory Control and Data Acquisition (SCADA) system to enable full automatic control, remote monitoring and data acquisition. The design and manufacturing of the motor control centers must be done in accordance with the detailed requirements contained in this document in alignment with the site requirements. The bidder must take into account all the factors including the ambient temperature in the building and any other contributing factors. Any challenges in relation to the overheating of equipment including during the defects liability period will be the bidders responsibility.

#### 2. CURRENT/EXISTING INFRASTRUCTURE CONDITIONS

The current infrastructure conditions in the 19 Water Care Works are that most of the electrical infrastructure mainly operates on either Schneider Technology or Simens Technology. Based on our combined studies and Erwat experience including the shared experienced in the engineering space, it is critical to consider the compatibility of technologies during maintenance or replacement these components of the electric infrastructure (e.g., plant automation is sensitive to the compatibility of software across the different technology providers). This specification is designed around the mainly existing technologies, and all other alternative technologies shall be expected similar or compatible with the existing technologies.

#### 3. TECHNICAL SCOPE OF WORK FOR MOTOR CONTROL CENTRES

The Scope of Work for this Contract is (but not limited to): The Contractor shall perform all work and furnish labour, equipment and materials, construction plant, temporary works (including site welfare and temporary supplies), equipment, auxiliaries and accessories, special tools, spare parts and performing all operations and work required for the design, engineering, material selection, manufacturing, inspection and testing, delivery at site including packing, forwarding, loading, transportation to site, transportation from Supplier's premises to construction site, erection, finishing, painting, testing commissioning, performance guarantee tests with all materials, tools.


**The standards will be applicable to all equipment supplied and therefore does not form part of the evaluation criteria. All work must be carried out in strict accordance with the following standards:**


SANS 10142-1	The wiring of premises Part 1: Low-voltage installations
SANS 10142-2	Installation and electrical Network
SANS 1973-8 & SANS 60439-1	Standards low-voltage switchgear and control gear assemblies


In line with these requirements, the Contractor will be responsible for all relevant Plans, Working Methodologies and Registers, which will include, but not be limited to the following:


**\*NB: The Supply, Installation and Commissioning of Fibre cables, SCADA System, full automation and communication of the plant shall be witnessed by the ERWAT Engineer or his appointed representative.**


  
Contractor

  
Witness 1

  
Witness 2

  
Employer

  
Witness 1

  
Witness 2

### 1.1. ELECTRICAL DISTRIBUTION SWITCHBOARD SPECIFICATION

- i. The scope of work includes the furnishing of all labour, material and services for the design, supply, manufacture, testing, works inspection, delivery to site, offloading, placing into position, site assembly, pre-commissioning, commissioning assistance and rectification of defects during warranty period of 12 months(stipulating turn-around time) for 400V Distribution Switchboard and Motor Control Panels as specified herein.
- ii. The Contractor will be required to decommission, remove and transport the existing MCC panels, equipment, rerouting of cables, old cables (that need to be removed) and cable trays onsite to designated site.
- iii. Determine the electrical load requirements and select appropriate switchboard ratings.
- iv. Design the switchboard layout, ensuring proper segregation of power distribution circuits and consider future expansion and flexibility in the design. All system design must allow for 30% expansion post commissioning.
- v. Integration of the MCC with the electrical distribution system, including motor connections, control wiring, and interlocks.
- vi. Include contactors, relays, motor starters, push buttons, indicators, and other necessary devices.
- vii. Provide appropriate control circuitry, including control transformers and control relays.
- viii. Include motor protection devices, such as thermal overload relays or electronic motor protection modules.
- ix. Incorporate appropriate safety features, such as replacing all the start stop stations for all motors specified herein lockable doors and clear marking of circuits.
- x. Provide surge protection devices and appropriate grounding arrangements.
- xi. Contractor will be required to do necessary calculations to determine the size and type of cables suitable for use on motors to be controlled by VSD's and all necessary cable work (immediate/internal/short cables) to be removed and replaced. All terminations to be done at the bottom, as per existing.
- xii. The system shall be fully digital, Microprocessor based, energy efficient, and shall provide very high reliability, high power factor, low harmonic distortion and low vibration and wear and noise.
- xiii. Contractor will be required to do necessary calculations to determine the size and type of cables suitable for use on motors to be controlled by VSD's and all necessary cable work (immediate/internal/short cables) to be removed and replaced. All terminations to be done at the bottom, as per existing.
- xiv. The awarded bidder should submit the calculations done for determination of cable size, layout schematics of the cable routing from equipment to panel together with its technical specifications to the responsible engineer.
- xv. Ensure compliance with relevant electrical codes and standards. All work must be carried out in strict accordance with SANS 10142-1:2017 and a certificate of compliance to be issued on completion.

### 1.2. MANUFACTURING AND CONSTRUCTION DETAILS FOR MCC CUBIC MODULAR SYSTEM:

- i. All equipment and services shall comply with the mandatory requirements of the Occupational Health and Safety Act 85 of 1993 (as amended). **Particular reference is made to Section 21 of the Act**

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

**which, in terms of sub-clause 4, requires the preparation and submission of a risk analysis before any equipment is delivered, off-loaded or erected on site.**

- ii. Manufacture and supply of Switch Board and Motor Control Panel in accordance with SANS 10142:2017 requirements so as to fulfil certification thereof.
- iii. Installation and commissioning risk assessment in relation to all the work and activities to be undertaken with regards to this contract as part of submissions.
- iv. Delivery of units to the construction site. It is expected of the manufacturer that deliveries to be received and stored by the electrical subcontractor. All equipment (electronic components and cable works) remains a responsibility of the contractor until the project is handed over.
- v. Prior arrangements of delivery to be coordinated with the Engineer, two weeks prior to delivery.
- vi. Two set of any special tools required per switchgear board that will be required for operation or maintenance purposes including three spare sets of each type of fuse.
- vii. Recommended spares for guaranty period should be OEM product.
- viii. Technical assistance if requested during checking for operational readiness.
- ix. Bidders must include project program with time frames on his/her submission.
- x. Cleaning and Housekeeping of the area during and after the completion of the Project should be to the satisfaction of the Engineer or their appointed representative
- xi. On completion of the work the contractor must supply ERWAT with three sets of as build drawings as well as COC for the MCC panel.
- xii. Manufacture/ Bidder will be responsible for ensuring heat from the VSD's and MCC Panel is conceded in the design in accordance to manufactures requirements and site conditions. Any additional cooling requirements due to the commissioning and installation of the new equipment will be for the account of the appointed contractor.
- xiii. Contractor is responsible for verification of all sizes and dimensions on site in terms of the requirements in this document.

### **1.3. VARIABLE SPEED DRIVES**

- i. The system must be fully digital, Microprocessor based, energy efficient, and must provide very high reliability, high power factor, low harmonic distortion and low vibration and wear and noise. It must be

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

easy to install in minimum time and expense and no special tools must be required for routine maintenance.

- ii. VSD system must be designed for continuous duty as per nameplate rating under the specified ambient conditions.
- iii. The VSD must be of the most modern design, yet user friendly and be simple to install, commission and maintain.
- iv. The VSD must be able to start and control the speed of currently existing motors based on the load needs on related site.
- v. The VSD must be programmed in accordance with the plant philosophy and controls to be integrated to the PLC system, this to be provided by operations.
- vi. The Programming terminal of the VSD must be accessible for programming and controls with the main door closed.
- vii. The following protocols must be the minimum available; Ethernet TCP/IP.
- viii. All necessary cable work for communication to be in place to ensure automatic control of motors on site.
- ix. VSD must match the characteristics of the mechanical load.

#### 1.4. SCADA SYSTEMS

The objective of this section is to implement a robust SCADA system that enables real-time monitoring, control, and data acquisition for your industrial processes. The system will provide a centralized platform to monitor and manage various equipment and processes, enhancing operational efficiency, reliability, and safety.

#### SCOPE OF WORK FOR SCADA SYSTEMS

Control systems which utilize computer based SCADA shall incorporate the following:

- i. The contractor shall develop a comprehensive system design and engineering plan. This will include the selection of appropriate hardware and software components, network architecture, and interface design.
- ii. The control system shall be configured so that the equipment is PLC controlled to the extent that the installation can operate under SCADA failure.
- iii. The new system should be compatible and be able to be integrated to the existing network.
- iv. Ensure that all components are of high quality, reliable, and compatible with ERWAT's existing infrastructure. Ensure seamless integration with your existing equipment, sensors, and control devices.
- v. Functions and information relating to a single item of equipment shall normally be provided on the control panel, MCC or other electrical panel. Functions and information relating to overall control shall normally be provided on the SCADA system.
- vi. Install and configure the SCADA system, including hardware setup, network configuration, and software installation.
- vii. Develop an intuitive and user-friendly Human-Machine Interface (HMI) that provides a clear and

Contractor

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Witness 2

Employer

Witness 1

Witness 2

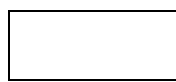
comprehensive view of ERWART's WCW process. The HMI shall allow operators to monitor real-time data, control equipment, and access historical data for analysis and decision-making.

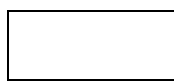
viii. Mimic screens provided for SCADA systems shall, where applicable, include at least the following:

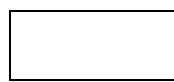
- Overview of scheme; including the process flow diagram and indicating all electronically monitored parameters.
- Overview of each separate installation.
- Individual unit (Centrifuge, compressor, pumpset, etc.).
- Equipment sequence selection.
- Equipment start interlocks.
- For all motor status and, where applicable, motor protection relay diagnostic.
- Electrical reticulation schematic.
- Hardware diagnostic.
- Alarms.
- Set-points for alarm, trip and control loop functions (including password protected alteration facility).
- Record of equipment and process parameters at instant of equipment trip and station trip.
- Trending of all monitored system parameters, with separate screens for logical groupings from an operating point of view.
- Communication status of control system hardware.
- SCADA security system password current settings, including personnel names.
- Ancillary equipment status; e.g. security, fire detection, UPS).
- Printing.
- Indication of measured parameters shall be provided to three significant places or more. For example, all set points, such as temperature trip settings, flow trip settings, level settings for pump switch-on, etc., shall be indicated on mimic screens. It shall be possible, with password protection, to alter the set-points.
- All points of inflection of measured parameters shall be recorded.
- At least one colour printer (for graphs, mimics, etc.) and one line printer (for alarms) shall be provided.
- An alarm condition which leads to the control system executing an equipment trip shall be logged and all subsequent alarms which occur as a result of the tripping action shall be logged as subordinate alarms. The condition which caused the trip shall be fully described with respect to the:
  - \* Item of equipment
  - \* Trip set point reached.
  - \* Description of parameter; i.e. flow, temperature, etc.
  - \* Time.
- Alarm conditions which lead to the control system executing an equipment trip shall be provided with a suitable time delay in order to limit the number of tripping actions cause by electrical disturbances or similar occurrences. The time delay for each trip shall be decided in conjunction with the Engineer.

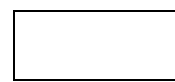
## 1.5. PROGRAMMABLE LOGIC CONTROLLER (PLC)

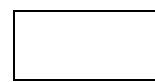
  
Contractor

  
Witness 1

  
Witness 2

  
Employer

  
Witness 1

  
Witness 2



The PLC will have the following functions; the control of the processes related to the installed mechanical, electrical and instrumentation equipment, the control related to the sequential and alternative operation of equipment in order to optimise electricity consumption and the display of status and possible fault and operational conditions related to the installed mechanical, electrical and instrumentation equipment.

- The Programmable Logic Controller (PLC) must be microprocessor based system which must be used for implementation of plant operation. System should be able to issue automatic commands to control the operation of the plant, this to be according to the plant philosophy as specified by operations. All necessary cable work for communication to be in place to ensure automatic control.
- All software and hardware design and supply is to be approved by the Instrumentation specialist.
- Complete product documentation describing installation and simple field maintenance must be readily available in the form of a user manual.
- All system hardware design must be suitably sized for the installation.
- All system design must allow for 30% expansion post commissioning.
- The manufacturer or its authorised distributor must provide complete technical support for all of its products. This must include headquarters or local training, regional application centres and local or headquarters assistance.
- The system must be programmed in principle as per the logic diagrams.
- The system must be able to operate satisfactorily from 150C to 400C and 0 ~ 95% non-condensing humidity range unless otherwise specified.

## 1.6. FIBRE CABLES AND NETWORK

This section outlines the scope of work for the supply, installation, and testing of a fibre optic cable network at ERWAT's WCWs. The project aims to establish a high-speed and reliable communication infrastructure to support various data-intensive applications and services. The following are requirements must be met for each respective site:-

- i. The contractor shall develop a detailed design and engineering plan for the fibre optic network.
- ii. The plan will include network topology, cable routing, splice points, termination points, distribution points, and any necessary equipment such as fibre optic switches, patch panels, and enclosures.
- iii. The contractor shall supply high-quality fibre optic cables, connectors, and related components, ensuring compliance with industry standards and specifications.
- iv. The contractor shall perform the installation of fibre optic cables, adhering to industry best practices and safety standards. This includes aerial or underground cable laying, duct installation, conduit fittings, and cable termination. Proper cable management and labelling shall be implemented throughout the installation process.
- v. All the fibre cable must run inside a 50mm fibre optic cable sleeve. Both underground and in cable channels
- vi. Lay out the cable routes based on the planned design, taking into account factors such as distance, bends, and cable management, road crossings and paving crossings.
- vii. Fibre splicing and patching is required on all sections
  - a. Each section must have a panel with a back plate.
  - b. On the back plate, must be a section of Dinrail.
  - c. A Splice panel must be fitted on the Dinrail.
  - d. The splice panel must be the section that contain the spliced sections of fibre optic cable.

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

- e. 8x Pig tails must be available in each panel
  - f. Fly leads from the splice box to Ethernet switch must be included.
  - g. All cables and patch leads must enter and exit the panel through a compression gland.
  - h. Cables must be mounted on a Cable tray between the fibre cable sleeve and the panel.
- viii. The contractor shall install all necessary network equipment, including fibre optic switches, patch panels, enclosures, and any other required components. The installation will be carried out according to manufacturer guidelines and in coordination with the network design or specified by the Engineer.
- ix. Conduct comprehensive testing of the fibre optic network using specialized testing equipment. This includes measuring optical loss, checking for any signal degradation or reflections, and verifying network performance.


#### 1.7. FIELD EMERGENCY STOP CONTROL STATION AND ISOLATOR


- i. Enclosure material should be of stainless steel 316, 1,2mm thick.
- ii. Enclosure should have a minimum IP rating of 65 to eliminate moisture ingress.
- iii. Dimensions should be a minimum of 250mm x 250mm x 200mm.
- iv. Minimum size of push button should be diameter of 22mm.
- v. Colour coding; emergency stop – red mushroom shape push button latching and green start button.
- vi. Each motor must have its disconnecting device (isolator) to disconnect the individual motors from the entire installation, three phase pad lockable device with auxiliary switch position contact.
- vii. Isolators to be suitable for each motor as specified on motor list, and to meet SANS 10142:2017.
- viii. Contractor to determine size of isolator and provide calculations used.


#### 1.8. VENTILATION AND THERMAL MANAGEMENT


- i. Adequate ventilation must be provided for the MCC panel compartments. The temperature inside the compartment may not rise by more than **5°C** above the ambient temperature of the equipment over the operating temperature range. Contractor to determine the maximum expected heat dissipation from the new MCC panel also considering all equipment that will be installed including the VSD's, based on this value contractor to provide appropriate and sufficient ventilating method to ensure temperature rise is not above **5°C** above the ambient temperature. Contractor to take into consideration limited space available based on site conditions.
- ii. The panel must have **IP 55** rating.
- iii. Ventilation should be integrated in such a way that it will not be blocked by any of the surrounding structures, contractor to take note of limited space available for construction of the panel.
- iv. Attention must be given to ventilation to prevent the accumulation of ionized gases. Suitable drip proof, fine mesh screened, vermin proof openings must be provided to facilitate air movement by convection. These openings must be arranged such that the hot gasses or other materials cannot be discharged in a manner injurious to operating personnel.
- v. Precautions must be taken to prevent localised hot spots.
- vi. Where necessary, ventilation fans or blowers may be fitted to assist with compartment ventilation. Any fan or blower used must be designed to fit the purpose as per site conditions.


  
Contractor

  
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Witness 2

  
Employer

  
Witness 1

  
Witness 2

- vii. The air intake of the compartment must be fitted with a removable dust filter. The filter material must be readily available for replacement purposes and must comply with relevant standard specification.

## 1.9. LIGHTING SYSTEM

- i. The luminaire shall consist of a body manufactured from high-pressure die-cast aluminium.
- ii. The body shall be hail-proof, weatherproof, corrosion, and vandal resistant.
- iii. The housing shall be equipped with armoured glass fixed in a sturdy, hinged die-cast frame with a silicon-rubber gasket secured with screws.
- iv. The luminaire shall be suitable for one 250 or 400-watt high-pressure sodium vapour lamp.
- v. The luminaire shall be equipped with integral control gear mounted internally or alternatively, the control gear may be mounted in a separate control gear compartment, in which case the compartment shall have the same IP rating as the luminaire.
- vi. The luminaire shall have an ingress protection rating of at least IP43.
- vii. Heavy gauge hot-dipped galvanised or powder coated steel mounting bracket with pre-punched holes shall be supplied with the luminaire
- viii. Minimum illuminance of 200 Lux is required at floor level.

## 1.10. CABLE TRAYS


- i. Material used should hot-dipped galvanized coating where damp conditions might be encountered.
- ii. Trunking may be secured direct to a surface or suspended by means of brackets.
- iii. Size should be of such dimensions that will accommodate the volume of cable work to be installed therein, contractor to determine this based on cables required to be replaced.
- iv. The ratio of the space occupied by all the cables in trunking to the whole space enclosed by the trunking is known as the space factor. The space factor for cables within a trunking should not exceed 45%, this means that the cables must not fill more than 45% of the space enclosed by the trunking.


## 1.11. CABLE TRUNKING


- i. Material used for trunking should be a non-conductive material preferably PVC.
- ii. Sizing of PVC Trunking and related conductors must comply with SANS 10142:2017
- iii. Additional 25% Spare capacity must be allowed. The contractor must ensure that all trunking is adequately sized to house the necessary wiring.
- iv. Allowance must be made during LV Cabinet Layout design to ensure that a minimum distance of 50mm is maintained between terminals and PVC Trunking, in order to ensure that conductor core indents are visible at all times. The manufacturer must also ensure that a space of not less than 50mm must be maintained between trunking and any component or object.


## 1.12. ELECTRONIC MOTOR PROTECTION UNIT


All outgoing circuits must be equipped with individual motor protection relays. Motor protection relay must have following bare minimum features:-


  
Contractor

  
Witness 1

  
Witness 2

  
Employer

  
Witness 1


  
Witness 2


- i. The supply voltage must be 240 VAC.
- ii. The following thermal overload trip curves must be available inverse ( $I^2t$ ) and definite time (Ixt) curves.
- iii. The relay must have an earth fault protection capability.
- iv. HMI for configuration purposes must be included.
- v. Communication and network protocol required is Modbus TCP.
- vi. Metering and fault memory must be available.
- vii. The following motor temperature sensing, PTC binary, PTC analogue, NTC analogue and PT100 must be available.
- viii. Protection must include the following:
  - a. Thermal overloads current.
  - b. Phase imbalance.
  - c. Current phase loss.
  - d. Current phase reversal.
  - e. Long start.
  - f. Jam.
  - g. Under current.
  - h. Over current.
  - i. Ground current.
  - j. Motor temperature sensor.
  - k. Voltage phase imbalance.
  - l. Voltage phase loss.
  - m. Voltage phase reversal.
  - n. Under voltage.
  - o. Overvoltage.
  - p. Voltage dips management (auto restart and load shedding).
  - q. Power limits and power factor limits.


### 1.13. ELECTRICAL POWER METER


- i. The power and energy metering must include the following; 3-phase voltage, current, power (kW ,kW/hr, kVA), demand, energy, frequency and power factor.
- ii. Meter must be programmable for a minimum of four Multi-tariff rates.
- iii. Power quality analysis must include, total harmonic distortion (THD), total demand distortion (TDD ) and Harmonics, individual (odd) up to the 31st
- iv. Inputs and outputs required; four digital inputs, two digital outputs and two relay outputs
- v. Number of alarms required minimum of fifty
- vi. Data logging function with a minimum of 1 Megabyte storage capacity.
- vii. Communications, with a minimum of one Ethernet port with Modbus TCP protocol
- viii. Face plate size 96 mm by 96 mm to fit a square cut-out of 92 mm by 92 mm
- ix. System voltage requirement 400 volt 3 phase


  
Contractor

  
Witness 1

  
Witness 2

  
Employer

  
Witness 1

  
Witness 2

- x. Wire termination on meter by screw terminals with RJ 45 connection for Ethernet port with Modbus TCP protocol

#### 1.14. HUMAN MACHINE INTERFACE (HMI)

Each area equipped with a PLC must be equipped with an HMI. The HMI must be 12 inch. The HMI must be mounted on the front of the PLC panel. The supplier must be responsible for the development of all HMI screens and the translation of the operational philosophy into the control programme to enable operation of the plant from the HMI.

#### 1.15. ETHERNET BACKBONE SYSTEM

Communication between the PLC's, HMI's, electronic motor protection relays, Power Meter and VSD's must be by Industrial Ethernet (Modbus TCP). The Ethernet link between the areas of the plant must be achieved by multi-mode fibre optic cable. The contractor is required to supply, install and terminate 6 pair multi-mode fibre cables between the required areas.

#### 1.16. PANEL ACCESS CONTROL

- i. The panel must be accessible via panel key.
- ii. The panel must be lockable, on extended barrel type square key lock (must be able to lock with padlock minimum size 40mm).

#### 1.17. DUTY DESCRIPTION

The distribution switchgear must be capable of continuous duty at full rating under the following conditions;

- i. Altitude: 500m - 1800
- ii. Installation location; see Tender Document C4: Site Information
- iii. Exposed to vermin and dust depredations
- iv. Maximum air temperature 40°C
- v. Minimum air temperature -4°C
- vi. Relative Humidity; 95% Non-condensing
- vii. Operation 24 hours per day, 365 days per year

#### 1.18. DESIGN CRITERIA

System details;

- i. Bursar voltage 400V  $\pm$ 10%
- ii. Phases 3 + N
- iii. Frequency 50 Hz
- iv. Phase rotation R-W-B (anti - clockwise)

Note:

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

The duration of the maximum short circuit currents must be deemed to be a minimum of one second. Evidence (in the form of Certificates by ERWAT recognized Testing Authorities) of the ability of the 400V distribution switchgear boards offered to withstand satisfactorily the prospective fault conditions must be furnished with the tender.

#### 4. MANUFACTURING AND CONSTRUCTION DETAILS

**\*NB:** Boards must conform to IEC 61439:2009.

##### MECHANICAL CONSTRUCTION:

- i. The distribution boards must be adjustable pattern comprising one or more fully interchangeable modular, rigid, free-standing sections bolted together to form an extensible, composite, rigid, free standing, vermin proof distribution board of uniform appearance to conform to Form 3b of the specifications. The **maximum height** of the sections must **not exceed 2200mm (without bus bar compartment)**. Each section must be divided vertically into panels. Each panel must be divided into one or two cubicles one above the other.
- ii. The minimum width of incomers and motor starter cubicles is 600 mm
- iii. A channel must be provided under each completed section of transportable length which must be so constructed that it can be used for lifting the transportable section without distortion taking place.
- iv. All completed sections must be provided with lifting facilities and must have sufficient strength to withstand all stresses occurring during transportation, installation and operation without distortion or damage.
- v. The distribution board must be compartmentalized to segregate bursar, cable, circuit-breaker and instrument zones. Power bursars must be completely separated from any other compartment by means of suitably earthed metallic barriers.
- vi. Only one motor starter per cubicle is permitted.
- vii. Separate compartments must be provided for circuit breaker and instrument sections.
- viii. Instrument section minimum width is 750mm.
- ix. Access to all power bus bar compartments must be by removable bolted covers. Removable covers must be provided with captive screws.
- x. Incoming feeder, outgoing feeder, relay, control transformer and metering and instrumentation cubicles must have doors suitably constructed to ensure rigidity. Doors must be fitted with robust steel or brass (41200 EMB or equivalent) hinges with at least two 6mm square recessed quick close/open latches (26013 Din lock or equivalent). Hinges must be provided at 500mm intervals per door with a minimum of two hinges per door. Each door, front and rear, must be fitted with an equal number of hinges and latches. At least one of these latches must be pad lockable.
- xi. Doors and covers must be provided with a sufficient gasket to form a firm seal. The neoprene seal must be a nominal 5mm thick compressed to 3mm on closing of the door. The entire switchboard must be effectively dust and splash proof to IP55.
- xii. All hinged doors must open to a minimum angle of 135° from the closed position, to facilitate easy access for maintenance reinforcement.
- xiii. Sectionalized removable gland plates must be fitted and must be fixed by means of captive nuts or

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screws and so located that ample space is available for the satisfactory entry and termination of cables. Cable entry must be at the bottom of the board. All gland plates are to be connected to the main panel earth bar via suitably sized copper conductors and unused sections must be left blank. Gland plates for 3 core cable of cross-sectional area 70mm<sup>2</sup> and above must be minimum 5mm plate.


- xiv. Gland plates must be galvanized. The cable gland compartments must have removable covers attached with standard 6mm square recessed quick close/open latches.
- xv. Suitable termination points must be provided to enable any multiple three core cables to be terminated without cross-over of different phases and with minimum lengths of cable "tails". All cable termination points and associated connections must be suitably braced to withstand the available fault currents without damage. If necessary cable support clamps must be provided for the individual cores after glanding off.
- xvi. In addition to any support/bracing required by the electrical conditions, the bursars must also have sufficient support to prevent stresses being transmitted to the circuit breakers or any components by cable terminations. Particular attention must be paid to the termination arrangements of any multiple incoming 3 core cables.
- xvii. The general structure of the board must be designed and fabricated to ensure that no excessive vibration caused by the operation of any component is transmitted to any other components thereby causing spurious tripping of any device.
- xviii. Unless otherwise agreed or stated in this specification all screws, bolts and nuts must be hexagonal to ISO metric commercial standards and must be rust proof.
- xix. The switchboard steelwork must be a minimum of 2mm thick irrespective of the type of steel used and chassis members must be a minimum 2.0mm thick steel
- xx. Each cubicle/compartment door must be labelled with the reference letter(s) of that compartment using durable designation label with 20mm high black letters on a white background. The labels must have two designation letters, the 1st being the tier, numbered from A left to right and the 2nd the cubicle numbered from top to bottom (e.g. A1,A2, etc.).
- xxi. Every door and/or removable cover giving access to a cubicle must bear a durable designation label suitably inscribed with the description and the equipment number where applicable; using engraved black characters at least 6mm high on white background. Incomers must be labelled as indicated on the single line diagrams.
- xxii. The 400V switchgear must be provided with a Main Identity label, engraved with 20mm black on white characters and must be mounted on top of the switchgear.
- xxiii. All identity labels must be agreed with the Engineer before manufacture.
- xxiv. All removable covers/doors protecting live equipment must be fitted with warning labels. Warning labels must be engraved white characters 6mm high on a red background.
- xxv. Each circuit must be provided with a blank white/black white traffolyte type label or Gravoply type (or engraved in accordance with designations on drawings).
- xxvi. All electrical components/equipment must be labelled (with designations corresponding to those of the schematic diagrams) to facilitate recognition. Engraving must be left to the discretion of the manufacturer but must be legible and durable. The component labels must be affixed adjacent the


  
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component they refer to.

- xxvii. All labels and label brackets except those for components must be affixed by machine screws.
- xxviii. Incomers must be labelled "INCOMER FED FROM ..." and the standby bus coupler (where applicable) must be labelled "STANDBY BUS COUPLER".
- xxix. Doors to compartments must be so arranged that normally they cannot be opened whilst the apparatus contained is alive unless this apparatus is fully shrouded or screened to IP20C to prevent inadvertent contact. Doors must be designed to ensure rigidity and must be a neat fit in the framework and around the circuit breaker escutcheon plate.
- xxx. Circuit breakers must be interlocked with the panel door to prevent opening of the door when the circuit breaker is in the "ON" position.
- xxxi. A non-apparent interlock defeat must be provided for the opening of the door with the circuit breaker in the on position for testing and maintenance. In addition there must be provision for the attaching of three padlocks to each operating handle in the "OFF" position, which prevents the circuit breaker from being operated.
- xxxii. All access doors, front and rear, are to be effectively and permanently earthed to the main panel enclosure of the switchgear, by means of a suitable braided copper earth strap, not less than 16mm<sup>2</sup>, crimped with lugs and bolted at each end to the door and enclosure

Contractor

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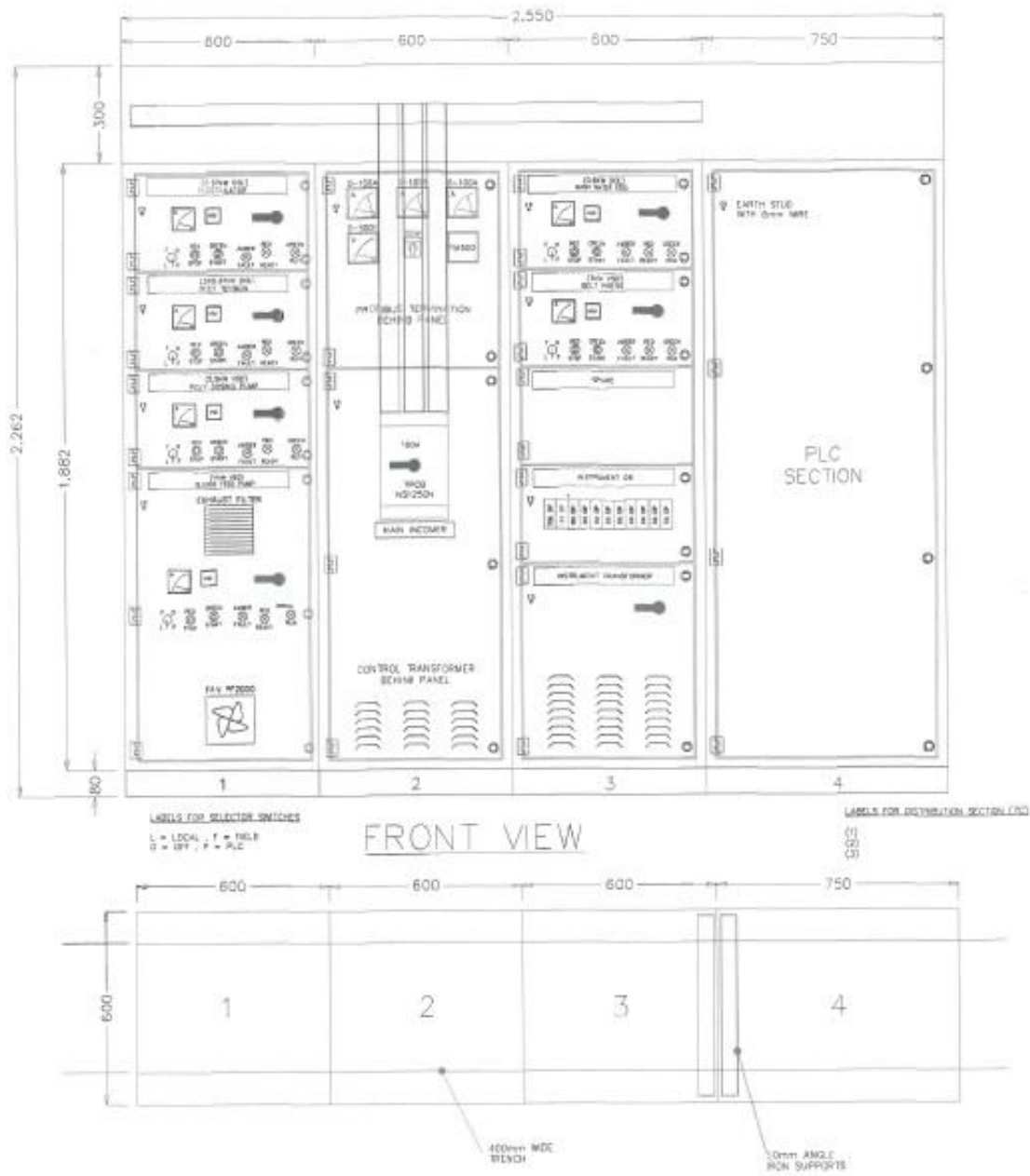
Employer

Witness 1

Witness 2



Typical MCC GA drawing



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Witness 1

Witness 2

Employer

Witness 1

Witness 2

- **Electrical Construction**

- **Main incomer Metering**

The metering panel must include:  
Three phase voltage symmetrisation system (VSS)  
Three amp meters one per phase.  
Power meter.

