REPUBLIC OF KENYA

MINISTRY OF ENVIRONMENT, WATER AND NATURAL RESOURCES

P. O. BOX 30126, 00100

NAIROBI.

KENYA METEOROLOGICAL SERVICES

TENDER NO: MEWNR/T/18/2013-2014 SUPPLY, DELIVERY, INSTALLATION AND COMMISSIONING OF AUTOMATIC WEATHER STATIONS (AWS).

CLOSING DATE: 8th November 2013.

TIME: 10:00 A.M. LOCAL TIME
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SECTION C– TENDER NOTICE

Date: 24th October 2013.

REFERENCE: TENDER NO. MEWNR/T/18/2013-2014– SUPPLY, DELIVERY INSTALLATION AND COMMISSIONING OF AUTOMATIC WEATHER STATIONS

The MINISTRY OF ENVIRONMENT, WATER AND MINERAL RESOURCES now invites sealed tenders from eligible candidates for Supply, Delivery, Installation and Commissioning of Automatic Weather Stations (AWS).

Interested eligible candidates may obtain further information from and inspect the Tender documents at the Procurement Office, during normal working hours, NHIF Building on 11th Floor, Room 1110 upon payment of non-refundable fees of Kshs 5000 payable to the cashier on 11th Floor, NHIF Building, Ragati Rd, either in cash or bankers cheque payable to PRINCIPAL Secretary, MINISTRY OF ENVIRONMENT, WATER AND NATURAL RESOURCES.

Prices quoted should be net inclusive of all taxes, must be in Kenya Shillings and shall remain valid for (180) days from the closing date of the tender.

Prices quoted should be net inclusive of all taxes, must be in Kenya Shillings and shall remain valid for (180) days from the closing date of the tender.

A Complete set of tender documents are to be enclosed in plain sealed envelopes marked with tender reference number and must be addressed to:-

THE PRINCIPAL SECRETARY
MINISTRY OF ENVIRONMENT, WATER AND NATURAL RESOURCES.
P.O.BOX 30126– 00100 GPO
NAIROBI.

And be deposited in the quotation box located on 11th Floor, NHIF Building, Ragati Rd, so as to reach him on or before 8th November, 2013, at 10.00 AM.

Tenders will be opened immediately thereafter in the presence of the Candidates or their representatives who choose to attend immediately thereafter,

Head, Supply Chain Management Officer
For: PRINCIPAL SECRETARY,
MINISTRY OF ENVIRONMENT, WATER AND NATURAL RESOURCES
Section B: Invitation for Tenders

Date: 24th October 2013

Dear Sirs,

To: M/s. ………………………………………………………………………………………
    P.O.BOX……………………………………..

REFERENCE: TENDER NO. MEWNR/T/18/2013-2014 – SUPPLY, DELIVERY
INSTALLATION AND COMMISSIONING OF AUTOMATIC WEATHER
STATIONS

We hereby invite you and other Tenderers to submit sealed tenders for the execution and
completion of the above tender.

You may obtain a complete set of Tender document from the Procurement Office, Room
1110, MINISTRY OF ENVIRONMENT, WATER AND NATURAL RESOURCES,
NHIF Building, Ragati Road, during normal working hours.

Complete tender documents must be addressed to:-

    THE PRINCIPAL SECRETARY
    MINISTRY OF ENVIRONMENT, WATER AND NATURAL RESOURCES.
    P.O.BOX 30126– 00100 GPO
    NAIROBI.

And be deposited in the quotation box located on 11 th Floor,NHIF Building, Ragati Rd, so
as to reach him on or before 8TH NOVEMBER, 2013, at 10.00 AM. and will be opened
immediately thereafter, in the presence of Tenderers’ representatives who choose to attend.

Head, Supply Chain Management Officer
For: PRINCIPAL SECRETARY,
MINISTRY OF ENVIRONMENT, WATER AND NATURAL RESOURCES
1. SECTION C—INSTRUCTIONS TO TENDERERS

1.1. Eligible Tenderers

1.1.1. This Invitation for Tenders is open to all Tenderers eligible as described in the tender documents. Successful Tenderers shall provide the services for the stipulated duration from the date of commencement (hereinafter referred to as the term) specified in the tender documents.

1.1.2. Tenderers shall provide the qualification information statement that the Tenderer (including all members of a joint venture and subcontractors) is not associated, or have been associated in the past, directly or indirectly, with a firm or any of its affiliates which have been engaged by the Procuring entity to provide consulting services for the preparation of the design, specifications, and other documents to be used for the procurement of the services under this Invitation for Tenders.