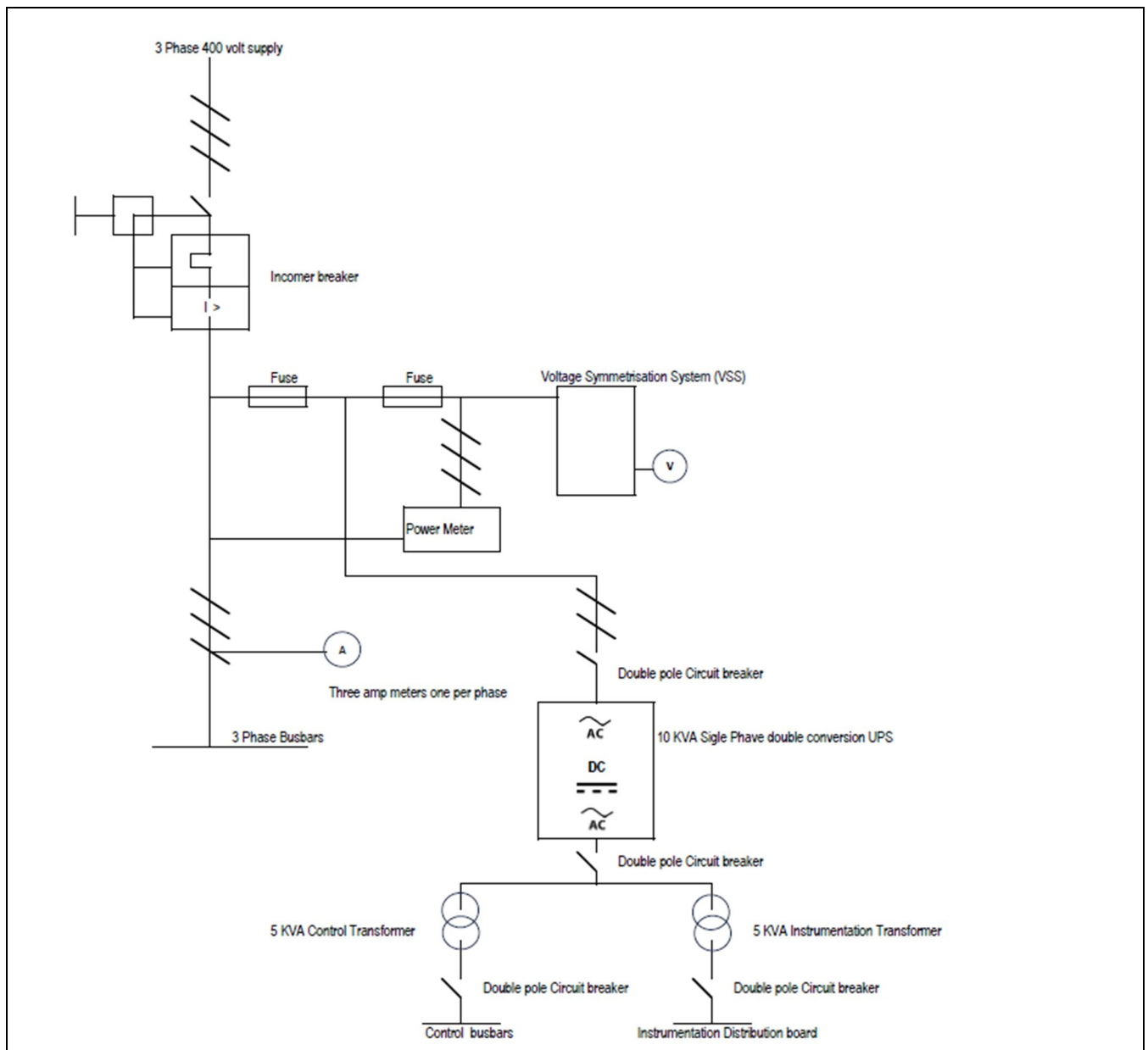
- **Control and instrumentation supply**

Individual isolation transformers 230//230 volt must be installed for the control and instrumentation supplies.

The two transformers must have a minimum rating of 5 KVA.

The two transformers must be supplied from a, 10 KVA double conversion UPS

- **Typical main incomer Sigle line diagram**



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- **Main incomer label requirements**

Typical label example

<b>Name of Manufacturer:</b>	ABC Switch boards		
<b>Name of client:</b>	ERWAT	<b>Identification No:</b>	586-7
<b>Designation:</b>	DAF Area 009-MCC-001	<b>Date inspected:</b>	Oct 07
<b>Manufactured TO:</b>	SANS IEC 60439-1	<b>Form of separation:</b>	Form 3B
<b>Type of board:</b>	Floor standing	<b>Pollution degree:</b>	No 3
<b>Test certificate number:</b>	586-7	<b>Type of system earthing:</b>	TN-S
<b>Rated operational voltage <math>U_i</math>:</b>	400V	<b>IP Rating:</b>	IP 55
<b>Rated short time current /cw:</b>	18 kA 1 sec	<b>Designed diversity factor:</b>	0.8
<b>Type test report No:</b>	HC./10046/794/84263/L43	<b>SABS Permit no:</b>	3086/12029
<b>TTA Assembly:</b>	Yes	<b>EMC environment:</b>	1

- **Cooling (Bus bars)**

Artificial cooling of any component will not be acceptable. All design and construction must be based on natural cooling by convection or radiation.

- **Bus bars and connections**

Bus bars and connections must generally comply with SANS 1973-1 for air clearances. Notwithstanding the contents of the above-mentioned specifications, all solid copper work must be made of hard drawn high conductivity copper of constant cross-section throughout their lengths with a maximum design current density of **1,66A/mm<sup>2</sup>**.

Notwithstanding the requirements of SANS 1973-1:2017 the following minimum air clearances must be observed for busbars and other current carrying or live parts:

- Phase - Earth : **30 mm**
- Phase – Phase : **45 mm**

Where these clearances cannot be attained, suitable insulating barriers must be employed.

In addition, all copper work (including connections to, from and between equipment) must have applied solid insulation suitable for the rated voltages. Heat/cold shrink insulation must be used wherever possible.

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Main bursars must be rated suitably to the incoming breaker. Bursar droppers must be manufactured from solid copper bar and rated for the maximum possible current (determined by the breaker frame size) in that section with a minimum rating as set out by SANS 1973-1:2017.

**Note:**

All bursar joints must be high pressure bolted lap joints and all nuts, bolts, spring washers must be corrosion proof and **high tensile 8.8**.

\*Successful bidder should provide COC that clearly indicates the torque applied on the bolts and torque settings. Bolts should be clearly marked.

All bursars and droppers must be securely supported by heavy, high di-electric, non-hygroscopic material with bracing to withstand stresses due to short circuits of one second duration and at least equal to the interrupting rating of the circuit breaker protecting the bursars.

All insulation used on electrical conductors/connections and wiring must be flame retardant types, constructed of low toxicity materials.

Power wiring on the "live" side of the circuit breakers (bursar dropper to circuit breaker) must be **as short as possible**, sized to carry the:

- maximum current continuously of the frame size of the respective breakers
- discrimination between components and fault level archived by the calculation
- and must be a **flexible conductor**.

The flexible connection must be provided on all such connections and must be designed so as to prevent the transmission of any forces that may arise between the bursar droppers and the circuit breaker. In terms of IEC 60439:2009 this connection is deemed to be a fault free zone, the design and use of the flexible must in no manner compromise this zone.

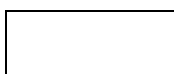
**This connection may be from insulated stranded conductor, laminated, insulated conductor or multi-strand braid.**

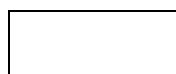
Notwithstanding the foregoing the minimum power wiring size must be 16 mm<sup>2</sup>. Power wiring terminations must use an appropriate crimped accessory. The pressed tubular type of accessories is preferred. **Stamped, folded, split-barrel type accessories are not acceptable.**

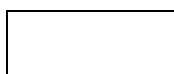
In addition, hexagonal die type hydraulic crimping must be used for all wiring greater than **16 mm<sup>2</sup>**.

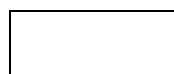
- **Earth bar**

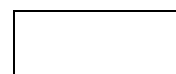
A continuous copper main earth bar or minimum cross sectional area **95 mm<sup>2</sup>** must extend the whole length of each switchgear board. This earth bar must, at least, be bolted to the switchgear housing at each vertical section. Crimp type terminal lugs for **95 mm<sup>2</sup>** stranded copper must be provided at both ends of the earth bar for connection of ERWAT earthling.

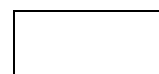
  
Contractor

  
Witness 1

  
Witness 2

  
Employer

  
Witness 1

  
Witness 2

- **Cable entry and cables**

- I. Panels must be generally of the wall or floor standing cubicle type, suitable for cable entry from the bottom for both power and control cables as per existing. Cables must be glanded in the rear of the panels in cable compartments (on an individual MCC tier basis).
- II. Delicated cable marshalling panels must be included for all section in the MCC.
- III. All internal cables (cables in the immediate MCC panel room) to be replaced, joining of short cables strictly prohibited, contractor to determine the size of cables to be used through calculations and length of the.
- IV. Should a need arise to extend the external cables, these are to be joined using a standard approved method and type jointing.
- V. Cables should be sleeved and extra sleeving for road crossing cables.

- **Cable glanding**

Unless stated otherwise, all cabling, inclusive of power, control, data and instrument must be bottom entry. Cable entry must be via pre-punched gland plates and must be glanded within the cabinet to which the associated cable is terminated.

Only suitable steel glands must be supplied and installed

Glanding of cables in cabinets different to that in which the cable is terminated must not be permitted.

Spare cable entries must be plugged using appropriately sized blanking plugs.

The use of "push-out" blanking inserts to plug cable entries must not be permitted.

- **Wiring**

Each switchgear board must be fitted and wired completely at the factory and, only after satisfactory testing, be split if necessary for transport.

\*No power cabling to run in PLC and marshalling cubicles.

Control and instrumentation wiring must be of flexible stranded annealed untinned copper construction and must comply with the table below. Conductors must comply with SANS 1411:2017, Part 1.

CT wiring; 2.5mm<sup>2</sup> phase coloured, common return black insulated, earth link

General control wiring ; (AC) 1,5mm<sup>2</sup> Live Brown  
(AC) 1,5mm<sup>2</sup> Neutral unprotected - Black  
(AC) 1,5mm<sup>2</sup> Neutral Protected - Blue  
(DC) 2,5mm<sup>2</sup> Red +  
(DC) 2,5mm<sup>2</sup> Black –

LED's and PLC inputs & outputs 1.5 mm<sup>2</sup> , Supply (DC) 2,5mm<sup>2</sup> Red + (DC) 2,5mm<sup>2</sup> Black -

Digital Inputs

Grey

Contractor

Witness 1

Witness 2

Employer

Witness 1

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Digital Outputs	Orange
Analogue Inputs	Yellow
Analogue Outputs	Purple
(AC) Digital Inputs	White
(AC) Digital Outputs	Pink

Notwithstanding the above requirements the vendor must ensure wire size used is amply rated for the current under ambient conditions. Each end of every wire must be marked with a wire number by means of the Legrand Cab 3 or equivalent system.

All control/instrument panel wiring must terminate by means of suitably sized compression crimp lugs or bootlace feral. The minimum voltage rating of the control wiring must be 600/1000V grade to SANS 1507:2015 and SANS 1411:2017 Part I and III.

All wiring must be of the stranded type. Wiring must be run in plastic trunking. Only where a space problem exists will loomed wiring be acceptable. Sticks on harness holders are not acceptable.

- **Wire numbering**

Cable/wire marking ferrules must be to the codes laid down in SANS 10142-1:2017 and must correlate to the appropriate schematic or wiring diagrams.

Split or open type marking ferrules must not be used.

Preferred types are:


- Grapho or equivalent markers for wires
- Stainless steel engraved/ Aluminium printed markers and steel clips to secure marker in place


- **Terminals**


Rating for motor terminal blocks must be a minimum of **40A**, or rated current for all above **40A**. Minimum current rating for other terminal blocks must be in accordance of manufacturing specifications. Terminal strips/blocks must be marked with designations corresponding with the suppliers/buyers drawings. Generally terminal numbers must be the same as the relevant wire number. No more than two wires may be connected to any one side of a terminal. 10% spare terminals must be furnished.


- **Circuit Breakers**


Circuit breakers must be either fixed pattern moulded case circuit breakers complying with the following requirements:


  
Contractor

  
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Witness 2

## I. Moulded case circuit breakers (MCCBs)

- MCCBs must be of the manually operated trip free type with thermal and instantaneous magnetic trips in each pole. Trip functions must be resettable via the MCCB toggle.
- Generally these MCCBs will be used for the incoming circuit breakers and outgoing feeders up to a maximum rating required with a 25% adjustable range.
- The thermal trip elements of each MCCB must be calibrated for the maximum ambient temperature at 40°C
- MCCBs must be selected in accordance to the calculated fault level by the MCC supplier.
- MCCB must be provided with flash barriers on both live and load side of the MCCB.
- Each MCCB must be provided with suitable insulation between the live and load side terminals of the MCCB and the back plate/chassis onto which the MCCB is mounted, such that any loose nut, screw, etc., which may make contact between the MCCB terminals and back plate cannot cause a short circuit.
- Where interlocking is called for between the MCCBs this must be affected using captive keys in the breaker.
- All outgoing circuits must be equipped with either individual motor protection relays or suitably rated protection devices.
- All circuit breakers, except bus couplers and incomers, must be connected with the switched side to the load, i.e. with reference to power flow incoming to "LINE" and outgoing to "LOAD".
- The incoming terminals/shutters of all 400V circuit breakers must be effectively shrouded and marked "400V LIVE -" with white characters on a red ground.

### • 400V Power connections


Power connections on any equipment must not use "Philips" type screw/socket heads larger than 45kW. Allen type socket heads are preferred.


### • Insulation materials


Any insulation, filling putty, etc., used must be selected such that it can withstand without injurious effect (mechanically or electrically), all temperatures encountered within the switchboard.


### • Instruments and meters


All current transformers must conform to IEC-60044-1:1996. For protection purposes class 10P CTs are to be used: for indicating purposes Class 1 CT's are to be used. In general current transformer mechanical and thermal ratings must be co-ordinate with the short circuit ratings of the equipment. In general voltmeters and


  
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ammeters will predominate and must be included as follows:

- I. Incoming feeders must be equipped with a single electrical power meter as specified.
- II. Outgoing feeders shall be equipped with a suitably sized operated 96mm x 96mm 90° movement suppressed maximum ammeter having an overload rating of 40 x rated current for one second.
- III. All instruments are to be mounted internally in the outer door/cover to enable external observation of the instruments.

- **Push button and selector switches**

All push buttons must be of the spring release type and colour coded and labelled as follows:

- Start (Green)
- Stop (Red)
- Reset (Black)
- Lamp test (Yellow)

A three-position selector switch must be positioned on each pump station panel door and labelled as follows:

- Position 1 (Manual)
- Position 2 (Off)
- Position 3 (Automatic)

- **Motor local start station**

Motor local start station must be contained in a steel enclosure comprising of the following:

- I. Three phase lockable isolator with the lockable handle on the door.
- II. Local start button
- III. Emergency stop

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Witness 2

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- **QUALITY ASSURANCE AND OTHER REQUIREMENTS**
- **QUALITY ASSURANCE REQUIREMENTS**

#### **A. QUALITY CONTROL PLAN**

Quality control plans are required for every stage of the project implementation process. The stages are divided as follows:

Pre-manufacturing Quality control

Material Quality control

Manufacturing or constructing Quality control

Installation Quality control

Commissioning Quality control

The Quality control plan will be based on the project plan progress and quality evaluation intervention will be implemented at predetermined milestones. At these milestones hold points will allow for Quality control inspection to take place before any further activities are undertaken. The inspection details and documentation will be determined the product service or activity. In the case of a manufacturing process the manufactured will be required to submit a QCP and related documentation to the Engineer to be approved with regards to the specific product. In the case of construction or installation work the supplier will be required to submit a detailed method statement that will be the bases of the QCP. The same will apply to the commissioning process. The following document is an example of the proposed format for a QCP. The basic hold points will be for:

Dimensional inspection-D

Visual inspection - V

Functional tests - F

Factory acceptance test - FAT

Site acceptance test - SAT

Other hold points may be added if required and alternative QCP may be used based on the approval from the engineer.

Contractor


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		<b>Quality Control Plan</b>																																																																																																																					
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Contractor

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## B. DRAWINGS AND DATA

Prior to fabrication of the Panels the supplier / contractor shall submit for consultant's approval the shop / vendor drawing consisting of G.A. drawing, sectional elevation, single line diagram, bill of material etc. and design calculations indicating type, size, short circuit rating of all the electrical components used, bus bar size, internal wiring size, Panels dimension, colour, mounting details etc.. The contractor shall submit manufacturer's catalogues of the electrical components installed in the Panels.

Drawings and documentation shall also be submitted to the Engineer for final Drawing and documentation shall be in accordance with Attachment No 1. For detail see "Documents to Be Supplied by Contractor. The following documents have to be presented at handover, 4 copies of each;

- Control Panel Data Sheet;
- Cable schedules
- General arrangement;
- Wiring diagrams and terminal strip wiring diagrams size and details;
- Panel layout drawings with dimensions;
- Single diagrams
- Auxiliary wiring diagrams;
- Foundation / mounting details;
- Installation details;
- Operating Manual;
- Alarm and trip setting schedules.

## C. PAINTING AND PROTECTIVE COATING

- Painting and protective coating shall be in accordance with specification "General Technical Specification - Corrosion Protection". The paint system shall be the standard powder coated specification offered.
- All paint used on the switchgear boards shall have added with the recognized flame retardant which must be detailed at time of tender. Should vendor not be able to comply with this specification then the vendors' standard painting specification shall be submitted for approval.
- The interior finish shall be white.
- Where applicable, Emergency incoming breaker panel doors shall be **Signal Red Shade A11**
- Bus coupler panel doors shall be **Electric Orange B26**
- Motor Control starter doors shall be **Electric Orange B26**
- All the above colour shades refer to SANS 1091/75:2012.

Contractor

Witness 1

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#### D. GENERAL ITEMS

- Risk assessment requirements must be complied with in terms of the construction regulations (2014).
- A Safety File will be required upon receipt of an award letter
- Site induction training has to be completed before any work can be undertaken.
- All the relevant work permits and authorization has to be obtained before any work can be undertaken.
- All work done and equipment supplied has to be in accordance with the relevant and current code and applicable statutory requirements listed.
- The relevant requirement with regards to the Occupational Health and safety act has to be Complied with, with particular reference to the safety file in accordance with the construction regulation and items covered by this document taking into consideration that that the most current regulation will always take precedence.
- No modifications to equipment may be undertaken without written approval from the designated ERWAT representative.
- All the required tools, consumables, testing facilities, etc. required to perform the work as per the Contract shall be provided by the Contractor.
- ERWAT reserves the right to hold Contractor responsible for any equipment that will be damaged due to Contractor's negligence or poor workmanship.
- All consumables will be included where required.
- Penalties will apply as detailed in relevant section.

Contractor

Witness 1

Witness 2

Employer

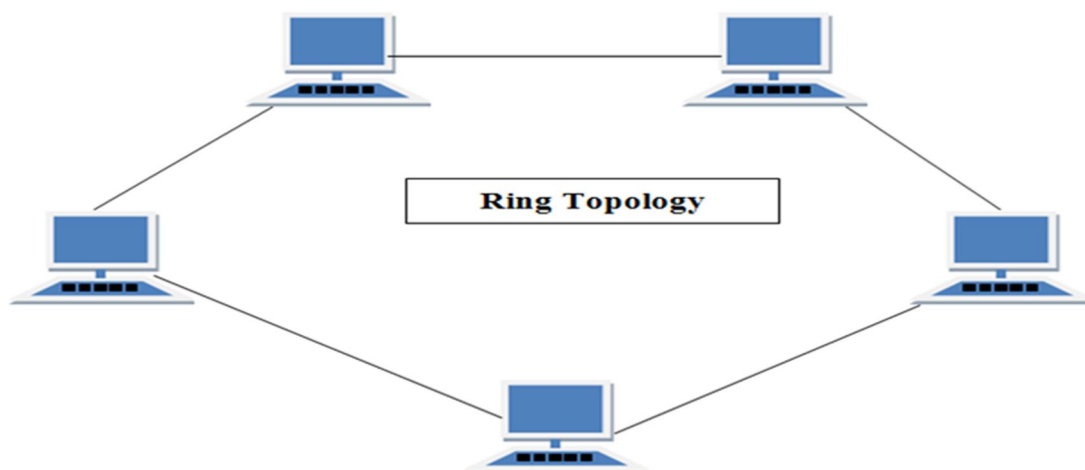
Witness 1

Witness 2

## Advantages of a Ring Network

- Reduced chances of data collision as each node release a data packet after receiving the token.
- Token passing makes ring topology perform better than bus topology under heavy traffic.
- No need of server to control connectivity among the nodes.
- Equal access to the resources

The Ring Network will be configured as indicated below;



Contractor should not take CONTINGENCIES as the amount which they are entitled to during the project, spending of CONTINGENCIES will be based on the discretion of ERWAT if the need arises and it was not factored into the stipulated scope of work.

Contractor

Witness 1

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## E. REFERENCE STANDARDS AND SPECIFICATIONS

In general work and materials shall be in accordance with the latest practice and in particular in accordance with the latest revision of the following specifications, and any amendments thereto, the SANS specification taking precedence:

SANS-IEC.60439 (2007)	SANS-IEC.60439 (2007) Factory-built Assemblies of Low Voltage Switchgear and Control gear
IEC 60947	Low Voltage Switchgear and Control Gear
SANS 10142	Low voltage electrical installations
SANS 1042	Binding/Identification Sleeves for Cables and Wires
SANS-IEC 60439:2009	Factory-built Assemblies of Low Voltage Switchgear and Control gear
IEC 61439:2014	Low Voltage Switchgear and Control Gear
IEC 60947:1990	Low Voltage Control Switches
IEC 228	Bursars, Main Connections and Small Wiring for Switchgear
SANS 1042:2017	Binding/Identification Sleeves for Cables and Wires
SANS 1507:2015	PVC Cables and Cords (where applicable)
SANS 1161	Low Voltage Porcelain Insulators
SANS 1171	Low Voltage Lightning Arrestors metal screws for wood
IEC 60076:2011	Power Transformers
IEC 61869:2007	Instrument Transformers
IEC 62419:2009	Measuring Instruments

Contractor

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IEC 60947-1(2007)	General rules
IEC 60947-2(2003)	Circuit breakers
IEC 60947-3(2015)	Switches/Isolators/Switch Isolators and Combination Fuse Switch Units
IEC 60947-4(2018)	Contactors
IEC 60947-5(2016)	Relays
IEC 60228 (2004)	Bursars, Main Connections and Small Wiring for Switchgear
SANS 1507-3(2015)	PVC Cables and Cords
SABS 156 (2007)	MCBs and MCCBs
SANS 60439-1 (2004)	Low voltage MCCs
SANS 1507-2 (2015)	Low voltage cable
SANS 10313 (2018)	Earthing and lightning protection
SANS 10142 -1 (2017)	Regulations for the wiring of premises

Contractor

Witness 1

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Witness 2

**- DOCUMENTS TO BE SUPPLIED BY CONTRACTOR**

The contractor appointed to carry out the work shall produce a comprehensive set of detailed design drawings suitable for issue for construction as well as provide detailed shop drawings, prior to manufacture of equipment.

The following drawings shall be provided:

- LV cable routes.
- Cable rack and trench lay outs.
- DB and MCC single line schematic diagrams.
- 400V single line schematic diagram.
- Power cable schedule
- Motor schedule
- Detailed Distribution Panel and MCC arrangement
- Wiring and termination schedules as required for construction
- Equipment schedules
- Equipment data sheets

The contractor shall also be responsible for As-Built drawings and operating and maintenance manuals on completion.

*Contractor*

*Witness 1*

*Witness 2*

*Employer*

*Witness 1*

*Witness 2*



- **ADDITIONAL DOCUMENTS REQUIRED**

**a. INSTALLATION REFERENCES**

The contractor is required to submit equipment references (Brochure) with the tender document for evaluation during the adjudication/evaluation process.

**b. DRAWINGS**

The contractor is required to submit a General Layout of the installation with the tender for evaluation during the adjudication/evaluation process. Drawings shall be Hard Copy of A3 size.

**c. TECHNICAL WARRANTEE**

All equipment supplied shall have a guarantee/warranty period of 12 months from date of completion. Proof of this guarantee shall be submitted with after successful commissioning and commencing on the same day as the final site acceptance test certificate.

**d. CONFIRMATION ON SPARES AVAILABILITY**

Bidder should supply ERWAT with a confirmation from their supplier that spares of this particular equipment will still be available in 10 years' time.

**e. CIDB RATING**

The Contract CIDB Rating required for this Contract is CIDB GRADING **7EP**. Bidders shall submit proof of current registration or application to register for this Grading or higher.  
Failure to adhere to this requirement will lead to disqualification.

**f. CONTRACT**

The contract to be used for this tender will be the ERWAT standard SLA (Service Level Agreement) which will be the binding contract between ERWAT and the successful bidder.

**g. PAYMENTS**

All payments will be discussed and agreed upon on the SLA.

**h. RETAINED AMOUNT**

5 per cent of the contract amount will be retained by ERWAT for the entire warrantee period and will only be paid to the contractor after the warrantee has lapsed.

**i. TIME FOR COMPLETION**

The time for completion of this contract, from date of signing SLAs up to and inclusive of commissioning and

Contractor

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"first delivery" shall be **three-year contract (36 months)**. Note that the defects liability period of 12 months commences at first delivery. Final delivery shall take place at the expiry of the defect's liability period. A detailed construction program shall also be submitted within 7 (seven) days after appointment prior signing SLA. This program shall be finalized in liaison with and approved by the Project technician.

#### **j. SECURITY OF MATERIALS AND EQUIPMENT**

It is the responsibility of the contractor as no uninstalled equipment shall be left on site. The Contractor shall replace any materials damaged or stolen from site prior to first handover with no cost to ERWAT. Therefore, bidders are responsible for insurance on all items until official handover to ERWAT.

#### **k. QUALITY OF MATERIALS**

All materials shall comply with the relevant specifications. All materials shall be unconditionally guaranteed for a period of 12 months from the date of practical completion, which is first hand over. Where supplier's guarantees are of a shorter duration than 12 months, the Contractor shall unreservedly agree to the extension and cession of all warranties and guarantees to ERWAT.

#### **l. FINISHING AND TIDYING**

In view of the concentration of construction and other activities likely to be experienced during the Contract period, progressive and systematic finishing and tidying will form an essential part of this Contract. On no account will soil, rubble, materials, equipment or unfinished operations be allowed to accumulate in such a manner as to unnecessarily impede the activities of others. In the event of this occurring the ERWAT will have the right to withhold payment for as long as may be necessary in respect of the relevant Works in the area(s) concerned without thereby prejudicing the rights of others to institute claims against the Contractor on the ground of unnecessary obstruction.

Finishing and tidying shall therefore not be left to the end of the Contract, but shall be a continuous operation. All removed items/rubble must be removed from ERWAT site to the nearest ERWAT site or approved landfill site/transfer station as indicated by the ERWAT representative.

#### **m. CERTIFICATE OF COMPLIANCE AND SAMPLES**

The tenderer shall indicate, section-by-section, whether or not his tender complies in every respect with this specification.

If alternative quotations are submitted, all divergences from this specification shall be clearly stated and included in the supporting document file.

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Contractor

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Technical literature consisting of brochures, technical description and configurations shall be submitted for comparative evaluation with the tender. Failure to comply with the above will invalidate the tender. Samples of the various equipment shall be forwarded on request from the Engineer.

#### **n. TRAINING OF OPERATING AND MAINTENANCE STAFF**

1. The Contractor shall undertake to train the Employer's operating and maintenance staff to be fully competent in the operation, maintenance, fault finding, replacement and repair of the equipment.
2. Before or on completion of the installation, when the system is in running order, the Contractor shall instruct operators in the operation of the system until they are fully conversant with the equipment and the handling thereof.
3. The Contractor shall take full responsibility for the safety of personnel during training and for the quality of work produced by such personnel under his supervision.
4. Tenderers have to include in the tender price for a training course for at least 5 persons from maintenance staff on the maintenance, fault finding, replacement and repair of the equipment.
5. Tenderers have to include in the tender price for a training course for at least 5 persons from operation staff on the installed system, process and the handling thereof.
6. Supplier must provide a training details on maintenance and operation training as required above.
7. The operations training course have to contain at least the functions, facilities and operation of the system on the different levels and shall include:
  1. Description of the system.
  2. Operating instructions and procedures for all levels of control personnel.
8. The maintenance-training course has to contain all normal maintenance procedures and repairs to be done for everyday problems with the system.
9. All material included in the courses, shall be included in the operating and maintenance manuals.
10. The contractor shall supply the Engineer with a proposed training course, one month prior to the commissioning of the system.

#### **o. TESTS AND COMMISSIONING**

##### **1. General**

- a. The Contractor shall draw up procedures for and execute the following tests and inspections:
  - Factory acceptance tests.
  - Site inspections.

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- Site acceptance tests.
  - Site commission and handover.
- b. The Employer and Engineer will have the right to attend any or all tests and inspections.
- c. The Contractor must supply all the necessary test equipment to execute the tests.
- d. All completed test and inspection reports must be submitted to the Engineer before acceptance of the system.
- e. The Contractor must execute all tests and submit completed test reports to the Engineer. The Engineer shall have the right to request the Contractor to perform all or some tests in the presence of the Engineer and the Employer.
- f. In the event of failure of the system to pass any of the tests, a re-test will be required within 14 days of the original test. The cost associated with all re-tests will be for the account of the Contractor.

#### 1.1 Factory acceptance tests

- All equipment must undergo factory testing in accordance with relevant SANS standard before being delivered to site.
  - The factory tests must ensure that only specified equipment is supplied.
  - The factory test procedures must include at least the following:
    - Item/equipment description and serial number.
    - Test equipment description and serial number.
    - Logical explanation of actions and/or measurements to be taken in order to determine the compliance with the specifications.
- a. Test reports containing the following:
- Specified values/requirements.
  - Measures/observed values/requirements.
  - Remarks.
  - Name and capacity of person that performed the test.
  - Date of tests.
  - Space for acceptance of test report by Engineer.
- b. The test procedures must be submitted to the Engineer for approval at least two weeks before the scheduled test date.

#### 1.2 Site inspections, site acceptance tests, commissioning, handover and Certificate of Compliance

- c. Contractor must be registered to conduct testing of earth mat and bonding and issuing of Certificate of Compliance thereof.
- d. On completion and handover of the work the Layout schematic drawings are required from the

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Contractor

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contractor; These shall be submitted, drawings are to show the extent of the system layout designed specifically for the building(s) or structures included in the contract drawings along with installation details of the equipment and the operating/test manual.

- e. Non-corrosive engraved plate detailing the date of COC, supplier details, serial number and all technical specifications of the system installed, this is to be attached to each structure.
- Inspections must be done on all equipment and material delivered to site.
  - The site inspections must ensure that all equipment and material being delivered complies with the requirements with regard to size, colour, finish, model, etc.
  - The site inspection procedures must include at least the following:
    - i. Item/material/equipment description and lot/serial number.
    - ii. Logical explanation of characteristics to be checked.
    - iii. Inspection reports containing the following:
      - Characteristics required.
      - Characteristics observed.
      - Remarks.
      - Name and capacity of person that performed the inspection.
      - Date of inspection.
      - Space for acceptance of inspection report by the Engineer.
  - COC to be issued in accordance with relevant SANS standard at time of hand over.
  - Visual inspection, bonding test, ground earthing resistance test and all other necessary tests to be done.
  - ERWAT will instruct the Contractor when Installation and Commissioning can commence.
  - The certificate shall be co-signed by either the Contractor or a qualified ERWAT Technician.
  - An Electrical Certificate of Compliance has to be issued for the installation work done, the contractor must be in the capacity of performing the tests and certifying compliancy.
  - The commissioning and the testing of the equipment will be done in the presence of the designated ERWAT representative

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Contractor

Witness 1

Witness 2

Employer

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**p. PENALTIES AND CALCULATION CRITERIA**

Penalties will take effect as soon as delivery period agreed upon has lapsed. The date of official order will be the date when both parties have agreed on terms and signed the service level agreement. The penalties are further discussed on the SLA.

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*Contractor*

*Witness 1*

*Witness 2*

*Employer*

*Witness 1*

*Witness 2*

#### C.3.1.4 DATA SHEETS

Instructions to complete the Data Sheets:

1. The Bidder is required to complete the Data Sheets in FULL. Comments like “included, etc.) will not be considered. Failure to adhere to this requirement will lead to disqualification.
2. There are three data sheets required to fully describing the scope of works, bidders shall be expected to complete all three data sheets.
3. Each datasheet is based on a main technology manufacturer, however there are components that are not necessary expected to belong to the main technology manufacturer, therefore the following shall apply:
  - a. The Bidder shall be expected to provide the name(s) of the manufacture(s) for all the three (3) Data Sheets in the **blank spaces** under the manufacture column.
  - b. The Bidder shall be expected to provide the name of the **main manufacture** on the Data Sheet for Alternative Technologies.

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Contractor

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### C.3.1.4.1 DATA SHEET FOR EXISTING TECHNOLOGIES (MCC PANELS, ELECTRICAL WORK)

#### C.3.1.4.1.1 SCHNEIDER TECHNOLOGY

MAIN MANUFACTURE: SCHNEIDER ELECTRICAL						
CONTROL CUBICLES						
Item	Description	QTY	Type	Ph	Manufacturer	Load Type
1	60A @ 10 kA	1			Main Manufacturer	
2	100A @ 15 kA	1			Main Manufacturer	
3	150A @ 15 kA	1			Main Manufacturer	
4	250A @ 25 kA	1			Main Manufacturer	
5	300A @ 25 kA	1			Main Manufacturer	
6	60A @ 10 kA	1			Main Manufacturer	
7	300 to 630A @ 50 kA	1			Main Manufacturer	
8	Supply and delivery of panel door mount louvers and extraction fans	1				
9	Supply and delivery of MCC room ventilation system including wall mount louvers and extraction fans (including civil and installation works)	1				
Single pump control compartment complete with typical control gear, alarm / status indicator lamps, telemetry I/O, etc as specified, excl. pump motor drive ( i.e. VSD / Soft Starter ) measured elsewhere for:						
Item	Description	QTY	Type	Ph	Manufacturer	Load Type

Contractor

Witness 1

Witness 2

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1	3 kW pump	1			Main Manufacturer	
2	5.5 KW Pump	1			Main Manufacturer	
3	7,5 kW pump	1			Main Manufacturer	
4	11 kW Pump	1			Main Manufacturer	
5	15 kW pump	1			Main Manufacturer	
6	30 kW pump	1			Main Manufacturer	
7	37 kW pump	1			Main Manufacturer	
8	45 kW pump	1			Main Manufacturer	
9	55 kW pump	1			Main Manufacturer	
10	75 kW pump	1			Main Manufacturer	
11	90 kW pump	1			Main Manufacturer	
12	132 kW pump	1			Main Manufacturer	
13	315 kW pump	1			Main Manufacturer	

**Single mixer control compartment complete with typical control gear, alarm / status indicator lamps, telemetry I/O, etc as specified, but excl pump motor drive ( i.e. VSD / Soft Starter ) measured elsewhere for:**

Item	Description	QTY	Type	Ph	Manufacturer	Load Type
1	1.1 kW mixer	1			Main Manufacturer	
2	1.5 kW mixer	1			Main Manufacturer	
3	2.2 kW mixer	1			Main Manufacturer	

Contractor

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4	3 kW mixer	1			Main Manufacturer	
5	7.5 kW mixer	1			Main Manufacturer	
6	15 kW mixer	1			Main Manufacturer	

**Single mixer control compartment complete with typical control gear, alarm / status indicator lamps, telemetry I/O, etc as specified, but excl mixer motor drive ( i.e. VSD / soft starters ) measured elsewhere for:**

Item	Description	QTY	Type	Ph	Manufacturer	Load Type
1	1.1 kW mixer	1			Main Manufacturer	
2	3 kW mixer	1			Main Manufacturer	

**Single mechanical screen control compartment complete with typical control gear, alarm / status indicator lamps, telemetry I/O, etc as specified, but excl screen motor drive ( i.e. VSD / soft starters )measured elsewhere for:**

Item	Description	QTY	Type	Ph	Manufacturer	Load Type
1	0.55 kW Screen	1			Main Manufacturer	
2	0.75 kW Screen	1			Main Manufacturer	
3	1.1 kW Screen	1			Main Manufacturer	
4	3 kW Screen	1			Main Manufacturer	

**Single screw conveyor screen control compartment complete with typical control gear, alarm / status indicator lamps, telemetry I/O, etc as specified, but excl motor drive ( i.e. VSD / soft starters ) measured elsewhere for:**

Item	Description	QTY	Type	Ph	Manufacturer	Load Type
1	0.75 kW screw conveyor	1			Main Manufacturer	
2	1.1 kW screw conveyor	1			Main Manufacturer	

Contractor

Witness 1

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3	2.2 kW screw conveyor	1			Main Manufacturer	
4	3 kW screw conveyor	1			Main Manufacturer	
5	4 kW screw conveyor	1			Main Manufacturer	

**Single Blower control compartment complete with typical control gear, alarm / status indicator lamps, telemetry I/O, etc as specified, but excl motor drive ( i.e. VSD / soft starters ) measured elsewhere for:**

Item	Description	QTY	Type	Ph	Manufacturer	Load Type
1	1.5 kW Blower	1			Main Manufacturer	
2	7.5 kW Blower	1			Main Manufacturer	
3	11 kW Blower	1			Main Manufacturer	
4	400 kW Blower	1			Main Manufacturer	

**Single Compressors control compartment complete with typical control gear, alarm / status indicator lamps, telemetry I/O, etc as specified, but excl motor drive ( i.e.DOL/ VSD / soft starters ) measured elsewhere for:**

Item	Description	QTY	Type	Ph	Manufacturer	Load Type
1	5.5 kW Compressor	1			Main Manufacturer	
2	7.5 kW Compressor	1			Main Manufacturer	
3	kW Compressor	1			Main Manufacturer	
4	kW Compressor	1			Main Manufacturer	

**Single Sediment Tank control compartment complete with typical control gear, alarm / status indicator lamps, telemetry I/O, etc as specified, but excl. motor drive ( i.e.DOL/ VSD / soft starters ) measured elsewhere for:**

Item	Description	QTY	Type	Ph	Manufacturer	Load Type
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Contractor

Witness 1

Witness 2

Employer

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Witness 2

1	0.55 kW Motor	1			Main Manufacturer	
2	0.75 kW Motor	1			Main Manufacturer	

**Single Grid removal control compartment complete with typical control gear, alarm / status indicator lamps, telemetry I/O, etc as specified, but excl. motor drive ( i.e.DOL/ VSD / soft starters ) measured elsewhere for:**

Item	Description	QTY	Type	Ph	Manufacturer	Load Type
1	0.55 kW Motor	1			Main Manufacturer	
2	0.75 kW Motor	1			Main Manufacturer	

**Single Aerator control compartment complete with typical control gear, alarm / status indicator lamps, telemetry I/O, etc as specified, but excl. motor drive ( i.e.DOL/ VSD / soft starters ) measured elsewhere for:**

Item	Description	QTY	Type	Ph	Manufacturer	Load Type
1	37 kW Motor	1			Main Manufacturer	
2	55 kW Motor	1			Main Manufacturer	
3	75 kW Motor	1			Main Manufacturer	

**Supply and install VSD inside new Motor Control Panel cubicles for:**

Item	Description	QTY	Type	Ph	Manufacturer	Load Type
1	3 kW Motor	1			Main Manufacturer	
	0,75 kW motor	1			Main Manufacturer	
	1.1 kW motor	1			Main Manufacturer	
2	5.5 KW Motor	1			Main Manufacturer	

Contractor

Witness 1

Witness 2

Employer

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3	7,5 kW Motor	1			Main Manufacturer	
4	11 kW Motor	1			Main Manufacturer	
5	15 kW Motor	1			Main Manufacturer	
6	30 kW Motor	1			Main Manufacturer	
7	37 kW Motor	1			Main Manufacturer	
8	45 kW Motor	1			Main Manufacturer	
9	55 kW Motor	1			Main Manufacturer	
10	75 kW Motor	1			Main Manufacturer	
11	90 kW Motor	1			Main Manufacturer	
12	132 kW Motor	1			Main Manufacturer	
13	315 kW Motor	1			Main Manufacturer	
14	400 kW Motor	1			Main Manufacturer	

**Supply and install soft starter equipment type inside new Motor Control Panel cubicles for:**

Item	Description	QTY	Type	Ph	Manufacturer	Load Type
1	0.75 kW motor	1			Main Manufacturer	
	1.1 kW motor	1			Main Manufacturer	
	3 kW motor	1			Main Manufacturer	
2	7.5 kW motor	1			Main Manufacturer	

Contractor

Witness 1

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3	15 kW motor	1			Main Manufacturer	
4	30 kW motor	1			Main Manufacturer	
5	37 kW motor	1			Main Manufacturer	
6	55 kW motor	1			Main Manufacturer	
7	75 kW motor	1			Main Manufacturer	
8	90 kW motor	1			Main Manufacturer	
9	132 kW motor	1			Main Manufacturer	
10	260 kW motor	1			Main Manufacturer	

**Spare set of three ultra-rapid fuses for all VSD / Soft Starter equipment installed in MCC panel measured elsewhere.**

Item	Description	QTY	Type	Ph	Manufacturer	Load Type
1	0,75 kW motor	1			Main Manufacturer	
2	1.1 kW motor	1			Main Manufacturer	
3	3 kW motor	1			Main Manufacturer	
4	7.5 kW motor	1			Main Manufacturer	
5	15 kW motor	1			Main Manufacturer	
6	30 kW motor	1			Main Manufacturer	
7	37 kW motor	1			Main Manufacturer	
8	55 kW motor	1			Main Manufacturer	

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Witness 1

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9	75 kW motor	1			Main Manufacturer	
10	90 kW motor	1			Main Manufacturer	
11	132 kW motor	1			Main Manufacturer	
12	260 kW motor	1			Main Manufacturer	

**Moulded case circuit breaker complete with interconnecting tails, etc. installed inside MCC Panel, kiosk, etc:**

Item	Description	QTY	Type	Ph	Manufacturer	Load Type
1	300 to 630A 3 Pole 50kA Circuit Breaker.	1			Main Manufacturer	
2	300A 3 Pole 25kA Circuit Breaker.	1			Main Manufacturer	
3	250A 3 Pole 25kA Circuit Breaker.	1			Main Manufacturer	
4	150A 3 Pole 15kA Circuit Breaker.	1			Main Manufacturer	
5	100A 3 Pole 10kA Circuit Breaker.	1			Main Manufacturer	
6	80A 3 Pole 10kA Circuit Breaker.	1			Main Manufacturer	
7	63A 3 Pole 10kA Circuit Breaker.	1			Main Manufacturer	
8	40A 3 Pole 10kA Circuit Breaker.	1			Main Manufacturer	
9	40A 2 Pole 10kA Circuit Breaker.	1			Main Manufacturer	
10	20A 3 Pole 10kA Circuit Breaker.	1			Main Manufacturer	
11	20A 2 Pole 10kA Circuit Breaker.	1			Main Manufacturer	

Contractor

Witness 1

Witness 2

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12	80A 3 Pole 10kA Circuit Breaker.	1			Main Manufacturer	
13	63A 2 Pole 10kA Circuit Breaker.	1			Main Manufacturer	
14	20A 1 Pole 6kA Circuit Breaker.	1			Main Manufacturer	
15	16A 1 Pole 6kA Circuit Breaker.	1			Main Manufacturer	
16	10A 1 Pole 6kA Circuit Breaker.	1			Main Manufacturer	
17	3 Phase + N Class 2 surge protection (Dehn guard & Dehn Gap)	1			Main Manufacturer	
18	63A E/L Unit ( 3P + N )	1			Main Manufacturer	
19	63A E/L Unit ( 1P + N )	1			Main Manufacturer	

**Single PLC / HMI control compartment complete with Delta type PLC and HMI equipment, I/O and communication cards, etc as specified with sufficient I/O modules to cater for:**

Item	Description	QTY	Type	Ph	Manufacturer	Load Type
1	Main Power supply (230VAC-24 VDC)	1			Main Manufacturer	
2	Main Power supply (24 VDC-24 VDC)	1			Main Manufacturer	
3	CPU Modbus Ethernet	1			Main Manufacturer	
4	Communication Module Ethernet Device Scanning	1			Main Manufacturer	
5	4 slot Backplane	1			Main Manufacturer	
6	6 slot Backplane	1			Main Manufacturer	
7	8 slot Backplane	1			Main Manufacturer	

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8	12 slot Backplane	1			Main Manufacturer	
9	4-20 mA Ethernet Converter	1			Main Manufacturer	
10	Ethernet Managable Switch 2 Fibre and 6 Copper	1			Main Manufacturer	
11	Ethernet Managable Switch 2 Fibre and 24 Copper	1			Main Manufacturer	
12	Termination box- IP 20 rated polyester enclosures with hinged door and enough space to allow for a 25% extension	1			Main Manufacturer	
13	3.5" Touch Screen Panel HMI	1			Main Manufacturer	
14	12" Touch Screen Panel HMI	1			Main Manufacturer	
15	8 Channels AI	1			Main Manufacturer	
16	8 Channels AO	1			Main Manufacturer	
17	8 Channels DI	1			Main Manufacturer	
18	8 Channels DO	1			Main Manufacturer	
19	16 Channels AI	1			Main Manufacturer	
20	16 Channels AO	1			Main Manufacturer	
21	16 Channels DI	1			Main Manufacturer	
22	16 Channels DO	1			Main Manufacturer	
23	32 Channels AI	1			Main Manufacturer	
24	32 Channels AO	1			Main Manufacturer	
25	32 Channels DI	1			Main Manufacturer	

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

26	32 Channels DO	1			Main Manufacturer	
27	64 Channels DI	1			Main Manufacturer	
28	64 Channels DO	1			Main Manufacturer	

### ELECTRICAL INSTALLATION

**Trenching by hand for LV cable / sleeve, 400 mm wide x 700 mm deep, including backfilling and compaction:**

Item	Description	QTY	Type	Ph	Manufacturer	Load Type
1	Soft pickable soil	m				
2	Soft Rock	m				
3	Hard rock	m				
4	Imported backfill material from off-site source.	m				
5	Disposal of surplus or unsuitable material including haulage up to 10 km from site.	m				
6	Break-up and re-instate paving along cable route after installation of sleeve.	m				

**Supply and install LV, PVCAS cable in trench / sleeve /cable tray measured elsewhere:**

Item	Description	QTY	Type	Ph	Manufacturer	Load Type
1	120 mm <sup>2</sup> Cu x 4 Core cable.	m				
2	95 mm <sup>2</sup> Cu x 4 Core cable.	m				
3	70 mm <sup>2</sup> Cu x 4 Core cable.	m				
4	70 mm <sup>2</sup> Single core insulated (Black) earth conductor	m				

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

5	70 mm <sup>2</sup> Insulated Earth conductor for above	m				
6	50 mm <sup>2</sup> Cu x 4 Core cable.	m				
7	50 mm <sup>2</sup> Single core insulated (Black) earth conductor	m				
8	50 mm <sup>2</sup> Insulated Earth conductor for above	m				
9	50 mm <sup>2</sup> Single core insulated (Black) earth conductor	m				
10	50 mm <sup>2</sup> 3 Core Copper cable.	m				
11	35 mm <sup>2</sup> Cu x 4 Core cable.	m				
12	25 mm <sup>2</sup> Cu x 4 Core cable.	m				
13	25 mm <sup>2</sup> Insulated Earth conductor for above	m				
14	25 mm <sup>2</sup> Single core insulated (Black) earth conductor	m				
15	25 mm <sup>2</sup> 3 Core Copper cable.	m				
16	16 mm <sup>2</sup> Cu x 4 Core cable.	m				
17	16 mm <sup>2</sup> Insulated Earth conductor for above	m				
18	10 mm <sup>2</sup> Cu x 4 Core cable.	m				
19	10 mm <sup>2</sup> Insulated Earth conductor for above	m				
20	10 mm <sup>2</sup> 3 Core Copper cable.	m				
21	6 mm <sup>2</sup> Cu x 4 Core cable.	m				
22	6 mm <sup>2</sup> Insulated Earth conductor for above	m				

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

23	4 mm <sup>2</sup> Cu x 4 Core cable.	m				
24	4 mm <sup>2</sup> Insulated Earth conductor for above	m				
25	4 mm <sup>2</sup> 3 Core Copper cable.	m				
26	2, 5 mm <sup>2</sup> Cu x 4 Core cable.	m				
27	2,5 mm <sup>2</sup> Insulated Earth conductor for above	m				
28	2, 5 mm <sup>2</sup> 3 Core Copper cable.	m				
29	2, 5 mm <sup>2</sup> 2 Core Copper cable.	m				
30	1, 5 mm <sup>2</sup> Cu x 4 Core cable.	m				
31	1,5 mm <sup>2</sup> Insulated Earth conductor for above	m				
32	1, 5 mm <sup>2</sup> 3 Core Copper cable.	m				
33	1, 5 mm <sup>2</sup> 2 Core Copper cable.	m				
34	Make provision for the scan of concrete floor slabs and walls for cable routes (2 Full Days)	day				
35	Make provision for the re-routing of existing cables	m				

**Dura cast resin through joint in LV, PVCAS cable measured elsewhere:**

Item	Description	QTY	Type	Ph	Manufacturer	Load Type
1	120 mm <sup>2</sup> Cu x 4 Core cable.	m				
2	95 mm <sup>2</sup> Cu x 4 Core cable.	m				

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

3	70 mm <sup>2</sup> Cu x 4 Core cable.	m				
4	70 mm <sup>2</sup> Insulated Earth conductor for above	m				
5	50 mm <sup>2</sup> Cu x 4 Core cable.	m				
6	50 mm <sup>2</sup> Insulated Earth conductor for above	m				
7	50 mm <sup>2</sup> Single core insulated (Black) earth conductor	m				
8	50 mm <sup>2</sup> 3 Core Copper cable.	m				
9	35 mm <sup>2</sup> Cu x 4 Core cable.	m				
10	25 mm <sup>2</sup> Cu x 4 Core cable.	m				
11	25 mm <sup>2</sup> Insulated Earth conductor for above	m				
12	25 mm <sup>2</sup> Single core insulated (Black) earth conductor	m				
13	25 mm <sup>2</sup> 3 Core Copper cable.	m				
14	16 mm <sup>2</sup> Cu x 4 Core cable.	m				
15	16 mm <sup>2</sup> Insulated Earth conductor for above	m				
16	10 mm <sup>2</sup> Cu x 4 Core cable.	m				
17	10 mm <sup>2</sup> Insulated Earth conductor for above	m				
18	10 mm <sup>2</sup> 3 Core Copper cable.	m				
19	6 mm <sup>2</sup> Cu x 4 Core cable.	m				
20	6 mm <sup>2</sup> Insulated Earth conductor for above	m				

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

21	4 mm <sup>2</sup> Cu x 4 Core cable.	m				
22	4 mm <sup>2</sup> Insulated Earth conductor for above	m				
23	4 mm <sup>2</sup> 3 Core Copper cable.	m				
24	2, 5 mm <sup>2</sup> Cu x 4 Core cable.	m				
25	2,5 mm <sup>2</sup> Insulated Earth conductor for above	m				
26	2, 5 mm <sup>2</sup> 3 Core Copper cable.	m				
27	2, 5 mm <sup>2</sup> 2 Core Copper cable.	m				
28	1, 5 mm <sup>2</sup> Cu x 4 Core cable.	m				
29	1,5 mm <sup>2</sup> Insulated Earth conductor for above	m				
30	1, 5 mm <sup>2</sup> 3 Core Copper cable.	m				
31	1, 5 mm <sup>2</sup> 2 Core Copper cable.	m				

**Terminate and connect LV, PVCAS cables at kiosk /MCC panel / motors / equipment using brass cable gland, brass locknut, neoprene rubber shroud and crimp lugs:**

Item	Description	QTY	Type	Ph	Manufacturer	Load Type
1	120 mm <sup>2</sup> Cu x 4 Core cable (Indoor)	m				
2	95 mm <sup>2</sup> Cu x 4 Core cable. (Indoor)	m				
3	70 mm <sup>2</sup> Cu x 4 Core cable. (Indoor)	m				
4	70 mm <sup>2</sup> Insulated Earth conductor for above(Indoor)	m				

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

5	50 mm <sup>2</sup> Cu x 4 Core cable. (Indoor)	m				
6	50 mm <sup>2</sup> Insulated Earth conductor for above(Indoor)	m				
7	50 mm <sup>2</sup> Single core insulated (Black) earth conductor(Indoor)	m				
8	50 mm <sup>2</sup> 3 Core Copper cable. (Indoor)	m				
9	35 mm <sup>2</sup> Cu x 4 Core cable. (Indoor)	m				
10	25 mm <sup>2</sup> Cu x 4 Core cable. (Indoor)	m				
11	25 mm <sup>2</sup> Insulated Earth conductor for above(Indoor)	m				
12	25 mm <sup>2</sup> Single core insulated (Black) earth conductor(Indoor)	m				
13	25 mm <sup>2</sup> 3 Core Copper cable. (Indoor)	m				
14	16 mm <sup>2</sup> Cu x 4 Core cable. (Indoor)	m				
15	16 mm <sup>2</sup> Insulated Earth conductor for above(Indoor)	m				
16	10 mm <sup>2</sup> Cu x 4 Core cable. (Indoor)	m				
17	10 mm <sup>2</sup> Insulated Earth conductor for above(Indoor)	m				
18	10 mm <sup>2</sup> 3 Core Copper cable. (Indoor)	m				
19	6 mm <sup>2</sup> Cu x 4 Core cable. (Indoor)	m				
20	6 mm <sup>2</sup> Insulated Earth conductor for above(Indoor)	m				
21	4 mm <sup>2</sup> Cu x 4 Core cable. (Indoor)	m				

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

22	4 mm <sup>2</sup> Insulated Earth conductor for above(Indoor)	m				
23	4 mm <sup>2</sup> 3 Core Copper cable. (Indoor)	m				
24	2, 5 mm <sup>2</sup> Cu x 4 Core cable. (Indoor)	m				
25	2,5 mm <sup>2</sup> Insulated Earth conductor for above(Indoor)	m				
26	2, 5 mm <sup>2</sup> 3 Core Copper cable. (Indoor)	m				
27	2, 5 mm <sup>2</sup> 2 Core Copper cable. (Indoor)	m				
28	1, 5 mm <sup>2</sup> Cu 4 Core cable. (Indoor)	m				
29	1,5 mm <sup>2</sup> Insulated Earth conductor for above(Indoor)	m				
30	1, 5 mm <sup>2</sup> 3 Core Copper cable. (Indoor)	m				
31	1, 5 mm <sup>2</sup> 2 Core Copper cable. (Indoor)	m				

**Terminate and connect overall screened, steel wire armoured, twisted pair type instrumentation cables at MCC panel / equipment / remote E-stop stations /Pratley or termination box using brass cable gland, brass locknut, neoprene rubber shroud and crimp lugs:**

Item	Description	QTY	Type	Ph	Manufacturer	Load Type
1	1, 5 mm <sup>2</sup> X 1 pair	m				
2	1, 5 mm <sup>2</sup> X 4 pair	m				
3	1, 5 mm <sup>2</sup> X 8 pair	m				
4	Terminate and connect instrumentation cables supplied with pressure / flow sensors, no flow / float Switches, PT 100 sensors, etc at MCC panel / junction box using compression type glands and crimp lugs.	sum				

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2



**HD bare copper earth wire laid in trench / sleeve /cable tray:**

Item	Description	QTY	Type	Ph	Manufacturer	Load Type
1	50 mm <sup>2</sup>	m				
2	35 mm <sup>2</sup>	m				
3	25 mm <sup>2</sup>	m				
4	16 mm <sup>2</sup>	m				
5	6 mm <sup>2</sup>	m				
6	4 mm <sup>2</sup>	m				

**Hard drawn bare copper earth wire terminated at kiosk / MCC panel / pump motor / Pratley or termination box.**

Item	Description	QTY	Type	Ph	Manufacturer	Load Type
1	50 mm <sup>2</sup>	1				
2	35 mm <sup>2</sup>	1				
3	25 mm <sup>2</sup>	1				
4	16 mm <sup>2</sup>	1				
5	6 mm <sup>2</sup>	1				
6	4 mm <sup>2</sup>	1				
7	Main AMF / MCC earth consisting of approx. 30 metre length of 70mm <sup>2</sup> PVC bare copper conductor installed in trench, 2 x 4,5 metre long earth spikes and 2 x earth spike markers.	Sum				

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

**CONDUIT - Supply and install steel conduit with support fixings (saddles/couplings/ adaptors), cast in concrete, surface bed screed, fixed to wood, roof members suspended ceiling, steel, etc., run in roof space chased and/or fixed in brickwork including bends if required.**

Item	Description	QTY	Type	Ph	Manufacturer	Load Type
1	40 mm Ø	m				
2	32 mm Ø	m				
3	25 mm Ø	m				
4	20 mm Ø	m				

**PVC conduit saddled to pump station ceiling / wall /roof purlins, etc. Item to include for all saddles, adapters etc required.**

Item	Description	QTY	Type	Ph	Manufacturer	Load Type
1	75 mm Ø	m				
2	50 mm Ø	m				
3	40 mm Ø	m				
4	32 mm Ø	m				
5	25 mm Ø	m				
6	20 mm Ø	m				

**CONDUIT ACCESSORIES AND DRAW BOXES - Supply and install steel conduit accessories, outlet boxes and cover plate to suit number, size or type of entries, fixed onto conduit and including fixing screws, etc:**

Item	Description	QTY	Type	Ph	Manufacturer	Load Type
1	100mm x 100mm x 50mm deep box (Flush)	1				

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

2	100mm x 100mm x 50mm deep box (Surface)	1				
3	100mm x 50mm x 50mm deep box (Flush)	1				
4	100mm x 50mm x 50mm deep box (Surface)	1				
5	65mm Round steel box	1				
6	85mm x 130mm Fibreglass IP54 York box	1				

### RETICULATION – SLEEVES / MAN HOLES

Supply and install the following PVC Sleeves including short lengths and jointing, laid in trench (trenching and backfilling measured elsewhere). PVC fittings with "Safe lock" seal ring joints

#### SLEEVES

Item	Description	QTY	Type	Ph	Manufacturer	Load Type
1	110 mm Diameter PVC sleeve (Install in wall)	m				
2	50 mm Diameter PVC sleeve (Install in wall)	m				

#### MAN HOLES

1	Install manholes as per specifications.	1				
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#### EXCAVATIONS

Item	Description	QTY	Type	Ph	Manufacturer	Load Type
1	Excavate trenching 700mm deep for cable and sleeves in pickable soil. Import virgin soil of 100mm below and above cable. Install cable warning type 100mm above cable. Backfill and compact. Make neat and re-instate 40mm Bitumen layer.	m				
2	Excavate trenching 700mm deep for cable and sleeves in non pickable soil (Jack hammer).	m				

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

Import virgin soil of 100mm below and above cable. Install cable warning tape 100mm above cable. Backfill and compact. Make neat and re-instate 40mm Bitumen layer.

### ELECTRICAL CONNECTION

1

Allow to arrange for the isolation of the electrical supply of the library. Install breakers as specified in existing Main DB and service the back-up generator.

1

Surface mounted, weather and vandal proof instrumentation junction boxes rated IP 65 minimum, complete with all terminals, connectors, etc for all cable / conduit terminations as required for connection of:

Item	Description	QTY	Type	Ph	Manufacturer	Load Type
1	Typical pump ( i.e. flow switch, PT 100's, Klixon's, etc	1				
2	Typical Mixer ( seal fail, Klixon's, etc )	1				
3	Typical Screen ( over torque, etc )	1				
4	Sump ( ultrasonic sensor, float switches, etc )	1				
5	Three way, IP 68 EZEE-FIT Ex n Pratley No. 0 Instrumentation cable box, complete with Kwikblok mountings, Kwikblocks, etc.	1				

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Item	Description	QTY	Type	Ph	Manufacturer	Load Type
1	4 mm <sup>2</sup>	m				
2	2,5 mm <sup>2</sup>	m				

Supply and install Matelec type rotatable weatherproof switches in flush mounted boxes:

1	One way	No.	1			
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Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

2	Two way	No.	1			
<b>Light fittings surface mounted to wall / ceiling, etc including all galvanised steel screws, grommets, lamps, tubes, etc.:</b>						
Item	Description	QTY	Type	Ph	Manufacturer	Load Type
1	IP 65, enclosed fluorescent type luminaire similar or approved equal to the Lascon Corolite 10N type with 2 x 58W lamps.	1				
2	150 W HPS luminaires with internal eyelids, glass diffusers and decorative skirt similar or approved equal to Bekanova type.	1				
<b>Surface mounted 16 Amp 3-pin weatherproof switch socket outlet:</b>						
Item	Description	QTY	Type	Ph	Manufacturer	Load Type
1	Double socket outlet	1				
<b>TRUNKING/CABLE TRAY -Supply and install trunking installation complete with fixings, example hangers, caddy clips, nuts, washers, rivets, splices, Tee- pieces, 4 way cross overs, elbows, clamps, anchors, etc.</b>						
<b>TRUNKING</b>						
Item	Description	QTY	Type	Ph	Manufacturer	Load Type
1	16 x 16mm PVC white compact mini-trunking.					
2	40 x 25mm PVC white compact mini-trunking.					
<b>CABLE TRAY - Hot dipped galvanised steel mesh cable tray installed against wall / floor. Item to include all brackets, stainless steel mounting screws / bolts required:</b>						
Item	Description	QTY	Type	Ph	Manufacturer	Load Type
1	200mm wide	1				
2	100mm wide	1				

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

3	50mm wide	1				
4	Labelling of all cables.	1				
5	Allow to arrange for the isolation of the electrical supply of the library. Install breakers as specified in existing Main DB and service the back-up generator.	1				

### Fibre Optic & Data Installation

Item	Description	QTY	Type	Ph	Manufacturer	Load Type
1	4-Core Fibre Optic Cable (Multi Mode)	1				
2	Splicing of 4-Core Fibre Optic Cable (Multi Mode)	1				
3	Cat5 networking cable, including splicing etc.	1				
4	Cut off old RJ45 module in existing power skirting and re-install (Crimp) new RJ45 module in new power skirting. Complete	1				
5	Remove data, communication, power cables and wires from Power skirting and re-install in new power skirting (Measured per m power skirting).	1				
6	Re-commission entire data installation to ensure all the data points is in a working condition.	Sum				
7	Re-label entire data installation to ensure all the data points are labelled.	1				

**Light fittings - The rate shall include the installation and connection only of the following new light fittings**

Item	Description	QTY	Type	Ph	Manufacturer	Load Type
1	1200 x 600mm Recessed	1				
2	Recessed downlighter	1				
3	Cove Lighting (strip light c/w splices, etc.)	1				

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

4	Spot light (on surface mounted track)	1				
5	Wall mounted Bulkhead	1				
6	Footlight (300mm AFFL)	1				
7	Open channel 2 tube fluorescent fitting	1				
8	Ceiling mounted fitting	1				
9	Flood light	1				
10	Bollard light	1				
11	Open channel 1 tube fluorescent fitting	1				
12	Emergency Exit fitting	1				
13	Motion Detection Sensors	1				
14	230V surface mounted track c/w splices, brackets, etc.	1				

**Photo Cell**

Item	Description	QTY	Type	Ph	Manufacturer	Load Type
1	Supply, delivery and installation of a Photo cell	1				

**EARTHING AND LIGHTNING PROTECTION - Supply and installation of main earthing system complete with all sundry materials and as follows :**

Item	Description	QTY	Type	Ph	Manufacturer	Load Type
1	70 mm <sup>2</sup> earth wire	m				
2	70 mm <sup>2</sup> earth wire ends lugged	1				

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

3	70 mm <sup>2</sup> earth wire ends clamped at earth rods	1				
4	1,83 m. long earth electrodes	1				
5	Earth test points, incl. Copper to aluminium joints	1				
6	CADWELD conductor joints	1				
7	Bond earth wire to building reinforcement	m				
8	500 x 50 x 3mm earthbar c/w accessories	1				
9	300 x 50 x 3mm earthbar c/w accessories	1				
<b>FIRE DETECTION SYSTEM</b>						
Item	Description	QTY	Type	Ph	Manufacturer	Load Type
1	Supply and install Fire Control Panel	1				
2	Supply and install Passive mimic	1				
3	Supply and install Batteries	1				
4	Supply and install Optical Smoke Detectors	1				
5	Supply and install Heat Smoke Detectors	1				
6	Supply and install manual call points	1				
7	Supply and install Siren/Strobe light	1				
8	Labelling of complete Fire Detection system	Sum				
9	Fire Retardant wiring	m				
10	Supply and install 25mm dia PVC Conduit	m				
11	25mm 4 way round box complete with lid	1				

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2



### C.3.1.4.1.2 SIEMENS TECHNOLOGY

#### MAIN MANUFACTURE: SIEMENS

#### CONTROL CUBICLES

Item	Description	QTY	Type	Ph	Manufacturer	Load Type
1	60A @ 10 kA	1			Main Manufacturer	
2	100A @ 15 kA	1			Main Manufacturer	
3	150A @ 15 kA	1			Main Manufacturer	
4	250A @ 25 kA	1			Main Manufacturer	
5	300A @ 25 kA	1			Main Manufacturer	
6	60A @ 10 kA	1			Main Manufacturer	
7	300 to 630A @ 50 kA	1			Main Manufacturer	
8	Supply and delivery of panel door mount louvers and extraction fans	1				
9	Supply and delivery of MCC room ventilation system including wall mount louvers and extraction fans (including civil and installation works)	1				

Single pump control compartment complete with typical control gear, alarm / status indicator lamps, telemetry I/O, etc as specified, excl. pump motor drive ( i.e. VSD / Soft Starter ) measured elsewhere for:

Item	Description	QTY	Type	Ph	Manufacturer	Load Type
1	3 kW pump	1			Main Manufacturer	

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

2	5.5 KW Pump	1			Main Manufacturer	
3	7,5 kW pump	1			Main Manufacturer	
4	11 kW Pump	1			Main Manufacturer	
5	15 kW pump	1			Main Manufacturer	
6	30 kW pump	1			Main Manufacturer	
7	37 kW pump	1			Main Manufacturer	
8	45 kW pump	1			Main Manufacturer	
9	55 kW pump	1			Main Manufacturer	
10	75 kW pump	1			Main Manufacturer	
11	90 kW pump	1			Main Manufacturer	
12	132 kW pump	1			Main Manufacturer	
13	315 kW pump	1			Main Manufacturer	

**Single mixer control compartment complete with typical control gear, alarm / status indicator lamps, telemetry I/O, etc as specified, but excl pump motor drive (i.e. VSD / Soft Starter) measured elsewhere for:**

Item	Description	QTY	Type	Ph	Manufacturer	Load Type
1	1.1 kW mixer	1			Main Manufacturer	
2	1.5 kW mixer	1			Main Manufacturer	
3	2.2 kW mixer	1			Main Manufacturer	
4	3 kW mixer	1			Main Manufacturer	

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

5	7.5 kW mixer	1			Main Manufacturer	
6	15 kW mixer	1			Main Manufacturer	

**Single mixer control compartment complete with typical control gear, alarm / status indicator lamps, telemetry I/O, etc as specified, but excl mixer motor drive ( i.e. VSD / soft starters ) measured elsewhere for:**

Item	Description	QTY	Type	Ph	Manufacturer	Load Type
1	1.1 kW mixer	1			Main Manufacturer	
2	3 kW mixer	1			Main Manufacturer	

**Single mechanical screen control compartment complete with typical control gear, alarm / status indicator lamps, telemetry I/O, etc as specified, but excl screen motor drive ( i.e. VSD / soft starters )measured elsewhere for:**

Item	Description	QTY	Type	Ph	Manufacturer	Load Type
1	0.55 kW Screen	1			Main Manufacturer	
2	0.75 kW Screen	1			Main Manufacturer	
3	1.1 kW Screen	1			Main Manufacturer	
4	3 kW Screen	1			Main Manufacturer	

**Single screw conveyor screen control compartment complete with typical control gear, alarm / status indicator lamps, telemetry I/O, etc as specified, but excl motor drive ( i.e. VSD / soft starters ) measured elsewhere for:**

Item	Description	QTY	Type	Ph	Manufacturer	Load Type
1	0.75 kW screw conveyor	1			Main Manufacturer	
2	1.1 kW screw conveyor	1			Main Manufacturer	

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

3	2.2 kW screw conveyor	1			Main Manufacturer	
4	3 kW screw conveyor	1			Main Manufacturer	
5	4 kW screw conveyor	1			Main Manufacturer	

**Single Blower control compartment complete with typical control gear, alarm / status indicator lamps, telemetry I/O, etc as specified, but excl motor drive ( i.e. VSD / soft starters ) measured elsewhere for:**

Item	Description	QTY	Type	Ph	Manufacturer	Load Type
1	1.5 kW Blower	1			Main Manufacturer	
2	7.5 kW Blower	1			Main Manufacturer	
3	11 kW Blower	1			Main Manufacturer	
4	400 kW Blower	1			Main Manufacturer	

**Single Compressors control compartment complete with typical control gear, alarm / status indicator lamps, telemetry I/O, etc as specified, but excl motor drive ( i.e.DOL/ VSD / soft starters ) measured elsewhere for:**

Item	Description	QTY	Type	Ph	Manufacturer	Load Type
1	5.5 kW Compressor	1			Main Manufacturer	
2	7.5 kW Compressor	1			Main Manufacturer	
3	kW Compressor	1			Main Manufacturer	
4	kW Compressor	1			Main Manufacturer	

**Single Sediment Tank control compartment complete with typical control gear, alarm / status indicator lamps, telemetry I/O, etc as specified, but excl. motor drive ( i.e.DOL/ VSD / soft starters ) measured elsewhere for:**

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

Item	Description	QTY	Type	Ph	Manufacturer	Load Type
1	0.55 kW Motor	1			Main Manufacturer	
2	0.75 kW Motor	1			Main Manufacturer	

**Single Grid removal control compartment complete with typical control gear, alarm / status indicator lamps, telemetry I/O, etc as specified, but excl. motor drive ( i.e.DOL/ VSD / soft starters ) measured elsewhere for:**

Item	Description	QTY	Type	Ph	Manufacturer	Load Type
1	0.55 kW Motor	1			Main Manufacturer	
2	0.75 kW Motor	1			Main Manufacturer	

**Single Aerator control compartment complete with typical control gear, alarm / status indicator lamps, telemetry I/O, etc as specified, but excl. motor drive ( i.e.DOL/ VSD / soft starters ) measured elsewhere for:**

Item	Description	QTY	Type	Ph	Manufacturer	Load Type
1	37 kW Motor	1			Main Manufacturer	
2	55 kW Motor	1			Main Manufacturer	
3	75 kW Motor	1			Main Manufacturer	

**Supply and install VSD inside new Motor Control Panel cubicles for:**

Item	Description	QTY	Type	Ph	Manufacturer	Load Type
1	3 kW Motor	1			Main Manufacturer	
	0,75 kW motor	1			Main Manufacturer	
	1.1 kW motor	1			Main Manufacturer	

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

2	5.5 KW Motor	1			Main Manufacturer	
3	7,5 kW Motor	1			Main Manufacturer	
4	11 kW Motor	1			Main Manufacturer	
5	15 kW Motor	1			Main Manufacturer	
6	30 kW Motor	1			Main Manufacturer	
7	37 kW Motor	1			Main Manufacturer	
8	45 kW Motor	1			Main Manufacturer	
9	55 kW Motor	1			Main Manufacturer	
10	75 kW Motor	1			Main Manufacturer	
11	90 kW Motor	1			Main Manufacturer	
12	132 kW Motor	1			Main Manufacturer	
13	315 kW Motor	1			Main Manufacturer	
14	400 kW Motor	1			Main Manufacturer	

**Supply and install soft starter equipment type inside new Motor Control Panel cubicles for:**

Item	Description	QTY	Type	Ph	Manufacturer	Load Type
1	0.75 kW motor	1			Main Manufacturer	
2	1.1 kW motor	1			Main Manufacturer	
3	3 kW motor	1			Main Manufacturer	

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

4	7.5 kW motor	1			Main Manufacturer	
5	15 kW motor	1			Main Manufacturer	
6	30 kW motor	1			Main Manufacturer	
7	37 kW motor	1			Main Manufacturer	
8	55 kW motor	1			Main Manufacturer	
9	75 kW motor	1			Main Manufacturer	
10	90 kW motor	1			Main Manufacturer	
11	132 kW motor	1			Main Manufacturer	
12	260 kW motor	1			Main Manufacturer	

**Spare set of three ultra-rapid fuses for all VSD / Soft Starter equipment installed in MCC panel measured elsewhere.**

Item	Description	QTY	Type	Ph	Manufacturer	Load Type
1	0,75 kW motor	1			Main Manufacturer	
2	1.1 kW motor	1			Main Manufacturer	
3	3 kW motor	1			Main Manufacturer	
4	7.5 kW motor	1			Main Manufacturer	
5	15 kW motor	1			Main Manufacturer	
6	30 kW motor	1			Main Manufacturer	

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

7	37 kW motor	1			Main Manufacturer	
8	55 kW motor	1			Main Manufacturer	
9	75 kW motor	1			Main Manufacturer	
10	90 kW motor	1			Main Manufacturer	
11	132 kW motor	1			Main Manufacturer	
12	260 kW motor	1			Main Manufacturer	

**Moulded case circuit breaker complete with interconnecting tails, etc. installed inside MCC Panel, kiosk, etc:**

Item	Description	QTY	Type	Ph	Manufacturer	Load Type
1	300 to 630A 3 Pole 50kA Circuit Breaker.	1			Main Manufacturer	
2	300A 3 Pole 25kA Circuit Breaker.	1			Main Manufacturer	
3	250A 3 Pole 25kA Circuit Breaker.	1			Main Manufacturer	
4	150A 3 Pole 15kA Circuit Breaker.	1			Main Manufacturer	
5	100A 3 Pole 10kA Circuit Breaker.	1			Main Manufacturer	
6	80A 3 Pole 10kA Circuit Breaker.	1			Main Manufacturer	
7	63A 3 Pole 10kA Circuit Breaker.	1			Main Manufacturer	
8	40A 3 Pole 10kA Circuit Breaker.	1			Main Manufacturer	
9	40A 2 Pole 10kA Circuit Breaker.	1			Main Manufacturer	

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2



10	20A 3 Pole 10kA Circuit Breaker.	1			Main Manufacturer	
11	20A 2 Pole 10kA Circuit Breaker.	1			Main Manufacturer	
12	80A 3 Pole 10kA Circuit Breaker.	1			Main Manufacturer	
13	63A 2 Pole 10kA Circuit Breaker.	1			Main Manufacturer	
14	20A 1 Pole 6kA Circuit Breaker.	1			Main Manufacturer	
15	16A 1 Pole 6kA Circuit Breaker.	1			Main Manufacturer	
16	10A 1 Pole 6kA Circuit Breaker.	1			Main Manufacturer	
17	3 Phase + N Class 2 surge protection (Dehn guard & Dehn Gap)	1			Main Manufacturer	
18	63A E/L Unit ( 3P + N )	1			Main Manufacturer	
19	63A E/L Unit ( 1P + N )	1			Main Manufacturer	

**Single PLC / HMI control compartment complete with Delta type PLC and HMI equipment, I/O and communication cards, etc as specified with sufficient I/O modules to cater for:**

Item	Description	QTY	Type	Ph	Manufacturer	Load Type
1	Main Power supply (230VAC-24 VDC)	1			Main Manufacturer	
2	Main Power supply (24 VDC-24 VDC)	1			Main Manufacturer	
3	CPU Modbus Ethernet	1			Main Manufacturer	
4	Communication Module Ethernet Device Scanning	1			Main Manufacturer	
5	4 slot Backplane	1			Main Manufacturer	

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

6	6 slot Backplane	1			Main Manufacturer	
7	8 slot Backplane	1			Main Manufacturer	
8	12 slot Backplane	1			Main Manufacturer	
9	4-20 mA Ethernet Converter	1			Main Manufacturer	
10	Ethernet Managable Switch 2 Fibre and 6 Copper	1			Main Manufacturer	
11	Ethernet Managable Switch 2 Fibre and 24 Copper	1			Main Manufacturer	
12	Termination box- IP 20 rated polyester enclosures with hinged door and enough space to allow for a 25% extension	1			Main Manufacturer	
13	3.5" Touch Screen Panel HMI	1			Main Manufacturer	
14	12" Touch Screen Panel HMI	1			Main Manufacturer	
15	8 Channels AI	1			Main Manufacturer	
16	8 Channels AO	1			Main Manufacturer	
17	8 Channels DI	1			Main Manufacturer	
18	8 Channels DO	1			Main Manufacturer	
19	16 Channels AI	1			Main Manufacturer	
20	16 Channels AO	1			Main Manufacturer	
21	16 Channels DI	1			Main Manufacturer	
22	16 Channels DO	1			Main Manufacturer	
23	32 Channels AI	1			Main Manufacturer	

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

24	32 Channels AO	1			Main Manufacturer	
25	32 Channels DI	1			Main Manufacturer	
26	32 Channels DO	1			Main Manufacturer	
27	64 Channels DI	1			Main Manufacturer	
28	64 Channels DO	1			Main Manufacturer	

### ELECTRICAL INSTALLATION

**Trenching by hand for LV cable / sleeve, 400 mm wide x 700 mm deep, including backfilling and compaction:**

Item	Description	QTY	Type	Ph	Manufacturer	Load Type
1	Soft pickable soil	m				
2	Soft Rock	m				
3	Hard rock	m				
4	Imported backfill material from off-site source.	m				
5	Disposal of surplus or unsuitable material including haulage up to 10 km from site.	m				
6	Break-up and re-instate paving along cable route after installation of sleeve.	m				

**Supply and install LV, PVCAS cable in trench / sleeve /cable tray measured elsewhere:**

Item	Description	QTY	Type	Ph	Manufacturer	Load Type
1	120 mm <sup>2</sup> Cu x 4 Core cable.	m				
2	95 mm <sup>2</sup> Cu x 4 Core cable.	m				

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

3	70 mm <sup>2</sup> Cu x 4 Core cable.	m				
4	70 mm <sup>2</sup> Single core insulated (Black) earth conductor	m				
5	70 mm <sup>2</sup> Insulated Earth conductor for above	m				
6	50 mm <sup>2</sup> Cu x 4 Core cable.	m				
7	50 mm <sup>2</sup> Single core insulated (Black) earth conductor	m				
8	50 mm <sup>2</sup> Insulated Earth conductor for above	m				
9	50 mm <sup>2</sup> Single core insulated (Black) earth conductor	m				
10	50 mm <sup>2</sup> 3 Core Copper cable.	m				
11	35 mm <sup>2</sup> Cu x 4 Core cable.	m				
12	25 mm <sup>2</sup> Cu x 4 Core cable.	m				
13	25 mm <sup>2</sup> Insulated Earth conductor for above	m				
14	25 mm <sup>2</sup> Single core insulated (Black) earth conductor	m				
15	25 mm <sup>2</sup> 3 Core Copper cable.	m				
16	16 mm <sup>2</sup> Cu x 4 Core cable.	m				
17	16 mm <sup>2</sup> Insulated Earth conductor for above	m				
18	10 mm <sup>2</sup> Cu x 4 Core cable.	m				
19	10 mm <sup>2</sup> Insulated Earth conductor for above	m				

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

20	10 mm <sup>2</sup> 3 Core Copper cable.	m				
21	6 mm <sup>2</sup> Cu x 4 Core cable.	m				
22	6 mm <sup>2</sup> Insulated Earth conductor for above	m				
23	4 mm <sup>2</sup> Cu x 4 Core cable.	m				
24	4 mm <sup>2</sup> Insulated Earth conductor for above	m				
25	4 mm <sup>2</sup> 3 Core Copper cable.	m				
26	2, 5 mm <sup>2</sup> Cu x 4 Core cable.	m				
27	2,5 mm <sup>2</sup> Insulated Earth conductor for above	m				
28	2, 5 mm <sup>2</sup> 3 Core Copper cable.	m				
29	2, 5 mm <sup>2</sup> 2 Core Copper cable.	m				
30	1, 5 mm <sup>2</sup> Cu x 4 Core cable.	m				
31	1,5 mm <sup>2</sup> Insulated Earth conductor for above	m				
32	1, 5 mm <sup>2</sup> 3 Core Copper cable.	m				
33	1, 5 mm <sup>2</sup> 2 Core Copper cable.	m				
34	Make provision for the scan of concrete floor slabs and walls for cable routes (2 Full Days)	day				
35	Make provision for the re-routing of existing cables	m				

**Dura cast resin through joint in LV, PVCAS cable measured elsewhere:**

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

Item	Description	QTY	Type	Ph	Manufacturer	Load Type
1	120 mm <sup>2</sup> Cu x 4 Core cable.	m				
2	95 mm <sup>2</sup> Cu x 4 Core cable.	m				
3	70 mm <sup>2</sup> Cu x 4 Core cable.	m				
4	70 mm <sup>2</sup> Insulated Earth conductor for above	m				
5	50 mm <sup>2</sup> Cu x 4 Core cable.	m				
6	50 mm <sup>2</sup> Insulated Earth conductor for above	m				
7	50 mm <sup>2</sup> Single core insulated (Black) earth conductor	m				
8	50 mm <sup>2</sup> 3 Core Copper cable.	m				
9	35 mm <sup>2</sup> Cu x 4 Core cable.	m				
10	25 mm <sup>2</sup> Cu x 4 Core cable.	m				
11	25 mm <sup>2</sup> Insulated Earth conductor for above	m				
12	25 mm <sup>2</sup> Single core insulated (Black) earth conductor	m				
13	25 mm <sup>2</sup> 3 Core Copper cable.	m				
14	16 mm <sup>2</sup> Cu x 4 Core cable.	m				
15	16 mm <sup>2</sup> Insulated Earth conductor for above	m				
16	10 mm <sup>2</sup> Cu x 4 Core cable.	m				

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

17	10 mm <sup>2</sup> Insulated Earth conductor for above	m				
18	10 mm <sup>2</sup> 3 Core Copper cable.	m				
19	6 mm <sup>2</sup> Cu x 4 Core cable.	m				
20	6 mm <sup>2</sup> Insulated Earth conductor for above	m				
21	4 mm <sup>2</sup> Cu x 4 Core cable.	m				
22	4 mm <sup>2</sup> Insulated Earth conductor for above	m				
23	4 mm <sup>2</sup> 3 Core Copper cable.	m				
24	2, 5 mm <sup>2</sup> Cu x 4 Core cable.	m				
25	2,5 mm <sup>2</sup> Insulated Earth conductor for above	m				
26	2, 5 mm <sup>2</sup> 3 Core Copper cable.	m				
27	2, 5 mm <sup>2</sup> 2 Core Copper cable.	m				
28	1, 5 mm <sup>2</sup> Cu x 4 Core cable.	m				
29	1,5 mm <sup>2</sup> Insulated Earth conductor for above	m				
30	1, 5 mm <sup>2</sup> 3 Core Copper cable.	m				
31	1, 5 mm <sup>2</sup> 2 Core Copper cable.	m				

**Terminate and connect LV, PVCAS cables at kiosk /MCC panel / motors / equipment using brass cable gland, brass locknut, neoprene rubber shroud and crimp lugs:**

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

Item	Description	QTY	Type	Ph	Manufacturer	Load Type
1	120 mm <sup>2</sup> Cu x 4 Core cable (Indoor)	m				
2	95 mm <sup>2</sup> Cu x 4 Core cable. (Indoor)	m				
3	70 mm <sup>2</sup> Cu x 4 Core cable. (Indoor)	m				
4	70 mm <sup>2</sup> Insulated Earth conductor for above(Indoor)	m				
5	50 mm <sup>2</sup> Cu x 4 Core cable. (Indoor)	m				
6	50 mm <sup>2</sup> Insulated Earth conductor for above(Indoor)	m				
7	50 mm <sup>2</sup> Single core insulated (Black) earth conductor(Indoor)	m				
8	50 mm <sup>2</sup> 3 Core Copper cable. (Indoor)	m				
9	35 mm <sup>2</sup> Cu x 4 Core cable. (Indoor)	m				
10	25 mm <sup>2</sup> Cu x 4 Core cable. (Indoor)	m				
11	25 mm <sup>2</sup> Insulated Earth conductor for above(Indoor)	m				
12	25 mm <sup>2</sup> Single core insulated (Black) earth conductor(Indoor)	m				
13	25 mm <sup>2</sup> 3 Core Copper cable. (Indoor)	m				
14	16 mm <sup>2</sup> Cu x 4 Core cable. (Indoor)	m				
15	16 mm <sup>2</sup> Insulated Earth conductor for above(Indoor)	m				
16	10 mm <sup>2</sup> Cu x 4 Core cable. (Indoor)	m				

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2



17	10 mm <sup>2</sup> Insulated Earth conductor for above(Indoor)	m				
18	10 mm <sup>2</sup> 3 Core Copper cable. (Indoor)	m				
19	6 mm <sup>2</sup> Cu x 4 Core cable. (Indoor)	m				
20	6 mm <sup>2</sup> Insulated Earth conductor for above(Indoor)	m				
21	4 mm <sup>2</sup> Cu x 4 Core cable. (Indoor)	m				
22	4 mm <sup>2</sup> Insulated Earth conductor for above(Indoor)	m				
23	4 mm <sup>2</sup> 3 Core Copper cable. (Indoor)	m				
24	2, 5 mm <sup>2</sup> Cu x 4 Core cable. (Indoor)	m				
25	2,5 mm <sup>2</sup> Insulated Earth conductor for above(Indoor)	m				
26	2, 5 mm <sup>2</sup> 3 Core Copper cable. (Indoor)	m				
27	2, 5 mm <sup>2</sup> 2 Core Copper cable. (Indoor)	m				
28	1, 5 mm <sup>2</sup> Cu 4 Core cable. (Indoor)	m				
29	1,5 mm <sup>2</sup> Insulated Earth conductor for above(Indoor)	m				
30	1, 5 mm <sup>2</sup> 3 Core Copper cable. (Indoor)	m				
31	1, 5 mm <sup>2</sup> 2 Core Copper cable. (Indoor)	m				

**Terminate and connect overall screened, steel wire armoured, twisted pair type instrumentation cables at MCC panel / equipment / remote E-stop stations /Pratley or termination box using brass cable gland, brass locknut, neoprene rubber shroud and crimp lugs:**

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

Item	Description	QTY	Type	Ph	Manufacturer	Load Type
1	1, 5 mm <sup>2</sup> X 1 pair	m				
2	1, 5 mm <sup>2</sup> X 4 pair	m				
3	1, 5 mm <sup>2</sup> X 8 pair	m				
4	Terminate and connect instrumentation cables supplied with pressure / flow sensors, no flow / float Switches, PT 100 sensors, etc at MCC panel / junction box using compression type glands and crimp lugs.	sum				

**HD bare copper earth wire laid in trench / sleeve /cable tray:**

Item	Description	QTY	Type	Ph	Manufacturer	Load Type
1	50 mm <sup>2</sup>	m				
2	35 mm <sup>2</sup>	m				
3	25 mm <sup>2</sup>	m				
4	16 mm <sup>2</sup>	m				
5	6 mm <sup>2</sup>	m				
6	4 mm <sup>2</sup>	m				

**Hard drawn bare copper earth wire terminated at kiosk / MCC panel / pump motor / Pratley or termination box.**

Item	Description	QTY	Type	Ph	Manufacturer	Load Type
1	50 mm <sup>2</sup>	1				

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

2	35 mm <sup>2</sup>	1				
3	25 mm <sup>2</sup>	1				
4	16 mm <sup>2</sup>	1				
5	6 mm <sup>2</sup>	1				
6	4 mm <sup>2</sup>	1				
7	Main AMF / MCC earth consisting of approx 30 metre length of 70mm <sup>2</sup> PVC bare copper conductor installed in trench, 2 x 4,5 metre long earth spikes and 2 x earth spike markers.	Sum				

**CONDUIT - Supply and install steel conduit with support fixings (saddles/couplings/ adaptors), cast in concrete, surface bed screed, fixed to wood, roof members suspended ceiling, steel, etc., run in roof space chased and/or fixed in brickwork including bends if required.**

Item	Description	QTY	Type	Ph	Manufacturer	Load Type
1	40 mm Ø	m				
2	32 mm Ø	m				
3	25 mm Ø	m				
4	20 mm Ø	m				

**PVC conduit saddled to pump station ceiling / wall /roof purlins, etc. Item to include for all saddles, adapters etc required.**

Item	Description	QTY	Type	Ph	Manufacturer	Load Type
1	75 mm Ø	m				
2	50 mm Ø	m				

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

3	40 mm Ø	m				
4	32 mm Ø	m				
5	25 mm Ø	m				
6	20 mm Ø	m				

**CONDUIT ACCESSORIES AND DRAW BOXES - Supply and install steel conduit accessories, outlet boxes and cover plate to suit number, size or type of entries, fixed onto conduit and including fixing screws, etc:**

Item	Description	QTY	Type	Ph	Manufacturer	Load Type
1	100mm x 100mm x 50mm deep box (Flush)	1				
2	100mm x 100mm x 50mm deep box (Surface)	1				
3	100mm x 50mm x 50mm deep box (Flush)	1				
4	100mm x 50mm x 50mm deep box (Surface)	1				
5	65mm Round steel box	1				
6	85mm x 130mm Fibreglass IP54 York box	1				

**RETICULATION – SLEEVES / MAN HOLES**

Supply and install the following PVC Sleeves including short lengths and jointing, laid in trench (trenching and backfilling measured elsewhere). PVC fittings with "Safe lock" seal ring joints

**SLEEVES**

Item	Description	QTY	Type	Ph	Manufacturer	Load Type
1	110 mm Diameter PVC sleeve (Install in wall)	m				
2	50 mm Diameter PVC sleeve (Install in wall)	m				

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

### MAN HOLES

1	Install manholes as per specifications.	1				
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### EXCAVATIONS

Item	Description	QTY	Type	Ph	Manufacturer	Load Type
1	Excavate trenching 700mm deep for cable and sleeves in pickable soil. Import virgin soil of 100mm below and above cable. Install cable warning type 100mm above cable. Backfill and compact. Make neat and re-instate 40mm Bitumen layer.	m				
2	Excavate trenching 700mm deep for cable and sleeves in non pickable soil (Jack hammer). Import virgin soil of 100mm below and above cable. Install cable warning tape 100mm above cable. Backfill and compact. Make neat and re-instate 40mm Bitumen layer.	m				

### ELECTRICAL CONNECTION

1	Allow to arrange for the isolation of the electrical supply of the library. Install breakers as specified in existing Main DB and service the back-up generator.	1				
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Surface mounted, weather and vandal proof instrumentation junction boxes rated IP 65 minimum, complete with all terminals, connectors, etc for all cable / conduit terminations as required for connection of:

Item	Description	QTY	Type	Ph	Manufacturer	Load Type
1	Typical pump ( i.e. flow switch, PT 100's, Klaxons, etc	1				
2	Typical Mixer ( seal fail, Klaxons, etc )	1				

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

3	Typical Screen ( over torque, etc )	1				
4	Sump ( ultrasonic sensor, float switches, etc )	1				
5	Three way, IP 68 EZEE-FIT Ex n Pratley No. 0 Instrumentation cable box, complete with Kwikblok mountings, Kwikblocks, etc.	1				

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Item	Description	QTY	Type	Ph	Manufacturer	Load Type
1	4 mm <sup>2</sup>	m				
2	2,5 mm <sup>2</sup>	m				

<b>Supply and install Matelec type rotatable weatherproof switches in flush mounted boxes:</b>						
--	--	--	--	--	--	--

1	One way	No.	1			
2	Two way	No.	1			

<b>Light fittings surface mounted to wall / ceiling, etc including all galvanised steel screws, grommets, lamps, tubes, etc.:</b>						
---	--	--	--	--	--	--

Item	Description	QTY	Type	Ph	Manufacturer	Load Type
1	IP 65, enclosed fluorescent type luminaire similar or approved equal to the Lascon Corolite 10N type with 2 x 58W lamps.	1				
2	150 W HPS luminaires with internal eyelids, glass diffusers and decorative skirt similar or approved equal to Bekanova type.	1				

<b>Surface mounted 16 Amp 3-pin weatherproof switch socket outlet:</b>						
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Item	Description	QTY	Type	Ph	Manufacturer	Load Type
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Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

1	Double socket outlet	1				
<b>TRUNKING/CABLE TRAY -Supply and install trunking installation complete with fixings, example hangers, caddy clips, nuts, washers, rivets, splices, Tee- pieces, 4 way cross overs, elbows, clamps, anchors, etc.</b>						
<b>TRUNKING</b>						
Item	Description	QTY	Type	Ph	Manufacturer	Load Type
1	16 x 16mm PVC white compact mini-trunking.					
2	40 x 25mm PVC white compact mini-trunking.					
<b>CABLE TRAY - Hot dipped galvanised steel mesh cable tray installed against wall / floor. Item to include all brackets, stainless steel mounting screws / bolts required:</b>						
Item	Description	QTY	Type	Ph	Manufacturer	Load Type
1	200mm wide	1				
2	100mm wide	1				
3	50mm wide	1				
4	Labelling of all cables.	1				
5	Allow to arrange for the isolation of the electrical supply of the library. Install breakers as specified in existing Main DB and service the back-up generator.	1				
<b>Fibre Optic &amp; Data Installation</b>						
Item	Description	QTY	Type	Ph	Manufacturer	Load Type
1	4-Core Fibre Optic Cable (Multi Mode)	1				

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

2	Splicing of 4-Core Fibre Optic Cable (Multi Mode)	1				
3	Cat5 networking cable, including splicing etc.	1				
4	Cut off old RJ45 module in existing power skirting and re-install (Crimp) new RJ45 module in new power skirting. Complete	1				
5	Remove data, communication, power cables and wires from Power skirting and re-install in new power skirting (Measured per m power skirting).	1				
6	Re-commission entire data installation to ensure all the data points is in a working condition.	Sum				
7	Re-label entire data installation to ensure all the data points are labelled.	1				
<b>Light fittings - The rate shall include the installation and connection only of the following new light fittings</b>						
Item	Description	QTY	Type	Ph	Manufacturer	Load Type
1	1200 x 600mm Recessed	1				
2	Recessed downlighter	1				
3	Cove Lighting (strip light c/w splices, etc.)	1				
4	Spot light (on surface mounted track)	1				
5	Wall mounted Bulkhead	1				
6	Footlight (300mm AFFL)	1				
7	Open channel 2 tube fluorescent fitting	1				
8	Ceiling mounted fitting	1				

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2



9	Flood light	1				
10	Bollard light	1				
11	Open channel 1 tube fluorescent fitting	1				
12	Emergency Exit fitting	1				
13	Motion Detection Sensors	1				
14	230V surface mounted track c/w splices, brackets, etc.	1				

**Photo Cell**

Item	Description	QTY	Type	Ph	Manufacturer	Load Type
1	Supply, delivery and installation of a Photo cell	1				

**EARTHING AND LIGHTNING PROTECTION - Supply and installation of main earthing system complete with all sundry materials and as follows :**

Item	Description	QTY	Type	Ph	Manufacturer	Load Type
1	70 mm <sup>2</sup> earth wire	m				
2	70 mm <sup>2</sup> earth wire ends lugged	1				
3	70 mm <sup>2</sup> earth wire ends clamped at earth rods	1				
4	1,83 m. long earth electrodes	1				
5	Earth test points, incl. Copper to aluminium joints	1				
6	CADWELD conductor joints	1				

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

7	Bond earth wire to building reinforcement	m				
8	500 x 50 x 3mm earthbar c/w accessories	1				
9	300 x 50 x 3mm earthbar c/w accessories	1				

#### FIRE DETECTION SYSTEM

Item	Description	QTY	Type	Ph	Manufacturer	Load Type
1	Supply and install Fire Control Panel	1				
2	Supply and install Passive mimic	1				
3	Supply and install Batteries	1				
4	Supply and install Optical Smoke Detectors	1				
5	Supply and install Heat Smoke Detectors	1				
6	Supply and install manual call points	1				
7	Supply and install Siren/Strobe light	1				
8	Labelling of complete Fire Detection system	Sum				
9	Fire Retardant wiring	m				
10	Supply and install 25mm dia PVC Conduit	m				
11	25mm 4 way round box complete with lid	1				

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

### C 3.4.1.2 DATASHEET FOR ALTERNATIVE/OTHER TECHNOLOGIES

**MAIN MANUFACTURE:** \_\_\_\_\_.

#### CONTROL CUBICLES

Item	Description	QTY	Type	Ph	Manufacturer	Load Type
1	60A @ 10 kA	1			Main Manufacturer	
2	100A @ 15 kA	1			Main Manufacturer	
3	150A @ 15 kA	1			Main Manufacturer	
4	250A @ 25 kA	1			Main Manufacturer	
5	300A @ 25 kA	1			Main Manufacturer	
6	60A @ 10 kA	1			Main Manufacturer	
7	300 to 630A @ 50 kA	1			Main Manufacturer	
8	Supply and delivery of panel door mount louvers and extraction fans	1				
9	Supply and delivery of MCC room ventilation system including wall mount louvers and extraction fans (including civil and installation works)	1				

**Single pump control compartment complete with typical control gear, alarm / status indicator lamps, telemetry I/O, etc as specified, excl. pump motor drive ( i.e. VSD / Soft Starter ) measured elsewhere for:**

Item	Description	QTY	Type	Ph	Manufacturer	Load Type
1	3 kW pump	1			Main Manufacturer	
2	5.5 KW Pump	1			Main Manufacturer	

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

3	7,5 kW pump	1			Main Manufacturer	
4	11 kW Pump	1			Main Manufacturer	
5	15 kW pump	1			Main Manufacturer	
6	30 kW pump	1			Main Manufacturer	
7	37 kW pump	1			Main Manufacturer	
8	45 kW pump	1			Main Manufacturer	
9	55 kW pump	1			Main Manufacturer	
10	75 kW pump	1			Main Manufacturer	
11	90 kW pump	1			Main Manufacturer	
12	132 kW pump	1			Main Manufacturer	
13	315 kW pump	1			Main Manufacturer	

**Single mixer control compartment complete with typical control gear, alarm / status indicator lamps, telemetry I/O, etc as specified, but excl pump motor drive ( i.e. VSD / Soft Starter ) measured elsewhere for:**

Item	Description	QTY	Type	Ph	Manufacturer	Load Type
1	1.1 kW mixer	1			Main Manufacturer	
2	1.5 kW mixer	1			Main Manufacturer	
3	2.2 kW mixer	1			Main Manufacturer	
4	3 kW mixer	1			Main Manufacturer	
5	7.5 kW mixer	1			Main Manufacturer	

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

6	15 kW mixer	1			Main Manufacturer	
<b>Single mixer control compartment complete with typical control gear, alarm / status indicator lamps, telemetry I/O, etc as specified, but excl mixer motor drive ( i.e. VSD / soft starters ) measured elsewhere for:</b>						
Item	Description	QTY	Type	Ph	Manufacturer	Load Type
1	1.1 kW mixer	1			Main Manufacturer	
2	3 kW mixer	1			Main Manufacturer	
<b>Single mechanical screen control compartment complete with typical control gear, alarm / status indicator lamps, telemetry I/O, etc as specified, but excl screen motor drive ( i.e. VSD / soft starters )measured elsewhere for:</b>						
Item	Description	QTY	Type	Ph	Manufacturer	Load Type
1	0.55 kW Screen	1			Main Manufacturer	
2	0.75 kW Screen	1			Main Manufacturer	
3	1.1 kW Screen	1			Main Manufacturer	
4	3 kW Screen	1			Main Manufacturer	
<b>Single screw conveyor screen control compartment complete with typical control gear, alarm / status indicator lamps, telemetry I/O, etc as specified, but excl motor drive ( i.e. VSD / soft starters ) measured elsewhere for:</b>						
Item	Description	QTY	Type	Ph	Manufacturer	Load Type
1	0.75 kW screw conveyor	1			Main Manufacturer	
2	1.1 kW screw conveyor	1			Main Manufacturer	
3	2.2 kW screw conveyor	1			Main Manufacturer	
4	3 kW screw conveyor	1			Main Manufacturer	

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

5	4 kW screw conveyor	1			Main Manufacturer	
<b>Single Blower control compartment complete with typical control gear, alarm / status indicator lamps, telemetry I/O, etc as specified, but excl motor drive ( i.e. VSD / soft starters ) measured elsewhere for:</b>						
Item	Description	QTY	Type	Ph	Manufacturer	Load Type
1	1.5 kW Blower	1			Main Manufacturer	
2	7.5 kW Blower	1			Main Manufacturer	
3	11 kW Blower	1			Main Manufacturer	
4	400 kW Blower	1			Main Manufacturer	
<b>Single Compressors control compartment complete with typical control gear, alarm / status indicator lamps, telemetry I/O, etc as specified, but excl motor drive ( i.e.DOL/ VSD / soft starters ) measured elsewhere for:</b>						
Item	Description	QTY	Type	Ph	Manufacturer	Load Type
1	5.5 kW Compressor	1			Main Manufacturer	
2	7.5 kW Compressor	1			Main Manufacturer	
3	kW Compressor	1			Main Manufacturer	
4	kW Compressor	1			Main Manufacturer	
<b>Single Sediment Tank control compartment complete with typical control gear, alarm / status indicator lamps, telemetry I/O, etc as specified, but excl. motor drive ( i.e.DOL/ VSD / soft starters ) measured elsewhere for:</b>						
Item	Description	QTY	Type	Ph	Manufacturer	Load Type
1	0.55 kW Motor	1			Main Manufacturer	
2	0.75 kW Motor	1			Main Manufacturer	

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

**Single Grid removal control compartment complete with typical control gear, alarm / status indicator lamps, telemetry I/O, etc as specified, but excl. motor drive ( i.e.DOL/ VSD / soft starters ) measured elsewhere for:**

Item	Description	QTY	Type	Ph	Manufacturer	Load Type
1	0.55 kW Motor	1			Main Manufacturer	
2	0.75 kW Motor	1			Main Manufacturer	

**Single Aerator control compartment complete with typical control gear, alarm / status indicator lamps, telemetry I/O, etc as specified, but excl. motor drive ( i.e.DOL/ VSD / soft starters ) measured elsewhere for:**

Item	Description	QTY	Type	Ph	Manufacturer	Load Type
1	37 kW Motor	1			Main Manufacturer	
2	55 kW Motor	1			Main Manufacturer	
3	75 kW Motor	1			Main Manufacturer	

**Supply and install VSD inside new Motor Control Panel cubicles for:**

Item	Description	QTY	Type	Ph	Manufacturer	Load Type
1	3 kW Motor	1			Main Manufacturer	
2	0,75 kW motor	1			Main Manufacturer	
3	1.1 kW motor	1			Main Manufacturer	
4	5.5 KW Motor	1			Main Manufacturer	
5	7,5 kW Motor	1			Main Manufacturer	
6	11 kW Motor	1			Main Manufacturer	

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

7	15 kW Motor	1			Main Manufacturer	
8	30 kW Motor	1			Main Manufacturer	
9	37 kW Motor	1			Main Manufacturer	
10	45 kW Motor	1			Main Manufacturer	
11	55 kW Motor	1			Main Manufacturer	
12	75 kW Motor	1			Main Manufacturer	
13	90 kW Motor	1			Main Manufacturer	
14	132 kW Motor	1			Main Manufacturer	
15	315 kW Motor	1			Main Manufacturer	
16	400 kW Motor	1			Main Manufacturer	

**Supply and install soft starter equipment type inside new Motor Control Panel cubicles for:**

Item	Description	QTY	Type	Ph	Manufacturer	Load Type
1	0.75 kW motor	1			Main Manufacturer	
2	1.1 kW motor	1			Main Manufacturer	
3	3 kW motor	1			Main Manufacturer	
4	7.5 kW motor	1			Main Manufacturer	
5	15 kW motor	1			Main Manufacturer	
6	30 kW motor	1			Main Manufacturer	

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2



7	37 kW motor	1			Main Manufacturer	
8	55 kW motor	1			Main Manufacturer	
9	75 kW motor	1			Main Manufacturer	
10	90 kW motor	1			Main Manufacturer	
11	132 kW motor	1			Main Manufacturer	
12	260 kW motor	1			Main Manufacturer	

**Spare set of three ultra-rapid fuses for all VSD / Soft Starter equipment installed in MCC panel measured elsewhere.**

Item	Description	QTY	Type	Ph	Manufacturer	Load Type
1	0,75 kW motor	1			Main Manufacturer	
2	1.1 kW motor	1			Main Manufacturer	
3	3 kW motor	1			Main Manufacturer	
4	7.5 kW motor	1			Main Manufacturer	
5	15 kW motor	1			Main Manufacturer	
6	30 kW motor	1			Main Manufacturer	
7	37 kW motor	1			Main Manufacturer	
8	55 kW motor	1			Main Manufacturer	
9	75 kW motor	1			Main Manufacturer	

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

10	90 kW motor	1			Main Manufacturer	
11	132 kW motor	1			Main Manufacturer	
12	260 kW motor	1			Main Manufacturer	

**Moulded case circuit breaker complete with interconnecting tails, etc. installed inside MCC Panel, kiosk, etc:**

Item	Description	QTY	Type	Ph	Manufacturer	Load Type
1	300 to 630A 3 Pole 50kA Circuit Breaker.	1			Main Manufacturer	
2	300A 3 Pole 25kA Circuit Breaker.	1			Main Manufacturer	
3	250A 3 Pole 25kA Circuit Breaker.	1			Main Manufacturer	
4	150A 3 Pole 15kA Circuit Breaker.	1			Main Manufacturer	
5	100A 3 Pole 10kA Circuit Breaker.	1			Main Manufacturer	
6	80A 3 Pole 10kA Circuit Breaker.	1			Main Manufacturer	
7	63A 3 Pole 10kA Circuit Breaker.	1			Main Manufacturer	
8	40A 3 Pole 10kA Circuit Breaker.	1			Main Manufacturer	
9	40A 2 Pole 10kA Circuit Breaker.	1			Main Manufacturer	
10	20A 3 Pole 10kA Circuit Breaker.	1			Main Manufacturer	
11	20A 2 Pole 10kA Circuit Breaker.	1			Main Manufacturer	
12	80A 3 Pole 10kA Circuit Breaker.	1			Main Manufacturer	

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

13	63A 2 Pole 10kA Circuit Breaker.	1			Main Manufacturer	
14	20A 1 Pole 6kA Circuit Breaker.	1			Main Manufacturer	
15	16A 1 Pole 6kA Circuit Breaker.	1			Main Manufacturer	
16	10A 1 Pole 6kA Circuit Breaker.	1			Main Manufacturer	
17	3 Phase + N Class 2 surge protection (Dehn guard & Dehn Gap)	1			Main Manufacturer	
18	63A E/L Unit ( 3P + N )	1			Main Manufacturer	
19	63A E/L Unit ( 1P + N )	1			Main Manufacturer	

**Single PLC / HMI control compartment complete with Delta type PLC and HMI equipment, I/O and communication cards, etc as specified with sufficient I/O modules to cater for:**

Item	Description	QTY	Type	Ph	Manufacturer	Load Type
1	Main Power supply (230VAC-24 VDC)	1			Main Manufacturer	
2	Main Power supply (24 VDC-24 VDC)	1			Main Manufacturer	
3	CPU Modbus Ethernet	1			Main Manufacturer	
4	Communication Module Ethernet Device Scanning	1			Main Manufacturer	
5	4 slot Backplane	1			Main Manufacturer	
6	6 slot Backplane	1			Main Manufacturer	
7	8 slot Backplane	1			Main Manufacturer	
8	12 slot Backplane	1			Main Manufacturer	

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

9	4-20 mA Ethernet Converter	1			Main Manufacturer	
10	Ethernet Managable Switch 2 Fibre and 6 Copper	1			Main Manufacturer	
11	Ethernet Managable Switch 2 Fibre and 24 Copper	1			Main Manufacturer	
12	Termination box- IP 20 rated polyester enclosures with hinged door and enough space to allow for a 25% extension	1			Main Manufacturer	
13	3.5" Touch Screen Panel HMI	1			Main Manufacturer	
14	12" Touch Screen Panel HMI	1			Main Manufacturer	
15	8 Channels AI	1			Main Manufacturer	
16	8 Channels AO	1			Main Manufacturer	
17	8 Channels DI	1			Main Manufacturer	
18	8 Channels DO	1			Main Manufacturer	
19	16 Channels AI	1			Main Manufacturer	
20	16 Channels AO	1			Main Manufacturer	
21	16 Channels DI	1			Main Manufacturer	
22	16 Channels DO	1			Main Manufacturer	
23	32 Channels AI	1			Main Manufacturer	
24	32 Channels AO	1			Main Manufacturer	
25	32 Channels DI	1			Main Manufacturer	

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

26	32 Channels DO	1			Main Manufacturer	
27	64 Channels DI	1			Main Manufacturer	
28	64 Channels DO	1			Main Manufacturer	

### ELECTRICAL INSTALLATION

**Trenching by hand for LV cable / sleeve, 400 mm wide x 700 mm deep, including backfilling and compaction:**

Item	Description	QTY	Type	Ph	Manufacturer	Load Type
1	Soft pickable soil	m				
2	Soft Rock	m				
3	Hard rock	m				
4	Imported backfill material from off-site source.	m				
5	Disposal of surplus or unsuitable material including haulage up to 10 km from site.	m				
6	Break-up and re-instate paving along cable route after installation of sleeve.	m				

**Supply and install LV, PVCAS cable in trench / sleeve /cable tray measured elsewhere:**

Item	Description	QTY	Type	Ph	Manufacturer	Load Type
1	120 mm <sup>2</sup> Cu x 4 Core cable.	m				
2	95 mm <sup>2</sup> Cu x 4 Core cable.	m				
3	70 mm <sup>2</sup> Cu x 4 Core cable.	m				
4	70 mm <sup>2</sup> Single core insulated (Black) earth conductor	m				

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

5	70 mm <sup>2</sup> Insulated Earth conductor for above	m				
6	50 mm <sup>2</sup> Cu x 4 Core cable.	m				
7	50 mm <sup>2</sup> Single core insulated (Black) earth conductor	m				
8	50 mm <sup>2</sup> Insulated Earth conductor for above	m				
9	50 mm <sup>2</sup> Single core insulated (Black) earth conductor	m				
10	50 mm <sup>2</sup> 3 Core Copper cable.	m				
11	35 mm <sup>2</sup> Cu x 4 Core cable.	m				
12	25 mm <sup>2</sup> Cu x 4 Core cable.	m				
13	25 mm <sup>2</sup> Insulated Earth conductor for above	m				
14	25 mm <sup>2</sup> Single core insulated (Black) earth conductor	m				
15	25 mm <sup>2</sup> 3 Core Copper cable.	m				
16	16 mm <sup>2</sup> Cu x 4 Core cable.	m				
17	16 mm <sup>2</sup> Insulated Earth conductor for above	m				
18	10 mm <sup>2</sup> Cu x 4 Core cable.	m				
19	10 mm <sup>2</sup> Insulated Earth conductor for above	m				
20	10 mm <sup>2</sup> 3 Core Copper cable.	m				
21	6 mm <sup>2</sup> Cu x 4 Core cable.	m				

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

22	6 mm <sup>2</sup> Insulated Earth conductor for above	m				
23	4 mm <sup>2</sup> Cu x 4 Core cable.	m				
24	4 mm <sup>2</sup> Insulated Earth conductor for above	m				
25	4 mm <sup>2</sup> 3 Core Copper cable.	m				
26	2, 5 mm <sup>2</sup> Cu x 4 Core cable.	m				
27	2,5 mm <sup>2</sup> Insulated Earth conductor for above	m				
28	2, 5 mm <sup>2</sup> 3 Core Copper cable.	m				
29	2, 5 mm <sup>2</sup> 2 Core Copper cable.	m				
30	1, 5 mm <sup>2</sup> Cu x 4 Core cable.	m				
31	1,5 mm <sup>2</sup> Insulated Earth conductor for above	m				
32	1, 5 mm <sup>2</sup> 3 Core Copper cable.	m				
33	1, 5 mm <sup>2</sup> 2 Core Copper cable.	m				
34	Make provision for the scan of concrete floor slabs and walls for cable routes (2 Full Days)	day				
35	Make provision for the re-routing of existing cables	m				

**Dura cast resin through joint in LV, PVCAS cable measured elsewhere:**

Item	Description	QTY	Type	Ph	Manufacturer	Load Type
1	120 mm <sup>2</sup> Cu x 4 Core cable.	m				

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

2	95 mm <sup>2</sup> Cu x 4 Core cable.	m				
3	70 mm <sup>2</sup> Cu x 4 Core cable.	m				
4	70 mm <sup>2</sup> Insulated Earth conductor for above	m				
5	50 mm <sup>2</sup> Cu x 4 Core cable.	m				
6	50 mm <sup>2</sup> Insulated Earth conductor for above	m				
7	50 mm <sup>2</sup> Single core insulated (Black) earth conductor	m				
8	50 mm <sup>2</sup> 3 Core Copper cable.	m				
9	35 mm <sup>2</sup> Cu x 4 Core cable.	m				
10	25 mm <sup>2</sup> Cu x 4 Core cable.	m				
11	25 mm <sup>2</sup> Insulated Earth conductor for above	m				
12	25 mm <sup>2</sup> Single core insulated (Black) earth conductor	m				
13	25 mm <sup>2</sup> 3 Core Copper cable.	m				
14	16 mm <sup>2</sup> Cu x 4 Core cable.	m				
15	16 mm <sup>2</sup> Insulated Earth conductor for above	m				
16	10 mm <sup>2</sup> Cu x 4 Core cable.	m				
17	10 mm <sup>2</sup> Insulated Earth conductor for above	m				
18	10 mm <sup>2</sup> 3 Core Copper cable.	m				

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2



19	6 mm <sup>2</sup> Cu x 4 Core cable.	m				
20	6 mm <sup>2</sup> Insulated Earth conductor for above	m				
21	4 mm <sup>2</sup> Cu x 4 Core cable.	m				
22	4 mm <sup>2</sup> Insulated Earth conductor for above	m				
23	4 mm <sup>2</sup> 3 Core Copper cable.	m				
24	2, 5 mm <sup>2</sup> Cu x 4 Core cable.	m				
25	2,5 mm <sup>2</sup> Insulated Earth conductor for above	m				
26	2, 5 mm <sup>2</sup> 3 Core Copper cable.	m				
27	2, 5 mm <sup>2</sup> 2 Core Copper cable.	m				
28	1, 5 mm <sup>2</sup> Cu x 4 Core cable.	m				
29	1,5 mm <sup>2</sup> Insulated Earth conductor for above	m				
30	1, 5 mm <sup>2</sup> 3 Core Copper cable.	m				
31	1, 5 mm <sup>2</sup> 2 Core Copper cable.	m				

**Terminate and connect LV, PVCAS cables at kiosk /MCC panel / motors / equipment using brass cable gland, brass locknut, neoprene rubber shroud and crimp lugs:**

Item	Description	QTY	Type	Ph	Manufacturer	Load Type
1	120 mm <sup>2</sup> Cu x 4 Core cable (Indoor)	m				
2	95 mm <sup>2</sup> Cu x 4 Core cable. (Indoor)	m				

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

3	70 mm <sup>2</sup> Cu x 4 Core cable. (Indoor)	m				
4	70 mm <sup>2</sup> Insulated Earth conductor for above(Indoor)	m				
5	50 mm <sup>2</sup> Cu x 4 Core cable. (Indoor)	m				
6	50 mm <sup>2</sup> Insulated Earth conductor for above(Indoor)	m				
7	50 mm <sup>2</sup> Single core insulated (Black) earth conductor(Indoor)	m				
8	50 mm <sup>2</sup> 3 Core Copper cable. (Indoor)	m				
9	35 mm <sup>2</sup> Cu x 4 Core cable. (Indoor)	m				
10	25 mm <sup>2</sup> Cu x 4 Core cable. (Indoor)	m				
11	25 mm <sup>2</sup> Insulated Earth conductor for above(Indoor)	m				
12	25 mm <sup>2</sup> Single core insulated (Black) earth conductor(Indoor)	m				
13	25 mm <sup>2</sup> 3 Core Copper cable. (Indoor)	m				
14	16 mm <sup>2</sup> Cu x 4 Core cable. (Indoor)	m				
15	16 mm <sup>2</sup> Insulated Earth conductor for above(Indoor)	m				
16	10 mm <sup>2</sup> Cu x 4 Core cable. (Indoor)	m				
17	10 mm <sup>2</sup> Insulated Earth conductor for above(Indoor)	m				
18	10 mm <sup>2</sup> 3 Core Copper cable. (Indoor)	m				
19	6 mm <sup>2</sup> Cu x 4 Core cable. (Indoor)	m				

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

20	6 mm <sup>2</sup> Insulated Earth conductor for above(Indoor)	m				
21	4 mm <sup>2</sup> Cu x 4 Core cable. (Indoor)	m				
22	4 mm <sup>2</sup> Insulated Earth conductor for above(Indoor)	m				
23	4 mm <sup>2</sup> 3 Core Copper cable. (Indoor)	m				
24	2, 5 mm <sup>2</sup> Cu x 4 Core cable. (Indoor)	m				
25	2,5 mm <sup>2</sup> Insulated Earth conductor for above(Indoor)	m				
26	2, 5 mm <sup>2</sup> 3 Core Copper cable. (Indoor)	m				
27	2, 5 mm <sup>2</sup> 2 Core Copper cable. (Indoor)	m				
28	1, 5 mm <sup>2</sup> Cu 4 Core cable. (Indoor)	m				
29	1,5 mm <sup>2</sup> Insulated Earth conductor for above(Indoor)	m				
30	1, 5 mm <sup>2</sup> 3 Core Copper cable. (Indoor)	m				
31	1, 5 mm <sup>2</sup> 2 Core Copper cable. (Indoor)	m				

**Terminate and connect overall screened, steel wire armoured, twisted pair type instrumentation cables at MCC panel / equipment / remote E-stop stations /Pratley or termination box using brass cable gland, brass locknut, neoprene rubber shroud and crimp lugs:**

Item	Description	QTY	Type	Ph	Manufacturer	Load Type
1	1, 5 mm <sup>2</sup> X 1 pair	m				
2	1, 5 mm <sup>2</sup> X 4 pair	m				
3	1, 5 mm <sup>2</sup> X 8 pair	m				

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

4	Terminate and connect instrumentation cables supplied with pressure / flow sensors, no flow / float Switches, PT 100 sensors, etc at MCC panel / junction box using compression type glands and crimp lugs.	sum				
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**HD bare copper earth wire laid in trench / sleeve /cable tray:**

Item	Description	QTY	Type	Ph	Manufacturer	Load Type
1	50 mm <sup>2</sup>	m				
2	35 mm <sup>2</sup>	m				
3	25 mm <sup>2</sup>	m				
4	16 mm <sup>2</sup>	m				
5	6 mm <sup>2</sup>	m				
6	4 mm <sup>2</sup>	m				

**Hard drawn bare copper earth wire terminated at kiosk / MCC panel / pump motor / Pratley or termination box.**

Item	Description	QTY	Type	Ph	Manufacturer	Load Type
1	50 mm <sup>2</sup>	1				
2	35 mm <sup>2</sup>	1				
3	25 mm <sup>2</sup>	1				
4	16 mm <sup>2</sup>	1				
5	6 mm <sup>2</sup>	1				

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

6	4 mm <sup>2</sup>	1				
7	Main AMF / MCC earth consisting of approx 30 metre length of 70mm <sup>2</sup> PVC bare copper conductor installed in trench, 2 x 4,5 metre long earth spikes and 2 x earth spike markers.	Sum				

**CONDUIT - Supply and install steel conduit with support fixings (saddles/couplings/ adaptors), cast in concrete, surface bed screed, fixed to wood, roof members suspended ceiling, steel, etc., run in roof space chased and/or fixed in brickwork including bends if required.**

Item	Description	QTY	Type	Ph	Manufacturer	Load Type
1	40 mm Ø	m				
2	32 mm Ø	m				
3	25 mm Ø	m				
4	20 mm Ø	m				

**PVC conduit saddled to pump station ceiling / wall /roof purlins, etc. Item to include for all saddles, adapters etc required.**

Item	Description	QTY	Type	Ph	Manufacturer	Load Type
1	75 mm Ø	m				
2	50 mm Ø	m				
3	40 mm Ø	m				
4	32 mm Ø	m				
5	25 mm Ø	m				

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

6	20 mm Ø	m				
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**CONDUIT ACCESSORIES AND DRAW BOXES - Supply and install steel conduit accessories, outlet boxes and cover plate to suit number, size or type of entries, fixed onto conduit and including fixing screws, etc:**

Item	Description	QTY	Type	Ph	Manufacturer	Load Type
1	100mm x 100mm x 50mm deep box (Flush)	1				
2	100mm x 100mm x 50mm deep box (Surface)	1				
3	100mm x 50mm x 50mm deep box (Flush)	1				
4	100mm x 50mm x 50mm deep box (Surface)	1				
5	65mm Round steel box	1				
6	85mm x 130mm Fibreglass IP54 York box	1				

**RETICULATION – SLEEVES / MAN HOLES**

Supply and install the following PVC Sleeves including short lengths and jointing, laid in trench (trenching and backfilling measured elsewhere). PVC fittings with "Safe lock" seal ring joints

**SLEEVES**

Item	Description	QTY	Type	Ph	Manufacturer	Load Type
1	110 mm Diameter PVC sleeve (Install in wall)	m				
2	50 mm Diameter PVC sleeve (Install in wall)	m				

**MAN HOLES**

1	Install manholes as per specifications.	1				
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**EXCAVATIONS**

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

Item	Description	QTY	Type	Ph	Manufacturer	Load Type
1	Excavate trenching 700mm deep for cable and sleeves in pickable soil. Import virgin soil of 100mm below and above cable. Install cable warning type 100mm above cable. Backfill and compact. Make neat and re-instate 40mm Bitumen layer.	m				
2	Excavate trenching 700mm deep for cable and sleeves in non pickable soil (Jack hammer). Import virgin soil of 100mm below and above cable. Install cable warning tape 100mm above cable. Backfill and compact. Make neat and re-instate 40mm Bitumen layer.	m				

#### ELECTRICAL CONNECTION

1	Allow to arrange for the isolation of the electrical supply of the library. Install breakers as specified in existing Main DB and service the back-up generator.	1				
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**Surface mounted, weather and vandal proof instrumentation junction boxes rated IP 65 minimum, complete with all terminals, connectors, etc for all cable / conduit terminations as required for connection of:**

Item	Description	QTY	Type	Ph	Manufacturer	Load Type
1	Typical pump ( i.e. flow switch, PT 100's, Klixons, etc	1				
2	Typical Mixer ( seal fail, Klixons, etc )	1				
3	Typical Screen ( over torque, etc )	1				
4	Sump ( ultrasonic sensor, float switches, etc )	1				
5	Three way, IP 68 EZEE-FIT Ex n Pratley No. 0 Instrumentation cable box,	1				

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

complete with Kwikblok mountings, Kwikblocks, etc.

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Item	Description	QTY	Type	Ph	Manufacturer	Load Type
------	-------------	-----	------	----	--------------	-----------

1	4 mm <sup>2</sup>	m				
---	-------------------	---	--	--	--	--

2	2,5 mm <sup>2</sup>	m				
---	---------------------	---	--	--	--	--

**Supply and install Matelec type rotatable weatherproof switches in flush mounted boxes:**

1	One way	No.	1			
---	---------	-----	---	--	--	--

2	Two way	No.	1			
---	---------	-----	---	--	--	--

**Light fittings surface mounted to wall / ceiling, etc including all galvanised steel screws, grommets, lamps, tubes, etc.:**

Item	Description	QTY	Type	Ph	Manufacturer	Load Type
------	-------------	-----	------	----	--------------	-----------

1	IP 65, enclosed fluorescent type luminaire similar or approved equal to the Lascon Corolite 10N type with 2 x 58W lamps.	1				
---	--	---	--	--	--	--

2	150 W HPS luminaires with internal eyelids, glass diffusers and decorative skirt similar or approved equal to Bekanova type.	1				
---	--	---	--	--	--	--

**Surface mounted 16 Amp 3-pin weatherproof switch socket outlet:**

Item	Description	QTY	Type	Ph	Manufacturer	Load Type
------	-------------	-----	------	----	--------------	-----------

1	Double socket outlet	1				
---	----------------------	---	--	--	--	--

**TRUNKING/CABLE TRAY -Supply and install trunking installation complete with fixings, example hangers, caddy clips, nuts, washers, rivets, splices, Tee- pieces, 4 way cross overs, elbows, clamps, anchors, etc.**

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2



### TRUNKING

Item	Description	QTY	Type	Ph	Manufacturer	Load Type
1	16 x 16mm PVC white compact mini-trunking.					
2	40 x 25mm PVC white compact mini-trunking.					

**CABLE TRAY - Hot dipped galvanised steel mesh cable tray installed against wall / floor. Item to include all brackets, stainless steel mounting screws / bolts required:**

Item	Description	QTY	Type	Ph	Manufacturer	Load Type
1	200mm wide	1				
2	100mm wide	1				
3	50mm wide	1				
4	Labelling of all cables.	1				
5	Allow to arrange for the isolation of the electrical supply of the library. Install breakers as specified in existing Main DB and service the back-up generator.	1				

### Fibre Optic & Data Installation

Item	Description	QTY	Type	Ph	Manufacturer	Load Type
1	4-Core Fibre Optic Cable (Multi Mode)	1				
2	Splicing of 4-Core Fibre Optic Cable (Multi Mode)	1				
3	Cat5 networking cable, including splicing etc.	1				

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

4	Cut off old RJ45 module in existing power skirting and re-install (Crimp) new RJ45 module in new power skirting. Complete	1				
5	Remove data, communication, power cables and wires from Power skirting and re-install in new power skirting (Measured per m power skirting).	1				
6	Re-commission entire data installation to ensure all the data points is in a working condition.	Sum				
7	Re-label entire data installation to ensure all the data points are labelled.	1				
<b>Light fittings - The rate shall include the installation and connection only of the following new light fittings</b>						
Item	Description	QTY	Type	Ph	Manufacturer	Load Type
1	1200 x 600mm Recessed	1				
2	Recessed downlighter	1				
3	Cove Lighting (strip light c/w splices, etc.)	1				
4	Spot light (on surface mounted track)	1				
5	Wall mounted Bulkhead	1				
6	Footlight (300mm AFFL)	1				
7	Open channel 2 tube fluorescent fitting	1				
8	Ceiling mounted fitting	1				
9	Flood light	1				
10	Bollard light	1				

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

11	Open channel 1 tube fluorescent fitting	1				
12	Emergency Exit fitting	1				
13	Motion Detection Sensors	1				
14	230V surface mounted track c/w splices, brackets, etc.	1				

**Photo Cell**

Item	Description	QTY	Type	Ph	Manufacturer	Load Type
1	Supply, delivery and installation of a Photo cell	1				

**EARTHING AND LIGHTNING PROTECTION - Supply and installation of main earthing system complete with all sundry materials and as follows :**

Item	Description	QTY	Type	Ph	Manufacturer	Load Type
1	70 mm <sup>2</sup> earth wire	m				
2	70 mm <sup>2</sup> earth wire ends lugged	1				
3	70 mm <sup>2</sup> earth wire ends clamped at earth rods	1				
4	1,83 m. long earth electrodes	1				
5	Earth test points, incl. Copper to aluminium joints	1				
6	CADWELD conductor joints	1				
7	Bond earth wire to building reinforcement	m				
8	500 x 50 x 3mm earthbar c/w accessories	1				
9	300 x 50 x 3mm earthbar c/w accessories	1				

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

**FIRE DETECTION SYSTEM**

Item	Description	QTY	Type	Ph	Manufacturer	Load Type
1	Supply and install Fire Control Panel	1				
2	Supply and install Passive mimic	1				
3	Supply and install Batteries	1				
4	Supply and install Optical Smoke Detectors	1				
5	Supply and install Heat Smoke Detectors	1				
6	Supply and install manual call points	1				
7	Supply and install Siren/Strobe light	1				
8	Labelling of complete Fire Detection system	Sum				
9	Fire Retardant wiring	m				
10	Supply and install 25mm dia PVC Conduit	m				
11	25mm 4 way round box complete with lid	1				

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Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

### C3.3 Contractors Drawings

The contractor appointed to carry out the work shall produce a comprehensive set of detailed design drawings suitable for issue for construction as well as detailed shop drawings, prior to manufacture of equipment. They shall also be responsible for As-Built drawings and operating and maintenance manuals on completion.

The following civil drawings shall be provided:

- Plant lay out showing the points of connection of the panels.

#### - Construction

#### Site establishment

#### Services and Facilities provided by the Employer.

#### 1. Water Sources

There is a potable water supply available. The Site has a water reticulation system which connects directly to a Rand Water supply main. The Contractor will be responsible for supplying all pipework required to convey the water to the Works and for all associated fittings including for an isolating valve and approved water meter. He will further be responsible for paying a proportionate share of the water consumption charges at the ruling tariff at the time of using the water. The Contractor shall regulate his usage of water so as not to inconvenience other users and if necessary supply and erect a storage tank of sufficient capacity to even out unacceptable peak demands. The connection may only be made on the written consent of the Engineer after he is satisfied that the Contractor has made all the necessary and proper arrangements for receiving the water. No warranty is offered or given by the Employer that the existing available reticulated water supply will be adequate for the Contractor's purposes nor that such supply is in any way guaranteed.

Final effluent may be used for water testing of structures and pipelines and shall be available downstream of the final clarifiers or, subject to the Engineers approval, the pressurized reticulation system. The Contractor shall be responsible for supplying all pumps pipe work, tanks and for all associated fittings and he shall not interfere in anyway with the normal operation of the plant. Any temporary works which are approved by the Engineer shall be removed on completion and any damage resulting from his activities, repaired by the Contractor, at his own cost, to the satisfaction of the Engineer.

As the Site is situated on dolomitic strata no leakage or indiscriminate discharge of water will be permitted on or about the Works and failure on the part of the Contractor or his employees to observe this requirement will result in the termination of water supplies until such time as any shortcomings in this regard are rectified.

#### 2. Electricity Supply

The Site is provided with ESKOM power. One or more 380 V 50 Hz power supply points can be made available to the Contractor. The Contractor will be responsible for supplying his own distribution and meter board at each point and cabling to the positions of usage. He shall also be responsible for paying all costs of work required to be carried out by ERWAT in providing the connection and subsequent removal on completion of the Contract and for paying his proportionate share of the electricity charges at the tariff ruling at the time of using the power. The contractor shall be responsible for providing an installation which complies in all respects with the standing regulations of the supply authority. Failure on the part of the Contractor to observe these requirements or maintain his installations in terms therefore will result in the termination of electrical power supplies until such time as any shortcomings in this regard are rectified.

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

No warranty is offered or given by the Employer that the existing available electricity supply will be adequate for the Contractor's purposes nor that such supply is in any way guaranteed.

### 3. Sanitary Services

No sanitary services are available for use by the Contractor at the site.

### 4. Telephone Services

To be provided by Contractor

### 5. Area for Contractor's Site Establishment

The proposed site of the Contractor's offices, workshops, stores and plant yard will be indicated on site, if requested.

- Facilities provided by the Contractor

The Contractor is required to provide a construction camp including offices, workshop, materials, store, sanitary facilities, offices and equipment for his own use as required.

- **Site Usage**

The Contractor; his personnel; and his subcontractors; and suppliers; shall confine their activities to the demarcated site of the Works and the direct access roads thereto. Temporary routes shall be subject to the written approval of the Engineer and be subject to the applicable Standardized Specifications.

- **MANAGEMENT OF THE WORKS**

- **Planning and Programming**

The programme referred to in the General Conditions of Contract shall be a network- based programme in accordance with the precedence method; a detailed cash flow graph indicating projected monthly invoice amounts shall also be provided. The critical path of the programme of work shall be clearly indicated and the programme monitored continually and updated monthly by the Contractor in accordance with his progress.

(1) In compiling the programme of work, the Contractor shall incorporate the following important specific requirements and constraints:

- (a) The identification and marking of affected services prior to commencing construction works.
- (b) The requirements of the Environmental Management Plan (EMP) as specified in the relevant sections of the Particular Specifications and the requirements in respect of inspections and community liaison.
- (c) The requirements of the Occupational Health Safety (OHS) Act of 1993 and the Construction Regulations, 2014.
- (d) The relocation of services.
- (e) An allowance to accommodate "normal" rain days.

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Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

- (2) The programme submitted shall include at least the following details:
- (a) A work breakdown structure identifying the major activity groups.
  - (b) The critical path shall be indicated and floats on non-critical activities shall be shown.
  - (c) The working hours per day, week and month allowed for in the programme with details of resource allocations per activity.
  - (d) Production rates for key activities, e.g. engineering, fabrication, delivery, installation, commissioning, etc.
- (3) In addition the Contractor shall submit to the Engineer at monthly intervals a progress report indicating the following details:
- (a) Work completed in previous month and total progress to date, per activity.
  - (b) Activities behind programme, for which the Contractor shall detail all reasons for such delays as well as the measures to be implemented to make up delays.
  - (c) A GANTT chart showing the original programme, the latest approved version of the programme, actual progress achieved and revised completion sates, if and when applicable.

Failure to comply with all of the foregoing requirements shall entitle the Engineer to use a programme based on his own assumptions to evaluate claims for extension of time for completion of the works, or for additional compensation.

- **Quality Management**

The requirements for Quality Management to be executed under the Contract are set out in Standard Specifications – Section A.

- **Interpretations**

**C. Abbreviations**

In this Specification, the following abbreviations will apply: This specifications will be applicable to equipment delivered and will not form part of the evaluation process.

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Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

- **Location of the Works**

ERWAT WCW	Stand/ Farm Positioned	Street Name	Co-ordinates
<b>Drainage District 3</b>			
<b>Esther Park</b>	Park 753, Ester Park, Extension	R25	S 26°05'58" E 28°11'02"
<b>Hartebeestfontein</b>	Portion 20 & Remaining of Portion 4 of farm Hartebeestfontein 17	Bapsfontein Road, Norkem Park, Kempton park	S 26°01'11" E 28°17'1"
<b>Olifantsfontein</b>	Olifantsfontein 402 IR	Ceramic Road, Olifantsfontein	S 26°56'26" E 28°12'56"
<b>Rynfield</b>	Portion 75 of Vlakfontein 161	Sarel Cilliers, Rynfield	S 26°09'37" E 28°21'30"
<b>Benoni</b>	Remaining Portion 6 of Rietfontein	Lancaster Road, Benoni	S 26°12'30" E 28°19'01"
<b>Drainage District 4</b>			
<b>Ancor</b>	Remaining Extension of Portion 151 farm Daggafontein 125	Ermelo Road, Springs	S 26°16'11" E 28°28'56"
<b>Daveyton</b>	Daveyton	Holfontein Road, Etwatwa	S 26°12'30" E 28°19'01"
<b>Jan Smuts</b>	Portion 73 of farm Weltevreden 118	Wanderers Street Extension, Brakpan	S 25°57'43" E 28°12'49"
<b>JP Marais</b>	Portion 70 of farm Modderfontein 76	Cnr N12 / Kingsway Road	S 25°57'43" E 28°12'49"
<b>Welgedacht</b>	Portion 81 & 82 of farm Welgedacht	1 Carnation Road Welgedacht AH, Springs	S 26°12'30" E 28°19'01"
<b>Drainage District 5</b>			
<b>Carl Grundling</b>	Portion 58 of farm Varkenfontein 169	Vorsterkroon, Nigel	S 26°12'30" E 28°19'01"
<b>Herbert Bickley</b>	Portion 13 of farm Maraisdrift 190	Heidelberg Road, Maraisdrift, Nigel	S 26°12'30" E 28°19'01"
<b>Heidelberg</b>	Portion 28 of farm Boschhoek 385	Vaaldam Road, Heidelberg	S 25°57'43" E 28°12'49"
<b>Ratanda</b>	Nooitegedacht 390	Vaaldam Road, Ratanda	S 26°12'30" E 28°19'01"
<b>Tsakani</b>	Portion 22 of farm Vlakfontein 161	Cnr Modjadji and khama Streets	S 26°12'30" E 28°19'01"
<b>Drainage District 6</b>			

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2



<b>Dekema</b>	Portion 10 of Kattlehong 151	Brickfield Road, Motsamai Section	S 26°12'30" E 28°19'01"
<b>Rondebult</b>	Remaining Portion 27 Rondebult 136	Cnr Kalk/ Van dyk Road, Rondebult	S 26°12'30" E 28°19'01"
<b>Vlakplaats</b>	Portion 191 farm of Vlakplaats 138	Cnr Brickfield / Bierman Street, Vosloorus	S 26°12'30" E 28°19'01"
<b>Waterval</b>	Portion 50,62,12 and 1 of farm Waterval 150 and Remaining portion 3 of the farm Witkop	Waterfal Farm, Meadow Road, kliprivier	S 26°12'30" E 28°19'01"

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Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

### C3.4 ENGINEERING

- Contractor's Design, Drawings and Information to be provided

These requirements list below will be implemented as part of the service level agreement (SLA)

The following must be provided by the Contractor

VENDOR INFORMATION AND DOCUMENT REQUIREMENT LIST	
DESCRIPTION	WHEN REQUIRED
Project Programme	Order + 1 Week
Design calculations calculation of the cable conductor size	Tender document and data book
Equipment brochures	Tender document and data book
Design calculations for the equipment	Order + 3 weeks and data book
GA drawings	Order + 3 weeks and data book
Schematic diagrams	Order + 3 weeks and data book
Foundation/Concrete Plinth details	Order + 3 weeks and data book
Manufacturing program	Order + 3 weeks
Manufacturing quality control plan	Order + 3 weeks and data book
Installation quality control plan	Order + 6 weeks and data book
Installation risk assessment and method statement including safe work procedure.	Order + 6 weeks and data book
Performance test certificate	data book
Electrical test certificate (including COC)	data book
Vendors cert. of conformance if any	data book
Operating / maintenance manual	data book
Progress Reports	Bi-Weekly

#### Note 1:

The Programme shall identify all major activities, principal items of plant and equipment and their components. The following activities and their duration shall, in addition to the requirements of the Conditions of Contract, form the minimum basis for the preparation of the Programme:-

- Insurance Bond and general obligations
- Design
- Plant equipment and arrangement drawings
- Project Quality Plan

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

- Schedules
- HAZOPS
- Procurement
- Inspection and works testing
- Delivery
- Installation
- Adjustment
- Testing
- Commissioning
- Defects Notification Period

**Note 2:**

The Contractor shall provide a monthly progress report to the Engineer. The report shall cover at least the following aspects:

- progress of various activities in comparison to original program
- attainment of key milestones
- list of purchase orders placed
- names and positions of key personnel working on the project
- staffing levels on site (when site work commences)
- identification of any aspects needing to be addressed by the Employer or the Engineer

- **Drawings**
- **Contractors Drawings**

The contractor appointed to carry out the work shall produce a comprehensive set of detailed design drawings suitable for issue for construction as well as detailed shop drawings, prior to manufacture of equipment. They shall also be responsible for As-Built drawings and operating and maintenance manuals on completion.

The following electrical drawings shall be provided:

- Generator GA Drawing
- Detailed cable layout routes
- Wiring and Termination schedules as required for construction
- Equipment schedules
- Equipment Data Sheets

- **CONSTRUCTION**

**Standards**

It shall be the responsibility of the Contractor to obtain, at his own expense, the most recent copies of the relevant editions of the documents referred to.

The Contractor shall keep copies of the Standard Specifications, copies which are available from the South African Bureau of Standards.

For the purpose of this Contract the following Standard Specifications shall apply to all items supplied and does not form part of the evaluation process:

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Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

- **Electrical Standards and specifications**

All material and equipment shall comply with recognized national and international standard specifications.

Typically the following standards shall apply:

- |  |                         |
|--|-------------------------|
| • Transformers                           | SANS 780                |
| • Mini Subs                              | SANS 1029 and SANS 1030 |
| • Low voltage MCCs                       | SANS 60439              |
| • Low voltage cable                      | SANS 1507               |
| • Luminaires                             | SANS 1279 & SANS 60598  |
| • Earthing and lightning protection      | SANS 10313 & 61024      |
| • Regulations for the wiring of premises | SANS 10142 -1 (2003)    |

In addition there shall be compliance with:

- The Occupational Health and Safety Act
  - Regulations of the Supply Authority
  - Local Authority by-laws
  - Regulations of the Fire office
  - Telecommunications legislation
- Site establishment
- *Services and Facilities provided by the Employer.*

• **Electricity Supply**

The Site is provided with ESKOM/Municipality power. One or more 380 V 50 Hz power supply points can be made available to the Contractor. The contractor shall be responsible for providing an installation which complies in all respects with the standing regulations of the supply authority. Failure on the part of the Contractor to observe these requirements or maintain his installations in terms therefore will result in the termination of electrical power supplies until such time as any shortcomings in this regard are rectified.

No warranty is offered or given by the Employer that the existing available electricity supply will be adequate for the Contractor's purposes nor that such supply is in any way guaranteed.

**6. Telephone Services**

To be provided by Contractor

**7. Area for Contractor's Site Establishment**

The proposed site of the Contractor's offices, workshops, stores and plant yard will be indicated on site if requested where applicable.

*-Facilities provided by the Contractor*

The Contractor is required to provide a construction camp including offices, workshop, materials, store, sanitary facilities, offices and equipment for his own use as required.

- Site Usage

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

The Contractor; his personnel; and his subcontractors; and suppliers; shall confine their activities to the demarcated site of the Works and the direct access roads thereto. Temporary routes shall be subject to the written approval of the Engineer and be subject to the applicable Standardized Specifications.

- **MANAGEMENT OF THE WORKS**

- Planning and Programming

The programme referred to in the General Conditions of Contract shall be a network- based programme in accordance with the precedence method; a detailed cash flow graph indicating projected monthly invoice amounts shall also be provided. The critical path of the programme of work shall be clearly indicated and the programme monitored continually and updated monthly by the Contractor in accordance with his progress.

(4) In compiling the programme of work, the Contractor shall incorporate the following important specific requirements and constraints:

- (f) The identification and marking of affected services prior to commencing construction works.
- (g) The requirements of the Environmental Management Plan (EMP) as specified in the relevant sections of the Particular Specifications and the requirements in respect of inspections and community liaison.
- (h) The requirements of the Occupational Health Safety (OHS) Act of 1993 and the Construction Regulations, 2003.
- (i) The relocation of services.
- (j) An allowance to accommodate "normal" rain days.

(5) The programme submitted shall include at least the following details:

- (e) A work breakdown structure identifying the major activity groups.
- (f) The critical path shall be indicated and floats on non-critical activities shall be shown.
- (g) The working hours per day, week and month allowed for in the programme with details of resource allocations per activity.
- (h) Production rates for key activities, e.g. engineering, fabrication, delivery, installation, commissioning, etc.

(6) In addition the Contractor shall submit to the Engineer at monthly intervals a progress report indicating the following details:

- (d) Work completed in previous month and total progress to date, per activity.

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

- (e) Activities behind programme, for which the Contractor shall detail all reasons for such delays as well as the measures to be implemented to make up delays.
- (f) A GANTT chart showing the original programme, the latest approved version of the programme, actual progress achieved and revised completion sates, if and when applicable.
- Failure to comply with all of the foregoing requirements shall entitle the Engineer to use a programme based on his own assumptions to evaluate claims for extension of time for completion of the works, or for additional compensation.

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Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

## ERW2311/01: APPOINTMENT OF PANEL SERVICE PROVIDER/S IN A FRAMEWORK CONTRACT FOR THE SUPPLY, INSTALLATION AND COMMISSIONING OF ELECTRICAL DISTRIBUTION SWITCHBOARD AND MOTOR CONTROL CENTRES FOR VARIOUS SITES AT EKURHULENI WATER CARE WORKS ON 'AS AND WHEN REQUIRED' BASIS FOR A PERIOD OF THIRTY-SIX (36) MONTHS

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Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2



### **C3.5. INTRODUCTION AND BACKGROUND**

#### **C3.5.1.1 BACKGROUND TO THE HEALTH AND SAFETY SPECIFICATION**

The Construction Regulations 2014 place the onus on the Client to prepare a preconstruction Health and Safety specification, highlighting all risks not successfully eliminated during design setting standards for Health and Safety during construction phase.

#### **C3.5.1.2 PURPOSE OF THE HEALTH AND SAFETY SPECIFICATION**

To assist in achieving compliance with the Occupational Health and Safety Act 85/1993 and the promulgated Construction Regulations 2014 in order to reduce incidents and injuries. These specifications shall act as the basis for the drafting of the construction phase Health and Safety plan by the Contractor.

The specification sets out the requirements to be followed by the Principal Contractor and their Contractors so that the Health and Safety of all persons potentially at risk may receive the same priority as other facets of the project e.g. Cost, programmed, environment, quality etc.

### **C3.5.2 HEALTH AND SAFETY SPECIFICATION**

#### **C3.5.2.1 SCOPE**

This specification covers the requirements for eliminating and mitigating incidents and injuries on the **ERW2311/01: APPOINTMENT OF PANEL SERVICE PROVIDER/S IN A FRAMEWORK CONTRACT FOR THE SUPPLY, INSTALLATION AND COMMISSIONING OF ELECTRICAL DISTRIBUTION SWITCHBOARD AND MOTOR CONTROL CENTRES FOR VARIOUS SITES AT EKURHULENI WATER CARE WORKS ON 'AS AND WHEN REQUIRED' BASIS) FOR 36 MONTHS**

The scope also addresses legal compliance, hazard identification and risk assessment, risk control and promoting a Health and Safety culture amongst those working on the project. The specification also makes provision for the protection of those persons other than employees.

##### **C3.5.2.1.2 Provision for Health & Safety Cost**

The Principal Contractor must make adequate provision for the cost of Health & Safety Measures during the construction process as required by the Construction Regulation 5(1)(g).

The health and safety cost will be recovered from the provisional sum allocated for this purpose.

#### **C3.5.2.2 INTERPRETATIONS**

##### **C3.5.2.2.1 APPLICATION**

This specification is a compliance document drawn up in terms of the South African legislation and is therefore binding. It must be read in conjunction with relevant legislation as noted previously.

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Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

### **C3.5.2.2.2 DEFINITIONS**

The definitions as listed in the Occupational Health and Safety Act 85/1993 and Construction Regulations 2014 shall apply.

### **C3.5.2.3 MINIMUM ADMINISTRATIVE REQUIREMENTS**

#### **C3.5.2.3.1 NOTIFICATION OF INTENTION TO COMMENCE CONSTRUCTION WORK**

The Principal Contractor shall notify the provincial Director of the Department of Employment and Labour in writing that construction work commences.

#### **C3.5.2.3.2 ASSIGNMENT OF CONTRACTOR'S RESPONSIBLE PERSONS TO SUPERVISE HEALTH AND SAFETY ON SITE**

The Principal Contractor shall submit supervisory appointments as well as any relevant Appointments in writing (as stipulated by the OHS Act and Construction Regulations), prior to commencement of work. Proof of competency must be included. See annexure B.

#### **C3.5.2.3.3 COMPETENCY FOR CONTRACTOR'S APPOINTED COMPETENT PERSON**

The Principal Contractors' competent persons for the various risk management portfolios shall fulfil the criteria as stipulated under the definition of Competent in accordance with the Construction Regulations 2014. Proof of competence for the various appointments must be included.

#### **C3.4.5.3.4 COMPENSATION OF OCCUPATIONAL INJURIES AND DISEASES ACT 130 OF 1993 (COIDA)**

The Principal Contractor shall submit a letter of good standing from their Compensation Insurer-FEM or Compensation Commissioner to the Client's Representative as proof of registration. Contractors shall submit proof of registration to their Contractor before they commence work on site.

The Principal Contractor shall ensure that the letter of good standing is kept valid for the duration of the contract period.

#### **C3.5.2.3.5 OCCUPATIONAL HEALTH AND SAFETY POLICY**

The Contractor and their Contractors shall submit a Health and Safety policy signed by their Chief Executive Officer. The Policy must outline objectives and how they will be achieved and implemented by the Company / Contractor.

#### **C3.5.2.3.6 HEALTH AND SAFETY ORGANOGRAM**

The Principal Contractor and their Contractors shall submit an organogram, outlining the Health and Safety site Management Structure including the relevant appointments / competent persons. In cases where appointments have not been made, the organogram shall reflect the intended positions. The organogram shall be updated when there are any changes in the site Management Structure.

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Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

### **C3.5.2.3.7 PRELIMINARY HAZARD IDENTIFICATION AND RISK ASSESSMENT AND PROGRESS HAZARD IDENTIFICATION AND RISK ASSESSMENT**

- Roof Work
- Mobile Cranes Management System
- Mechanical
- Working at heights, as per CR8 – Fall Protection Plan, Scaffolding Management
  - Person falling
  - Material falling
  - Protection of decking edges, finished floor slab edges, stairways, floor penetrations, lift shafts, any other openings and areas from where persons may fall.
- Excavations
  - Collapse of Walls
  - People/Equipment falling in Excavations
  - Shoring
  - Underground services
  - Drainage
  - Pipe-Jacking operations
- Confined Space entry
- Formwork and Support Work
  - Casting of Concrete
- Manual and Mechanical Handling o Lifting and placement of pipes o Overhead works
- Noise Control
- Dust Control

Principal Contractor to ensure that these risk assessments as well as other risks identified by them are updated monthly or as the risk change and communicated to all relevant parties. CR 9(3).

### **C3.5.2.3.8 HEALTH AND SAFETY REPRESENTATIVE(S)**

The Principal Contractor and their Contractors shall ensure that Health and Safety Representative(s) are appointed under consultation and trained to carry out their functions. The appointment must be in writing.

The Health and Safety Representative shall carry out regular inspections, keep records and report all findings to the Responsible Person forthwith and at Health and Safety meetings

### **C3.5.2.3.9 HEALTH AND SAFETY COMMITTEES**

Principal Contractor shall organize monthly Health & Safety meetings. Minutes and records shall be kept. Principal Contractors Health & Safety representative and responsible person shall attend this meeting.

### **C3.5.2.3.10 HEALTH AND SAFETY TRAINING**

#### **C3.5.2.3.10.1 Induction**

Principal Contractor shall ensure that all undergo site-specific induction presented by a competent person and proof of it too.

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

### C3.5.2.3.10.2 Awareness

The Principal Contractor shall ensure that, on site, periodic toolbox talks take place at **least once per week**. These talks should deal with risks relevant to the construction work at hand. A record of attendance shall be kept in the Health and Safety file. All Principal Contractor have to comply with this minimum requirement.

### C3.5.2.3.10.3 Competency

All competent persons shall have the knowledge, experience, training and qualifications specific to the work they have been appointed to supervise, control, and carry out. This will have to be assessed on a regular basis e.g.

Periodic audits by the Client's Health & Safety Agent, progress meetings, etc. The Contractor is responsible to ensure that competent Contractors are appointed to carry out construction work.

### C3.5.2.3.11 GENERAL RECORD KEEPING

The Principal Contractor and their Contractors shall keep and maintain Health and Safety records to demonstrate compliance with this Specification, with the OHS Act 85/1993, and with the Construction Regulations 2014. The Principal Contractor shall ensure that all records of incidents / accidents, emergency procedures training, inspections, audits, etc. are kept in a Health and Safety file held in the site office.

The Health and Safety File shall be submitted for approval prior to commencement of work and Annexure D shall be used to evaluate the file.

The Principal Contractor must ensure that every sub-Contractor keeps its own Health and Safety file, maintains the file and make it available on request (The file must include the Sub-Contractor's health and safety plan). These records are crucial for inclusion in the Principal Contractors' consolidated health and safety file for handover to the Client on completion of construction work.

### C3.5.2.3.12 HEALTH AND SAFETY AUDITS, MONITORING AND REPORTING

***The Client's Health & Safety Agent shall conduct monthly Health and Safety audits of the work. Operations including a full audit of physical site activities as well as an audit of the administration Health and Safety. The Principal Contractor is obligated to conduct similar audits on their Contractors.***

Detailed reports of the audit findings and results shall be reported on at all levels of project management meetings / forums. Copies of the Client audit reports shall be kept in the Primary Project Health and Safety file while the Principal Contractor audit reports shall be kept in their file, a copy being forwarded to the Client. Principal Contractor has to audit their Contractors and keep records of these audits in their Health and Safety files, available on request.

### C3.5.2.3.13 EMERGENCY PROCEDURES

The Principal Contractor shall compile a comprehensive Evacuation Plan with assemble point and contact details in the case of any emergency supplied by the Client's Health & Safety Agent.

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Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

#### C3.5.2.3.14 FIRST AID BOXES AND FIRST AID EQUIPMENT

The Principal Contractor and their Contractors shall appoint in writing First Aider(s). The appointed First Aider(s) are to be sent for accredited first aid training. Valid certificates are to be kept on site. All Principal Contractor with more than 5 employees shall supply their own first aid box. Principal Contractor with more than 10 employees shall have trained, certified first aider on site at all times & First aid Box adequately stocked at all times.

#### C3.5.2.3.15 ACCIDENT / INCIDENT REPORTING AND INVESTIGATION

Injuries are to be categorized into first aid, medical, disabling and fatal. The Principal Contractor must stipulate in its construction phase Health and Safety plan how it will handle each of these categories. When reporting injuries to the Client, these categories shall be used. All contractors must investigate and report on the 4 categories of injuries to the Principal Contractor at least monthly. Contractors must investigate injuries and accidents involving their employees within seven days of the incident in the form on Annexure1 (General Administrative Regulations) and forward a copy on the investigation report to the principal contractor forthwith. **All incidents reportable in terms of the provision of Section 24 of the OHS Act 1993 must be reported to the local Dept. of Employment and Labor in the prescribed manner.**

The Principal Contractor must report all injuries to the Client in the form of a spreadsheet, which includes all contractor injuries/incidents and man-hours worked for the month as well as the cumulative total. This report must be done on a monthly basis and must form part of the Principal Contractor's progress report.

#### C3.5.2.3.16 HAZARDS AND POTENTIAL SITUATIONS

The Principal Contractor shall immediately notify the Client's Health & Safety Agent of any hazardous or potentially hazardous situations that may arise during the performance of construction activities.

#### C3.5.2.3.17 PERSONAL PROTECTIVE EQUIPMENT (PPE) AND CLOTHING

The Principal Contractor shall ensure that all workers are issued and wear hard hats, protective footwear and overalls. The Principal Contractor and their Contractors shall make provision and keep adequate quantities of SABS or SANS approved PPE on site at all times.

#### C3.5.2.3.18 OCCUPATIONAL HEALTH AND SAFETY SIGNAGE

The Principal Contractor shall provide adequate on-site OHS signage. Including but not limited to: "no unauthorized entry", "report to site office", "site office", and "hardhat area". Signage shall be posted up at all entrances to site as well as on site in strategic locations e.g. Access routes, entrances to structures and buildings, scaffolding and other potential risk areas / operations. All Contractors to adhere to it.

#### C3.5.2.3.19 CONTRACTORS

The Principal Contractor shall ensure that all Contractors appointed by them comply with this Specification, the OHS Act 85/1993, and Construction Regulation 2014.

The Principal Contractor may only appoint a sub-contractor after approving the sub-contractor's health & safety plan. The Principal Contractor must audit each of its Contractors on a monthly

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Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

basis, with audit reports filed in the health & safety file on site. The audit must include an administrative assessment as well as a physical inspection of the contractor's health & safety system.

The Principal Contractor must stop any Contractor from carrying out construction work that is not in accordance with the Principal Contractor's or Contractor's health & safety plan or if there is an immediate threat to the health and safety of persons.

The Principal contractor shall take all reasonable steps necessary to ensure co- operation between all Contractors to enable each of those Contractors to comply with the provisions of these regulations;

The Principal Contractor must ensure that their Contractor is registered and in good standing with a recognized compensation fund or with a licensed compensation insurer prior to work commencing on site;

The Principal Contractor must ensure that potential Contractors submitting tenders have made provision for the cost of health and safety measures during the construction process; The Principal Contractor shall discuss and negotiate with their Contractor the contents of the health and safety Plan and shall finally approve that plan for implementation;

#### C3.5.2.3.20 PENALTIES

Penalties may be imposed for ongoing non-compliance to the provisions of the Client's Health and Safety specification and Principal Contractors' health & safety plans. The penalty procedure shall consist of a written warning with a compliance time frame. **Failure to comply within the time frame stipulated would result in a R1000 penalty per non-compliance item per day that the non- compliance persists.**

#### C3.5.2.3.21 A HEALTH AND SAFETY OFFICER CR 8(5)

**Subject to the applicable regulations in relation to the activities the Principal Contractor shall provide a full-time or part-time safety officer on site and proof of their competency to be attached to their appointment.**

#### C3.5.2.4 PHYSICAL REQUIREMENTS

##### C3.5.2.4.1 CIVIL WORK

Principal Contractor to ensure that the Contractor complies with Construction regulation 21 and that the following is undertaken during civil work:

- A competent site supervisor to be on site at all times.
- Plant and equipment inspected daily and registers kept.
- All employees performing construction work shall have a valid medical certificate of fitness issued by an Occupational Health Practitioner.
- All operators of plant and vehicles: trained, competent and physically and psychologically fit. Certificates to be put in their Health & Safety File.
- Workers that are working close to the traffic to be visible and are to wear reflective vests.
- Adequate safety signage to be posted ahead of any work area in the road.

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Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

- All signage, including delineators to be maintained and kept clean at all times.
- The required PPE must be worn at all times (Hard hats, safety shoes, overalls, etc.)
- Risk assessments to be conducted on all high-risk activities.
- Speed reduction road signs to be posted.
- Dust control practices used to limit dust generation.

#### **Laying of pipes / Backfilling**

- A competent site person to supervise lifting operations at all times.
- No employee to stand under any suspended loads.
- Loads must not be slewed over personnel, plant, site huts or property.
- All lifting equipment and accessories must be marked with the Safe Working Load.
- Slings must not be placed on sharp edges.
- Workers to wear proper PPE at all times.
- Work to be stopped when weather conditions prevent safe operations during trenching work or laying of pipes.
- Everyone to stand clear of any area being backfilled by mobile plant.

#### **C3.5.2.4.2 EXCAVATIONS, SHORING, DEWATERING OR DRAINAGE**

The Principal Contractor and any relevant Contractors shall make provision at tendering stage for shoring, dewatering or drainage of any excavations as per this specification.

The Principal Contractor shall make sure that:

- The excavations are inspected before every shift, after any blasting, after an unexpected fall of ground, after any substantial damage to the shoring and after rain, records kept thereof.
- Safe work procedures have been communicated to the workers,
- The safe work procedures are enforced and maintained by the Contractor's Responsible Persons at all times,
- The requirements as per Regulation 13 of the Construction Regulations are adhered to.
- Where pipe-jacking activities are taking place safe work procedures/method statements to be submitted to Client's Health & Safety Agent prior to these activities.

Method statement to be developed where shoring will be done, especially near public roads and also where explosives will be / are used.

#### **C3.5.2.4.3 CONFINED SPACE ENTRY**

The Principal Contractor to prepare a confined space procedure in line with General Safety Regulation (5) OHSA Act

#### **C3.5.2.4.4 EXISTING STRUCTURES**

Any adjacent structures that may be affected by work must be considered in the planning process. Precautionary measures must be detailed and applied to prevent damage, uncontrolled collapse of existing structures and/or loss to property and persons during the entire construction phase.

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Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

#### **C3.5.2.4.5 EDGE PROTECTION AND PENETRATIONS**

The Principal Contractor must ensure that all exposed edges and openings are guarded and demarcated at all times until permanent protection has been erected. The Principal Contractors' risk assessment must include these items finished floor slab edges, floor penetrations, and all other openings and areas where a person may fall.

#### **C3.5.2.4.6 HAZARDOUS CHEMICAL AGENTS (HCA)**

The Principal Contractor working with Hazardous chemical substances to obtain copies of all the (SDS) Safety Data Sheets and this is to be kept on site and a copy to be forwarded to Client's Health & Safety Agent.

#### **C3.5.2.4.7 STACKING OF MATERIALS**

The Principal Contractor shall ensure that there are sufficient appointed stacking supervisors and that all materials and equipment is stacked and stored safely. Double handling of material should be avoided and for this purpose, pallets and other stacking options should be used.

#### **C3.5.2.5 PLANT AND MACHINERY**

##### **C3.5.2.5.1 CONSTRUCTION PLANT**

The Principal Contractor shall ensure that all such plant complies with the Requirements of the OHS Act 85/1993 and Construction Regulations 2014. The Principal Contractor shall inspect and keep records of inspections of construction plants used on site. Only authorized / competent persons are to use machinery under proper supervision. Appropriate PPE must be provided and maintained at all times.

##### **C3.5.2.5.2 VESSELS UNDER PRESSURE (VUP) AND GAS BOTTLES**

The Principal Contractor shall comply with the Vessels under Pressure Regulations, including:

Providing competency and awareness training to the operators, Providing PPE, Inspect Equipment regularly and keep record of inspections, Provide appropriate firefighting equipment (Fire Extinguishers) on hand.

##### **C3.5.2.5.3 FIRE EXTINGUISHERS AND FIRE FIGHTING EQUIPMENT**

The Principal Contractor shall provide adequate, regularly serviced firefighting equipment located at strategic points on site, specific to the classes of fire likely to occur. The appropriate notices and signs must be posted as required.

##### **C3.5.2.5.4 HIRED PLANT AND MACHINERY**

The Principal Contractor shall ensure that any hired plant and machinery used on site is safe for use. The necessary requirements as stipulated by the OHS Act 85/1993 and Construction Regulations 2014 shall apply. The Contractor shall ensure that operators hired with machinery are competent and that certificates are kept on site in the Health and Safety file. All relevant Contractors must ensure the same.

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Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2



### C3.5.2.5.5 FORMWORK AND SUPPORT WORK FOR STRUCTURES

The Principal Contractor shall ensure that the regulation 12 of Construction Regulations 2014 are adhered to. These provisions must include but not be limited to ensuring that all equipment used is examined for suitability before use, that all formwork and support work is inspected by a competent person immediately before, during and after placement of concrete or any other imposed load and thereafter on a daily basis until the formwork and support work has been removed. Records of all inspections must be kept in a register on site.

### C3.5.2.5.6 GENERAL MACHINERY

The Principal Contractor shall ensure compliance with the Driven Machinery Regulations, which include inspecting machinery regularly, appointing a competent person to inspect and ensure maintenance, issuing PPE, and training those who operate the machinery.

### C3.5.2.5.7 HIGH VOLTAGE & ELECTRICAL INSTALLATIONS

If high voltage electrical lines are present on the site perimeter, the Contractor must be aware of the location of them and are to demarcate its positions.

These demarcations must be maintained throughout the duration of the construction work. The minimum safety clearances as per Electrical Machinery Regulation 15 must be adhered to. **All installation must comply with SANS 10142 & the regulations of the OHS Act 85/1993 and Construction Regulation 24.**

All temporary electrical installations must be inspected at least weekly.

### C3.5.2.5.8 PORTABLE ELECTRICAL TOOLS AND EXPLOSIVE POWERED TOOLS

The Principal Contractor shall ensure that use and storage of all explosive powered tools and portable electrical tools are in compliance with relevant legislation.

The Contractor shall ensure that all electrical tools, electrical distribution boards, extension leads, and plugs are kept in safe working order. Regular inspections and toolbox talks must be conducted to make workers aware of the dangers and the control measures that are to be implemented e.g. Personal protection equipment, guards, etc.

A competent person to undertake routine inspections and records are to be kept on file. Only authorized trained persons are to use the tools, the safe work procedures to apply. Awareness training to be carried out, compliance enforced at all times, and PPE are provided and maintained,

### C3.5.2.5.9 WELDING EQUIPMENT

- Only authorized / trained persons to use the equipment.
- The operators are to wear correct PPE - eye/ face/foot/body/respirator.
- Flashback arrestors are to be fitted on cylinders and gauges when using gas welding equipment. Fire prevention methods to be applied.
- Where electric arc welders are used, equipment only to be used in a dry area, protected from wetness.

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Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

### C3.5.2.5.10 PUBLIC AND SITE VISITOR HEALTH AND SAFETY

Both the Client and the Principal Contractor have a duty in terms of the OHS Act 85/1993 to do all that is reasonably practicable to prevent members of the public and site visitors from being affected by the construction activities. Site visitors must be briefed on the hazards and risks they may be exposed to and what measures are in place or should be taken to control these hazards and risks. A record of these inductions must be kept on site in accordance with the Construction Regulations. Principal Contractor to ensure that no unauthorized personal enter the construction area.

Method statements are to be drafted on traffic management on site, including work near the public.

### C3.5.2.5.11 NIGHT WORK

Adequate lighting to be provided where required. Personnel should not work alone at night.

## C3.5.2.6 OCCUPATIONAL HEALTH

### C3.5.2.6.1 OCCUPATIONAL HYGIENE

Exposure of workers to occupational health hazards and risks is very common in any work environment, especially in construction. Occupational exposure is a major problem and Principal Contractor must ensure that proper health and hygiene measures are put in place to prevent exposure to these hazards.

The Risk to be looked at includes:

#### Ventilation

Adequate ventilation / extraction / exhausting in hazardous areas e.g. chemicals / adhesives / welding / petrol or diesel/ motors running and in confined spaces / basements.

#### Noise

Tasks identified where noise exceeds 85 dBa. All reasonable steps are to be taken to reduce noise levels. Hearing protection is to be used where noise levels cannot be reduced to below 85 dBa.

#### Dust

Principal Contractor to ensure that employees working with grinders, saws & jackhammers, etc. are issued with dust masks and dust exposure to be minimized at all times.

### C3.5.2.6.2 WELFARE FACILITIES

The Principal Contractor shall ensure that welfare facilities complies with the requirements of regulation 30 of the Construction Regulations (2014).

The Principal Contractor will provide ablution facilities for all on site, including changing facilities & hand washing facilities. Safe and adequate facilities will be provided. Waste bins must be strategically placed and emptied regularly. Safe and clean storage areas must be provided for workers to store personal belongings and personal protective equipment.

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Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

### C3.5.2.6.3 ALCOHOL AND OTHER DRUGS

The Principal Contractor is to ensure that no alcohol and other drugs are allowed on site. No person may be under the influence of alcohol or any other drugs while on the construction site. Any person on prescription drugs must inform his/her superior, who shall in turn report this to the Contractor forthwith. Any person suffering from any illness / condition that may have a negative effect on his/her safety performance must report this to his/her superior, who shall in turn report this to the Principal Contractor forthwith.

Any person suspected of being under the influence of alcohol or other drugs must be sent home immediately, to report back the next day for a preliminary inquiry. The Contractor concerned must follow a full disciplinary procedure and a copy of the disciplinary action must be forwarded to the Principal Contractor for his records.

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Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

## **HEALTH AND SAFETY SPECIFICATIONS (HSS)**

### ***Annexure A***

The Principal Contractor must submit compliance with Annexure A within **one week** of receiving this Specification.

<b>HSS Item no.</b>	<b>REQUIREMENT</b>	<b>OHSa REQUIREMENT</b>	<b>SUBMISSION DATE</b>
<b>2.3.1</b>	Assignment of Responsible Persons to manage and supervise Construction work	OHS Act (section 16.2) & Construction Regulation 8(1) and 8(7)	Before commencement on site
<b>2.3.2</b>	Competence of Responsible Persons	OHS Act (section 16.2) & Construction Regulation 6	Together with H & S plan
<b>2.3.3</b>	Compensation of Occupational Injuries and Diseases - Proof of Registration- FEM or CC	COIDA	Together with H & S plan
<b>2.3.4</b>	Occupational Health and Safety Policy	OHS Act	Together with H & S plan
<b>2.3.5</b>	Health and Safety Organogram	Client Requirement	Together with H & S plan
<b>2.3.6</b>	Initial Hazard Identification and Risk Assessment based on the Client/s assessment	Construction Regulations.	Together with H & S plan
<b>2.3.7</b>	Health and Safety Representative	OHS Act	Submit as soon as There are more than 20 employees on site
<b>2.3.8</b>	Detailed breakdown of Safety cost	OHS Act	During SLA

*Contractor*

*Witness 1*

*Witness 2*

*Employer*

*Witness 1*

*Witness 2*

# Detailed breakdown of Safety cost (Construction Regulations 2014)

Tenderer (Company)		Responsible Person	Designation	Date
Project/Tender Title		Project/Tender No.	Project Location / Description	
#	Cost element	Unit Cost (R)	# of Units	Total Cost (R) (VAT incl)
1.				
2.				
3.				
4.				
5.				
6.				
7.				
8.				
9.				
10.				
11.				
12.				
13.				
14.				
15.				
Total Health and Safety Cost (R VAT incl)				

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

## **HEALTH AND SAFETY SPECIFICATIONS (HSS)**

### ***Annexure B***

The Principal Contractor shall make the following appointments according to the initial risk assessment: (further appointments could become necessary as the project progresses). Contractors shall make the relevant appointments as per their operations. The Client reserves the right to insist on any appointment as determined by its risk assessment of the Contractor concerned.

APPOINTMENT	OHS REFERENCE	REQUIREMENT
CEO Assignee	Section 16(2)	A competent person to assume the overall H & S responsibility - Contractor's Responsible Person
Construction Work Manager	CR 8.1	A competent person to manage construction activities and be responsible for Health and Safety related issues on site
Subordinate Construction Work Supervisors	CR 8.7	A competent person to assist with the daily supervision of construction / building work. The person(s) assist the Construction Work Supervisor
Health and Safety Representative(s)	Section 17	A competent person(s) to supervise construction activities and be responsible for Health and Safety related issues on site.
Incident Investigator	GAR 8	A competent person to investigate incidents / accidents on site, this could either be: <ul style="list-style-type: none"> <li>* The 6.1 or 6.2 Person</li> <li>* H &amp; S Representative</li> <li>* Member of the H &amp; S Committee</li> <li>* H &amp; S officer</li> </ul>
Risk Assessment Co-ordinator	CR 9	A competent person to co-ordinate all assessments on behalf of the Principle Contractor. The same applies to Contractors.
Fall protection plan co-ordinator	CR 10	A competent person to prepare and amend the fall protection plan
First Aiders	GSR 3	A qualified person to address all on site first aid cases
Lifting machine and equipment Inspector	DMR 18	A competent person to inspect lifting machines and equipment
Lifting tackle Inspector	DMR 18	A competent person to inspect lifting tackles
Scaffolding Inspector	SANS 10085-1:2004	A competent person to inspect scaffolding before use and every time after bad weather, etc.
Scaffolding Erector	SANS 10085-1:2004	A competent person to erect scaffolding
Scaffolding Supervisor	SANS 10085-1:2004	A competent person to supervise scaffolding
Stacking Supervisor	CR 28	A competent person to supervise all stacking and storage operations
Explosive powered tools Inspector / Supervisor	CR 21	A competent person to inspect and clean the tools daily and controlling all operations thereof
Temporary electrical installations Supervisor	CR 24	A competent person to control all temporary electrical installations
Fire-fighting equipment Inspector	CR 29	A competent person to inspect fire-fighting equipment

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

## OTHER REQUIREMENTS

### Annexure C

The Principal Contractor shall comply but not be limited to the following requirements: Reports on these to the addressed to the Client at progress meetings or at least monthly whichever is sooner. A report with supporting documents shall be tabled at the Contractor/s monthly Health and Safety meeting.

WHAT	WHEN	OUTPUT	ACCEPTED BY CLIENT WITH DATE
Construction-phase Health and Safety plan	Within one weeks of receipt of the Spec.	Principal Contractor to report on status of Principal Contractors' Health and Safety plans	
Health and Safety file	Open file when construction begins and maintain throughout	Have file on hand at meetings	
Awareness Training (Tool Box Talks)	At least weekly	Attendance registers	
Health and Safety Reports	Monthly	Report covering: * Incidents/Accidents and Investigations * Non conformances by employees & contractor * Internal & External H & S audit reports	
Risk assessment	Updated and signed off at least monthly	Documented risk assessment	
Method statements (safe work procedures)	Drawn up before workers are exposed to new risks	Documented set of safe work procedures (method statements) updated and signed off	
General Inspections	Weekly and Daily	OHS Act compliance Registers: * Scaffolding * Excavations * Formwork & support work * Explosive tools * Temporary electrical Installations	
General Inspections	Monthly	* Fire-fighting equipment * Portable electrical equipment * Ladders	
General Inspections	3 - Monthly	* Lifting tackle * Oxy-acetylene cutting and welding sets * Fall prevention and arrest equipment	
General Inspections	6 - Monthly	* Lifting machines	
Workman's Compensation	Updated Weekly	Table list of Principal Contractors' workman's compensation proof of good standing	
Construction site rules & Section 37.2 Mandatory Agreement	Update Weekly	Table a report of all signed up Mandatory's	

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2

**Annexure D**

**The following checklist shall be used to approve the Health and Safety File**  
**CONTRACTOR SAFETY FILE ASSESSMENT CHECKLIST**

<b>SCOPE/COVERAGE:</b>	<b>Contractor Safety file Assessment</b>	<b>ERWAT CONTRACTING DEPT:</b>		
<b>CONTRACTOR NAME:</b>		<b>INSPECTION BY:</b>		
<b>SERVICE RENDERED:</b>		<b>INSPECTION DATE:</b>		
<b>No.</b>	<b>Are items on file and meet requirements?</b>	<b>Approved</b>	<b>Not Approved</b>	<b>N/A</b>
1	Scope of Work			
2	Valid Letter of Good Standing with Compensation Fund or licensed insurer			
3	Public Liability Insurance			
4	Notification Letter of Construction Work (If Applicable)			
5	Health and Safety Organogram			
6	All required legal appointments signed and on file i.e Section 16(2), SHE Reps, First Aiders, Risk Assessor, Incident Investigators, Construction Work Appointments etc			
7	All employees have valid Medical Certificate of Fitness			
8	Health and Safety Policy			
9	Health & Safety Plan,			
10	Client Health and Safety Specification			
11	Section 37(2) Mandatary Agreement			
12	Risk Assessments: Method Statements: Safe Operating Procedures (including LOTO where applicable)			
13	Incidents / Accidents Register and Investigation Reports			
14	Emergency Plan			
15	Health and Safety Induction			
16	Documented Proof of Daily Toolbox Safety Talks/ DSTI			
17	Personal Protective Equipment (PPE)			
18	Equipment Registers, Inspections Checklist and testing certificates			
19	List of Hazardous Chemicals and MSDS (If applicable)			
20	Environmental Management Plan			

Contractor

Witness 1

Witness 2

Employer

Witness 1

Witness 2



ERW2311/01 APPOINTMENT OF PANEL SERVICE PROVIDER/S IN A FRAMEWORK CONTRACT FOR THE SUPPLY, INSTALLATION AND COMMISSIONING OF ELECTRICAL DISTRIBUTION SWITCHBOARD AND MOTOR CONTROL CENTRES FOR VARIOUS SITES AT EKURHULENI WATER CARE WORKS ON 'AS AND WHEN REQUIRED' BASIS FOR A PERIOD OF THIRTY-SIX (36.) MONTHS	329
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21	Fall Protection Plan (If Applicable)			
22	Training Records and Competency Certificates			
23	Other, as per scope of work			

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<div></div>	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>
Contractor	Witness 1	Witness 2	Employer	Witness 1	Witness 2

**Annexure E**

**Acknowledgement of Receipt of the Health and Safety Specifications:**

I, \_\_\_\_\_ representing

\_\_\_\_\_ Contractor

\_\_\_\_\_

Have satisfied myself with the content of the construction Health and Safety Specification and shall ensure that the Contractor and its personnel comply with all obligations / requirements in respect thereof.

**COMMENTS:**

\_\_\_\_\_

Contractor

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Witness 2

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Employer

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### **C3.6 ENVIRONMENTAL MANAGEMENT DURING CONSTRUCTION**

#### **C3.6.1 INTRODUCTION**

A comprehensive Environmental Scoping Report was prepared as part of the environmental and social assessment of the preceded project. Included in the report is an Environmental Management Plan (EMP) and the purpose of this Particular Specification is to make the Contractor aware of his obligations in terms of the EMP during construction and to afford him the opportunity to insert rates and prices in the Schedule of Quantities to cover these obligations.

Sub-Contractors and their employees must comply with all the requirements of this specification. Absence of specific reference to any sub-contractor in any specification does not imply that the sub-contractor is not bound by this specification.

The Contractor must arrange for all his employees and those of his sub- contractors to be informed of this specification before the commencement of construction to ensure:

- a.) basic understanding of the key environmental features of the work site and environments, and
- b.) familiarity with the requirements of this document.

#### **C3.6.2 MONITORING AND ASSESSMENT OF COMPLIANCE**

The environmental management performance of the Contractor (including his subcontractors and staff) will be reviewed on a regular basis by the Employer's ECO. The Contractor will be deemed not to have complied with the EMP if:

- a.) There is evidence of negligence or recklessness resulting in the contravention of any of the clauses, both within and outside the boundaries of the construction site;
- b.) The Contractor fails to comply with corrective or other instructions within a time specified by the Engineer;
- c.) The Contractor fails to respond adequately in terms of the contract, to complaints from the public.

The Contractor will be given a period of 2 weeks after the commencement date of the contract, before compliance is enforced.

Via these environmental specifications the Contractor has been made aware of what actions are required of him and/or his subcontractors. Certain do's and don'ts have been given and onus for these controls rests with the Contractor as he is the only person capable of controlling these aspects and a fine/reward system will be implemented to encourage compliance.

Compliance to the EMP will be reported by the ECO in the form of a monthly Environmental Compliance Report which will include all transgressions of the EMP and the environmental

Contractor

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specification and rate them in order of significance. The Environmental Compliance Report will be forwarded to the Engineer, the Employer and GDACE on a monthly basis.

A percentage point will be given based on a questionnaire which is attached to the Report. Any percentage compliance above 80% will be considered to be within acceptable limits. If the Contractor has not complied with any of the clauses of the EMP, or the score in the monthly environmental audit drops to below 80% compliance, the ECO will advise the Engineer who shall order the Contractor in terms of the contract to remedy the deficiencies. Failure on the part of the Contractor to carry out such order shall be dealt with in terms of the contract.

Should compliance drop below 60% the ECO shall immediately advise the Engineer who shall have the right in terms of the contract to order in writing the suspension of the Works.

### **C3.6.3 COMPLIANCE WITH SANS 1200**

All environmental clauses stated in the SANS 1200 "Standard Specification for Civil Engineering Construction" as amended in this document shall be adhered to by the Contractor. Where the EMP is in conflict with the Standard Specification, the EMP shall take precedence.

### **C3.6.4 SITE MANAGEMENT**

#### **C3.6.4.1 General**

The Contractor shall draw up a plan of all parts of the construction site, showing the layout of site establishment, stockpiles, planned access and circulation routes, etc. to depict the scope of his planned operations. The plan shall be submitted to the ECO for comment and approval by the Engineer.

The Works area will be indicated on the layout plan and shall never exceed the boundaries of the site at any given location during the construction period.

Every precaution shall be taken, in accordance with this specification, to prevent pollution of air, soil, ground, and surface water as a result of construction or associated activities.

All equipment must be inspected regularly for oil or fuel leaks before it is operated. Leakages must be repaired on mobile equipment or containment trays placed underneath immobile equipment until such leakage has been repaired.

#### **C3.6.4.2 Housekeeping**

The Contractor shall ensure that his working areas are kept clean and tidy at all times. The ECO shall inspect these areas on a regular basis.

#### **C3.6.4.3 Works area**

Routes for temporary access and haul roads shall be located within the approved Works area and vehicle movement shall be confined to these roads. Movement of vehicles outside the Works area shall not be permitted without authorization from the Engineer, after

Contractor

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consultation with the ECO.

All construction activities shall be restricted to working areas designated on the drawings and/or demarcated and approved by the Engineer. Materials, including spoil, shall only be stockpiled in the Works area.

#### **C3.6.4.4 Fire risk and burning**

Burning of vegetation including tree trunks and stumps cut during site clearing and establishment shall not be permitted.

The Contractor shall ensure that the risk of fire at any location on the site is kept to a minimum.

The Contractor shall supply fire-fighting equipment in proportion to the fire risk presented by the type of construction and other on-site activities and materials used on site. This equipment shall be kept in good operating order.

Open fires for heating and cooking shall only be permitted in protected areas designated by the ECO for this purpose.

No fires will be allowed adjacent to the boundary fence, either inside or outside the construction site.

Any welding or other sources of heating of materials must be done in a controlled environment, wherever possible and under appropriate supervision, in such a manner as to minimize the risk of veld fires and/or injury to staff.

#### **C3.6.4.5 Storage of fuel and other materials**

Fuel, lubricants, transmission, and hydraulic fluids shall only be stored in the Works area.

All fuel tanks must be installed above ground, depending on the volume of stored fuel, for easy detection of fuel leaks. All fuel tanks must be placed on a thick plastic sheet so as to prevent soil pollution, be set in a bund with earthen walls, and maintained throughout the contract.

Areas made available for fueling or greasing of equipment and vehicles must be clearly demarcated on the layout plan. In order to prevent soil pollution, these areas must be covered with a protective material (e.g. a thick plastic sheet). No fueling, greasing, or filling of oils may take place outside these demarcated areas.

The Contractor must provide adequate and approved facilities for the storage and recycling of used oil and contaminated hydrocarbons. Such facilities must be designed and sited with the intention of preventing pollution of the surrounding area and environment.

Cement must be stored and mixed on an impermeable substratum.

Contractor

Witness 1

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Employer

Witness 1

Witness 2

#### **C3.6.4.6 Concrete batching plants**

Concrete must be mixed only in an area demarcated for this purpose. All concrete spilled outside this area, must be promptly removed by the Contractor and taken to a permitted waste disposal site. After all concrete mixing is complete all waste concrete must be removed from the batching area and disposed of at an approved dumpsite.

The batching plant shall be enclosed by a bund wall with divisions and dedicated compartments for the various types of materials. Air filters shall be monitored and cleaned and replaced as per the supplier's guidelines.

Storm water must not be allowed to flow through the batching area.

Water laden with cement must be collected in a retention area for evaporation and not allowed to escape the batching area. This pond will be cleaned monthly.

Operators must wear suitable safety clothing.

#### **C3.6.4.7 Safety**

Equipment and stores should be locked up and not left unattended.

The Contractor must ensure that no unemployed labour seekers are permitted to gather at the site and no camp followers/shebeen operators shall be allowed to operate on or adjacent to the site.

Measures must be taken to prevent any interference that could result in flashover of power lines due to breaching of clearances or the collapse of power lines due to collisions by vehicles and equipment.

Measures must be taken during thunderstorms to protect workers and equipment from lightning strikes.

All tall structures must be properly earthed and protected against lightning strikes.

The Contractor must have a first aid box available on site and on all vehicles working on site.

The Contractor must submit a copy of the minutes of weekly health and safety meetings to the ECO.

#### **C3.6.4.8 Blasting and drilling**

A written warning of 2 days indicating the date and approximate time period of blasting activities shall be given to affected residents for the temporary removal of sensitive domestic animals such as horses, dogs, cats, birds, and cattle, before blasting and/or drilling activities commence during that period.

During blasting the stipulations of the Minerals Act, Act 50 of 1991 shall apply.

Contractor

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Should any warning not be given within the period specified above, the Contractor will be held liable for injuries to or deaths of the affected animals.

In order to minimize the potential impact on animals, it is proposed that soft explosives and/or noise mufflers be used.

When blasting, the Contractor shall take measures to limit flying rock. This may be achieved by matching the charge to the rock type, by using milli-second delay detonators or by using rubber blasting mats placed over the area to be blasted. Flying rock 150mm and larger which falls beyond the cleared working area shall be collected and removed together with the rock spoil.

When blasting under power lines the Contractor shall arrange for power to be temporarily switched off or have the lines moved.

#### **C3.6.4.9 Fencing**

Fencing shall be erected around sensitive natural or cultural elements to protect them from damage. No pedestrian or vehicular access shall be allowed to such fenced areas.

In places where temporary fencing is required, the Contractor shall erect such fencing and, when and where required by the Engineer, re-erect and maintain temporary fencing as necessary. Temporary fencing shall remain in position either until it is replaced by permanent fencing or until completion of the whole of the Works, unless the Contractor requires, or the Engineer directs its earlier removal. The Contractor shall erect and maintain the aforementioned temporary fencing in the locations and for the period described in the Contract.

If temporary fencing is removed temporarily for the execution of any part of the Works, it shall be reinstated as soon as practicable by the Contractor.

The clearing for permanent fencing shall be limited to the removal of trees and shrubs within 1m of the fence line. Where possible, the fence line must be aligned to retain trees or tree groups. There shall be no removal of the grass cover or topsoil within this width.

#### **C3.6.5 CONTROL OF DAMAGE TO VEGETATION AND ANIMALS**

The Contractor shall ensure that all works are undertaken in a manner which minimizes the impact on vegetation and animals inside or outside of the Works area.

##### **C3.6.5.1 Vegetation**

As much of the existing vegetation as possible shall be retained. The removal of existing vegetation shall only occur at the sites designated for construction activities. Only woody vegetation may be cleared. During clearing of woody vegetation no basal cover or grass and topsoil shall be removed and damage to this layer shall be minimized as far as possible.

Bush and grass veld must only be cleared to provide essential access for construction purposes.

Contractor

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No indigenous shrubs and/or trees shall be cut down by the Contractor. Removal, damage or disturbance of any vegetation outside the Works area is not permitted. Special care shall be taken not to disturb or destroy riverine vegetation.

Trees which have been selected for preservation by the ECO within or adjacent to the Works areas shall be fenced around their drip line. The fence shall be clearly marked with danger tape. No open fires shall be allowed within this fenced area, nor shall vehicles be parked underneath these trees. The area shall also not be used for materials storage or as allocation for temporary buildings. If such trees are located within the 15m working width of the pipeline, the pipeline shall be aligned to avoid these trees wherever possible.

Gathering of firewood shall not be permitted.

The Contractor shall take care that seeds are collected during the removal of alien vegetation in order to counter the spread of this vegetation type. Failure to do so may result in prosecution in terms of the Conservation of Agricultural Resources Act (Act 43 of 1983). A fine not exceeding R5000 and/or 2 years imprisonment can be imposed.

No vehicular access will be allowed on the grassy parts of the construction site.

### **C3.6.5.2 Disturbance of animals**

Under no circumstances shall any animals be handled, removed, killed or interfered with by the Contractor, his employees, his sub-contractors or his sub-contractors employees. Snakes and other reptiles that may be encountered on the construction site must not be killed unless the animal endangers the life of an employee. Disturbances to nesting sites of birds must be minimized. Anthills and/or termite nests that occur in the Works area must not be disturbed unless it is unavoidable for construction purposes.

The Contractor and his employees shall not bring any domestic animals onto the site.

The Contractor shall ensure that the work site is kept clean and tidy and free from rubbish which would attract animal pest species. There shall be no feeding of native animals.

The Contractor shall ensure that domestic and native animals are safe from injury that may arise from unprotected Works.

The Contractor shall advise his workers and subcontractors of the penalties associated with the needless destruction of wildlife, as set out in the Animals Protection Act (Act 71 of 1962) sec. 2 (fine R2 000 and/or 12 months imprisonment).

### **C3.6.6 CONTROL OF DAMAGE TO SOIL AND WATER**

#### **C3.6.6.1 Stripping of topsoil**

Topsoil shall be deemed to be the top 300mm layer of soil. This layer contains organic material, nutrients and plant and grass seed. For this reason it is an extremely valuable resource for the rehabilitation and re-vegetation of disturbed areas.

Contractor

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Employer

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Topsoil shall be stripped from all areas that are to be utilized during the construction period and where permanent structures and access is required. These areas will include the area comprising the permanent works, pipeline trenches, stockpiles, temporary and permanent access roads, construction camps, lay down areas, and any other area as indicated on the Works area drawings. Topsoil shall be stripped after clearing of woody vegetation and before excavation or construction commences.

Soil shall be stripped to a minimum depth of 150mm and maximum depth of 300mm or to the depth of bedrock where soil is shallower than 300mm. Herbaceous vegetation, overlying grass and other fine organic matter shall not be removed from the stripped soil.

No topsoil which has been stripped shall be buried or in any other way be rendered unsuitable for further use by mixing with spoil or by compaction by machinery.

Topsoil shall be stripped when it is in a dry condition in order to prevent compaction.

Stripping of topsoil shall be undertaken in such a way as to minimize erosion by wind or runoff.

### C3.6.6.2 Stockpiling of topsoil

The Contractor shall ensure that subsoil and topsoil are not mixed during stripping, excavation, reinstatement, and rehabilitation. If mixed with clay sub-soil the usefulness of the topsoil for rehabilitation of the site will be lost. Temporary soil stockpiles shall not be higher than 2,5m, and the slopes of soil stockpiles shall not be steeper than 1 vertical to 1,5 horizontal.

Areas from which topsoil is to be removed shall be cleared of any foreign material which may come to form part of the topsoil during removal including bricks, rubble, any waste material, litter any other material which could reduce the quality of the topsoil.

Soil must not be stockpiled on drainage lines or near watercourses.

No vehicles shall be allowed access onto the stockpiles after they have been placed. Topsoil stockpiles shall be clearly demarcated in order to prevent vehicle access and for later identification when required.

After topsoil stockpiling has been completed, the Contractor shall apply soil conservation measures to the stockpiles where and as directed by the Engineer / Environmental Officer. This may include the use of erosion control fabric and/or grass seeding.

### C3.6.6.3 Placement of topsoil

Topsoil shall be placed to a minimum depth of 150mm over all areas where it has been stripped, after construction in those areas has ceased. Topsoil placement shall follow as soon as construction in an area has ceased.

All areas onto which topsoil is to be spread shall be graded to the approximate original landform with maximum slopes of 1:2,5 and shall be ripped prior to topsoil placement. The

Contractor

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entire area to be covered with top soil shall be ripped parallel to the contours to a minimum depth of 300mm.

Topsoil shall be placed in the same soil zone from which it had been stripped. However, if there is insufficient topsoil available from a particular soil zone to produce the minimum specified depth, topsoil may be brought from other soil zones on approval by the Engineer after consultation with the ECO.

Where topsoil that has been stripped by the Contractor is insufficient to provide the minimum specified depth, the Contractor shall obtain suitable substitute material from other sources at no cost to the employer. The suitability of the substitute material shall be determined by means of a soil analysis which is acceptable to the Engineer.

No vehicles shall be allowed access onto or through topsoil after it has been placed.

After topsoil placement is complete, cleared and stockpiled vegetative matter shall be spread randomly by hand over the area covered with topsoil.

#### **C3.6.6.4 Klip river and Rietspruit**

The Klip River is situated approximately 250 m to the west of the construction site at its closest point, and the Rietspruit approximately 300 m to the east.

Site staff shall not be permitted to use the Klip River or the Rietspruit for the purpose of bathing, washing of clothing or vehicles nor disposal of any type of waste.

The Contractor shall not in any way modify nor damage the banks or bed of the Klip River or the Rietspruit and its drainage lines, unless required as part of the construction project specification and in consultation with the Project Manager and the ECO. Abstraction of water from the Klip River is allowed provided that no damage to the banks of the Klip River shall occur. Should damage occur the Contractor will be held liable for any reparation and/or rehabilitation to the banks of the Klip River and for prosecution in terms of the National Water Act (Act No. 36 of 1998).

All fuel, chemical, oil, etc spills must be confined to areas where the drainage of water can be controlled. Appropriate structures and methods to confine spillages such as the construction of berm shall be provided.

#### **C3.6.7 Control of pollution**

As a minimum requirement all waste emissions (hazardous, airborne, liquid and solid) from the site shall be kept within the limits of standards set in terms of relevant national and local pollution legislation and regulations.

##### **C3.6.7.1 General**

No waste of a solid, liquid or gaseous nature shall be emitted from the site without approval by the Engineer.

Contractor

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Employer

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Precautionary measures must be taken to prevent any form of pollution.

Accidental pollution incidents shall be reported to the Engineer and the ECO immediately after they occur and shall be cleaned-up by the Contractor or a nominated clean-up organization at the expense of the Contractor.

#### **C3.6.7.2 Soil**

Vehicle and plant maintenance shall be confined to the areas demarcated for this purpose. Should any amount of fuel, oil transmission or hydraulic fluids be spilled onto the soils the Engineer and the ECO shall be informed immediately. If ordered by the Engineer, tests must be conducted to determine the extent of soil contamination. The polluted soil shall be rehabilitated or remediated to the satisfaction of the Engineer, after consultation with the ECO. Proof of disposal of contaminated soil must be submitted by the Contractor to GDACE within 14 days of the disposal thereof.

#### **C3.6.7.3 Water**

Water containing waste shall be prevented from entering the Klip River or the Rietspruit either by seepage or natural flow. Oil absorbent fibres must be used to contain oil spilled in water.

Cost effective measures must be taken to minimize the flow of surface water to trench excavations.

On-site storm water management over the construction site shall be to the satisfaction of the Engineer.

#### **C3.6.7.4 Air**

All reasonable measures should be taken to minimize air emissions in the form of smoke, dust, and gases.

All machinery and vehicles used for the Works shall be in good working order. Any vehicle or piece of machinery that visibly emits excess pollutant shall be removed from site.

Waste must not be allowed to stand on site to decay, resulting in malodors. No fires shall be allowed if smoke from such fires will cause a nuisance to neighboring residents.

#### **C3.6.7.5 Sewage**

Any spillage of sewage caused by the Contractor or any of his employees or subcontractors during the construction activities shall be cleaned up at the expense of the Contractor.

#### **C3.6.8 MANAGEMENT OF WASTE**

In practice all wastes arising from construction activities are to be handled, transported and disposed of in accordance with the relevant regulations. All efforts should be made to minimize, reclaim or recycle waste, and failing that, dispose of it in a manner licensed by the government for that purpose.

Contractor

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Employer

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### C3.6.8.1 Sanitation

The Contractor shall provide adequate sanitation facilities in accordance with Clause PSA 1.2 hereof. The use of the surrounding veld for toilet purposes shall not be permitted under any circumstance.

### C3.6.8.2 Wastewater

*Definition: Wastewater is water that is contaminated by humans through their actions.*

All run-off from fuel depots, workshops, truck washing areas, and wash water from concreting vehicles and other equipment shall be collected and directed through pollution traps to the operational sewers. If connection to the sewers is not possible, the wastewater shall be collected in settlement ponds, which shall be suitably lined at the Contractor's expense.

Wastewater may not be disposed of directly or indirectly into the Klip River or the Rietspruit. The Contractor shall provide suitable retention and filtration structures (which shall be properly maintained) for the collection of wastewater.

The Contractor shall provide washing and changing facilities. All run-offs from these washing and/or changing facilities shall be contained in the retention structures to the satisfaction of the Engineer.

### C3.6.8.3 Solid waste

*Definition: "Solid Waste" refers to all construction waste (such as rubble, cement bags, waste cement, timber, cans, other containers, wires and nails), household and office waste.*

Solid waste shall be collected and stored in demarcated, fenced areas in skips and/or bins. The fenced areas or containers should be designed to prevent solid waste from being blown out by wind and should be strategically and conspicuously placed throughout the site.

Wherever possible solid waste that can be recovered shall be recycled.

Solid waste shall be disposed of at a registered solid waste disposal site. The prices submitted by the Contractor shall include all transportation and disposal costs of waste. Solid waste shall not be buried nor burned on site.

The entire works area and all construction sites must be swept of all pieces of wire, metal, wood or other material foreign to the natural environment.

### C3.6.8.4 Hazardous wastes

*Definition: Hazardous wastes are those which are proven to be toxic, corrosive, explosive, flammable, carcinogenic, radioactive, poisonous or as determined by the Hazardous Substance Act as amended.*

Contractor

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Employer

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Discharges of hazardous chemicals (such as paint, turpentine, oil and cement), as declared under the Hazardous Substances Act as amended, on the site or to the storm water system are prohibited.

Potentially hazardous raw and waste materials shall be handled and stored on-site in containers with tight lids that must be sealed and must be disposed of at an appropriately permitted hazardous waste disposal site. Such containers must not be used for purposes other than those originally designed for.

The following hazardous waste products shall be disposed of at a registered hazardous waste disposal site:

- a) cement;
- b) diesel, petroleum, oil and lubricants;
- c) explosives;
- d) drilling fluids;
- e) pesticides;
- f) paints and turpentine;
- g) concrete additives; and
- h) any other material which is listed in terms of the Hazardous Substances Act.

The Contractor must maintain a hazardous materials register.

### **C3.6.9 MANAGEMENT OF STORMWATER AND SOIL EROSION**

The aim is to minimize soil loss from the site due both to wind and water.

#### **C3.6.9.1 Storm water**

At all stages of the contract, storm water control measures shall be applied to keep soil on-site by minimizing

- a) Erosion or leaching of water from temporary stockpiles of topsoil and permanent spoil dumps
- b) Erosion from construction roads, excavations and borrow pits, where applicable
- c) Silt-laden run-off from all areas stripped of vegetation, including excavation surfaces and stockpiles of spoil and topsoil (the correct placement of rocks together with straw bales can be used to prevent silt-laden run-off); and
- d) Contaminated run-off from storage areas;

Thereby preventing it from entering waterways or the storm water drainage system.

Natural storm water run-off that is not polluted by site operations shall be diverted around spoil dumps and topsoil stockpiles. Effective measures shall be taken to minimize the flow of storm water to excavations.

Where uncontaminated storm water has accumulated in excavations and needs to be pumped out, it must be disposed of in such a way that erosion does not occur along the course of its passage. Contaminated storm water shall not be disposed of into the

Contractor

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waterways, unless it has been treated to the satisfaction of the Engineer, after consultation with the ECO.

#### **C3.6.9.2 Control of erosion**

At all stages of the contract, erosion of bare soil, other excavation surfaces and stockpiles of topsoil and spoil shall be prevented by the application of erosion control measures.

Should erosion occur due to negligence on the part of the Contractor to apply adequate measures, the Contractor will be responsible for reinstatement of the eroded area to its former state at his own expense. Any surface water pollution occurring, as a result of this negligence, shall be cleaned up by the Contractor or a nominated clean-up organization at the expense of the Contractor.

Cross and side storm water drainage measures shall be constructed on access and haul roads to the site and on roads within the site.

The Contractor shall ensure that run-off from access and haul roads, and that diverted into cross and side drains, does not cause erosion

#### **C3.6.10 CONTROL OF DISTURBANCE TO NEIGHBOURS AND/OR AFFECTED RESIDENTS**

All issues and items agreed to in the negotiations and discussions between the Owner and affected residents must be implemented.

##### **C3.6.10.1 Scenic quality**

The Contractor shall position all temporary structures as well as temporary plant on site in locations and at elevations which limit visual intrusion on neighbors. The type and colour of roofing and cladding materials shall be selected to reduce reflection.

The Contractor shall not establish or undertake any activities which, in the opinion of the Engineer, are likely to adversely affect the scenic quality of the area. The Engineer may direct the Contractor to refrain from such activities or to take ameliorative actions to reduce the adverse effect of such activities on the scenic quality of the environment.

No painting or marking of natural features shall be done. Marking for surveying and other purposes shall only be done with pegs and beacons.

All cut and fill forms shall be rounded at the edges to blend them with the surrounding landforms.

All packed rock and exposed rock cuttings shall be treated in order to blend their colour with the colours of the natural weathered rocks of the adjacent environment.

The colours of all permanent structures shall be chosen so as to blend in with the dominant colours of the surrounding landscape. Painted surfaces shall be painted with non-reflective (matt) colours.

Contractor

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Employer

Witness 1

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### **C3.6.10.2 Noise**

All noise levels must be controlled at the source. All employees must be given the necessary ear protection gear. Neighbouring residents must be informed of excessive noise factors.

Noise emanating from construction activities must not be "disturbing noise", that is, the sound level from the site measured at the nearest dwelling must not exceed the ambient noise level by 7dBA or more.

Appropriate directional and intensity settings should be maintained on hooters and sirens, if applicable.

Silencer units on plant and vehicles shall be maintained in good working order. Any vehicle/machine emitting excess noise shall immediately be removed from site or effectively repaired.

Where required by the ECO after consultation with the Engineer, the Contractor shall provide noise reduction measures in the form of cladding and earth berm between sources of on-site noise and neighbours and/or affected property owners.

A speed restriction of 40 km/h shall be imposed on all construction vehicles in order to limit additional noise generated by these vehicles. This restriction shall apply to the site and any road within 2 kilometres of the site.

No loud music shall be allowed on site and in construction camps.

### **C3.6.10.3 Dust**

The Contractor shall ensure that a minimum of dust is generated by construction and related activities. Roads and working areas should be maintained regularly and this may include the sprinkling of water. Water for this purpose shall be used sparingly to not generate run-off and resulting soil erosion.

The Contractor shall control dust from spoil dumps as specified above.

Soil and aggregate loads in transit must be kept covered, to prevent wind borne pollution (dust).

Stockpiles of soil must be kept covered or have a suitable dust palliative applied, such as water or commercial dust suppressants, to prevent windborne pollution.

### **C3.6.10.4 Social interaction and disruption**

The Contractor shall maintain normal working hours (i.e. from 07:00 until 17:00) from Mondays to Fridays for the duration of the construction period. The Contractor must inform all adjacent landowners of any after-hour construction activities and any other activity that could cause a nuisance e.g. the application of chemicals to the work surface.

The Contractor's activities and movement of staff shall be restricted to designated

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construction areas only. The Contractor and site staff may not interact directly with adjacent landowners but only through the Engineer, who will contact property owners to obtain permission.

The Contractor's staff shall wear special identity cards (with the employees photograph displayed on the card), which shall make identification possible, at all times. Any temporary staff employed by the Contractor or any sub- contractor appointed by the Contractor shall also comply with this clause.

Rapid migration of job seekers could lead to squatting and social conflict with resident communities and increase in social pathologies if not properly addressed. The Contractor must ensure that signs indicating the availability of jobs are installed.

Criteria for selection and appointment, by the Contractor, of construction labour must be established to allow for preferential employment of local communities.

#### **C3.6.10.5 Disruption of services and access**

Care must be taken by the Contractor to avoid damaging major and minor pipelines and other services. The relevant authorities must be notified of any interruptions of services, especially the Midvaal Local Municipality, the National Roads Agency, Spoomnet, TELKOM and ESKOM.

Disruption of access for local residents during construction, and haulage or any other construction activity shall only take place with the prior consent of the Engineer.

The Contractor shall liaise with the Engineer on a regular basis with regard to specific activities that could cause inconvenience to property owners, especially increased vehicular traffic through residential areas adjacent to the site. The Contractor shall prior to commencement inform property owners of his planned activities within a reasonable period of time.

The movement of construction vehicles through the affected areas shall be restricted to off-peak hours to minimize adverse impacts on private vehicular traffic. Temporary access roads must not be opened until required and must be restored to its former state as soon as the road is no longer needed.

#### **C3.6.10.6 Traffic control**

The Contractor shall ensure that all construction traffic including that of subcontractors, vendors, suppliers of materials and services are notified that a special speed limit of 40 kph shall apply along any road within the adjacent Klipwater Township; and special attention shall be given to road signs. Vehicles not complying with this ruling shall on the instruction of the Engineer, be denied access to the Site.

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### C3.6.11 Archaeology and cultural sites

All finds of human remains must be reported to the nearest police station.

Human remains from the graves of victims of conflict, or any burial ground or part thereof which contains such graves and any other graves that are deemed to be of cultural significance may not be destroyed, damaged, altered, exhumed or removed from their original positions without a permit from the South African Heritage and Resource Agency (SAHRA).

Work in areas where artefacts are found must cease immediately.

Under no circumstances must the Contractor, his/her employees, his/her sub- contractors or his/her sub-contractors' employees remove, destroy or interfere with archaeological artefacts. Any person who causes intentional damage to archaeological or historical sites and/or artefacts could be penalised or legally prosecuted in terms of the National Heritage Resources Act, 25 of 1999.

A fence at least 2m outside the extremities of the site must be erected to protect archaeological sites.

All known and identified archaeological and historical sites must be left untouched.

Work in the area can only be resumed once the site has been completely investigated. The Engineer will inform the Contractor when work can resume.

### C3.6.12 REHABILITATION

It is important that rehabilitation will commence as soon as feasible and to run in parallel with the construction and not to be left until completion of the works. This will increase the chances of successful rehabilitation as it can be monitored throughout the construction period.

The construction site shall be cleaned and rehabilitated as close as is reasonably possible to its original state.

All drainage deficiencies must be corrected.

Cut and fill areas must be restored and re-shaped.

Areas compacted by vehicles during construction must be scarified to allow penetration of plant roots and the re-growth of natural vegetation.

Rehabilitation of all the disturbed and compacted areas shall mean that these areas are ripped and covered with topsoil.

- Ripped shall mean - ploughed with a ripper to a depth of not less than 300mm in two directions at right angles.

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- Top soiled shall mean - the spreading of a minimum of 150mm of stockpiled topsoil either before or after ripping over the surface to be rehabilitated.

The areas immediately adjacent to the Works which are not designated for paving shall be grassed in accordance with the relevant engineering specification.

All alien vegetation removed during construction shall not be replaced.

The rehabilitated areas will be weeded by the nominated rehabilitation contractor for a period of 1 year.

### **C3.6.13 RESPONSE TO PUBLIC COMPLAINTS**

The Contractor shall assist the Engineer with responding to queries and complaints from the public regarding construction activities by:

- a.) Documenting the details of such communications and submitting the information to the Engineer for inclusion in the complaints register;
- b.) bringing any such matters to the attention of the Engineer immediately as they arise;
- c.) taking any remedial action as per the Engineer; and d.) discuss such matters at the site meetings.

The Contractor shall assist the Engineer and consult with affected parties for the purpose of explaining the construction process and answering questions raised by affected parties at reasonable times.

Should the owner of any property, contact the Contractor during the construction period regarding specific requests, the Contractor shall include all pertinent details in his report (Section 2.3 hereof).

### **C3.6.14 CLEARANCE OF SITE ON COMPLETION**

On completion of the Works, the Contractor shall clear away and remove from the site all construction plant, surplus materials, foundations, plumbing and other fixtures, rubbish and temporary works of every kind. Areas thus cleared shall be graded and scarified to restore the ground to its original profile as near as practicable before topsoil placement.

### **C3.6.15 COMPLIANCE WITH ENVIRONMENTAL MANAGEMENT SPECIFICATIONS**

- a.) All persons employed by the Contractor or his subcontractors shall abide by the requirements of these Environmental Management Specifications.
- b.) Any employees of the Contractor or his subcontractors found to be in breach of any of the Environmental Management Specifications may be ordered by the Engineer to leave the site forthwith. The order may be given orally or in writing. Confirmation of an oral order will be given as soon as practicable but lack of confirmation in writing shall not be a cause for the offender to remain on site. No extension of time will be granted for any delay or impediment to the Contractor brought about by a person ordered to leave the site.

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- c.) Supervisory staff of the Contractor or his subcontractors shall not direct any person to undertake any activities which would place such person in contravention of the Environmental Management Specifications.
- d.) Via these specifications the Contractor has been made aware of what actions are required of him and/or his subcontractors. Certain do's and don'ts have been given and onus for compliance rests with the Contractor as he is the only person capable of controlling these aspects. A fine/reward system will be implemented to encourage compliance. For every week that the Contractor successfully complies with the Environmental Management Plan and Specifications a bonus sum of R500 will be generated. However, for each and every time that the Environmental Management Plan and Specification is not met, a fine of R500 will be imposed.

### C3.6.16 MEASUREMENT AND PAYMENT

Unit:

Under Schedule No. 1 in Bill: Environmental Management ..... Sum.

The lump sum tendered shall include full compensation for initiating and maintaining the environmental awareness campaign as required in the Environmental Management Plan and Specifications.

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