1.1.3. Tenderers shall not be under a declaration of ineligibility for corrupt and fraudulent practices.

1.2. Eligible materials and spares

1.2.1. All consumable materials and spares used under the contract shall have their origin in eligible source countries.

1.2.2. For purposes of this clause, “origin” means the place where the materials are mined, grown, or produced. Materials are produced when, through manufacturing, processing, or substantial and major assembly of components, a commercially-recognized product results that is substantially different in basic characteristics or in purpose or utility from its components.

1.2.3. The origin of materials is distinct from the nationality of the Tenderer.

1.3. Cost of Tendering

1.3.1. The Tenderer shall bear all costs associated with the preparation and submission of its tender, and the procuring entity, will in no case be responsible or liable for those costs, regardless of the conduct or outcome of the tendering process.

1.4. Contents of Tender Document

1.4.1. The tender document comprises the documents listed below and addenda issued in accordance with clause 6 of these instructions to tenders:
1.4.2. The Tenderer is expected to examine all instructions, forms, terms, and specifications in the tender documents. Failure to furnish all information required by the tender documents or to submit a tender not substantially responsive to the tender documents in every respect will be at the Tenderer’s risk and may result in the rejection of its tender.

1.5. Clarification of Documents

1.5.1. A prospective Tenderer requiring any clarification of the tender document may notify the Procuring entity in writing or by cable (hereinafter, the term cable is deemed to include telex and facsimile) at the entity’s address indicated in the Invitation for tenders. The Procuring entity will respond in writing to any request for clarification of the tender documents, which it receives not later than seven (7) days prior to the deadline for the submission of tenders, prescribed by the MINISTRY OF ENVIRONMENT, WATER AND NATURAL RESOURCES (MEWNR). Written copies of the MEWNR response (including an explanation of the query but without identifying the source of inquiry) will be sent to all prospective Tenderers who have received the tender document.

1.6. Amendment of Documents

1.6.1. At any time prior to the deadline for submission of tenders, the Procuring entity, for any reason, whether at its own initiative or in response to a clarification requested by a prospective Tenderer, may modify the tender documents by amendment.

1.6.2. All prospective candidates who have received the tender documents will be notified of the amendment in writing or by cable, and such amendment will be binding on them.
1.6.3. In order to allow prospective Tenderers reasonable time in which to take the amendment into account in preparing their tenders, the Procuring entity, at its discretion, may extend the deadline for the submission of tenders.

1.7. Language of Tender

1.7.1. The tender prepared by the Tenderer, as well as all correspondence and documents relating to the tender exchanged by the Tenderer and the Procuring entity, shall be written in English language, provided that any printed literature furnished by the Tenderer may be written in another language provided they are accompanied by an accurate English translation of the relevant passages in which case, for purposes of interpretation of the tender, the English translation shall govern.

1.8. Documents Comprising the Tender

1.8.1. The tender prepared by the Tenderer shall comprise the following components:

(a) Tender Form and Price Schedule completed in accordance with paragraph 1.9.1.10 and 1.11 below;

(b) Documentary evidence established in accordance with paragraph 1.12 that the Tenderer is eligible to tender and is qualified to perform the contract if its tender is accepted;

(c) Documentary evidence established in accordance with paragraph 1.13 that the materials and spares to be used by the Tenderer for the services contract conform to the tender documents; and

(d) Tender security furnished is in accordance with paragraph 1.14;

(e) Confidential Business Questionnaire.

1.9. Tender Form

1.9.1. The Tenderer shall complete the Tender Form and the appropriate Price Schedule furnished in the tender documents, indicating the services to be performed, a brief description of the materials and spares, their country of origin, quantity, and prices.

1.10. Tender Prices

1.10.1. The Tenderer shall indicate on the appropriate Price Schedule the unit prices and total tender price of the services it proposes to provide under the contract.

1.10.2. Prices indicated on the Price Schedule shall be the cost of the services quoted including all customs duties and VAT and other taxes payable:

1.10.3. Prices quoted by the Tenderer shall be fixed during the Term of the contract
and not subject to variation on any account. A tender submitted with an adjustable price quotation will be treated as non-responsive and will be rejected, pursuant to paragraph 1.22.

1.11. Tender Currencies

1.11.1. Prices shall be quoted in the following currencies:

(a) For equipment that the Tenderer will supply from within Kenya, the prices shall be quoted in Kenya Shillings; and
(b) For equipment that the Tenderer will supply from outside Kenya, the prices may be quoted in US Dollars or in another freely convertible currency.
(c) Cost of installation and commissioning will be in Kenya Shillings.

1.12. Tenderers Eligibility and Qualifications.

1.12.1. Pursuant to paragraph 1.1 of section C, the Tenderer shall furnish, as part of its tender, documents establishing the Tenderers eligibility to tender and its qualifications to perform the contract if its tender is accepted.

1.12.2. The documentary evidence of the Tenderers qualifications to perform the contract if its tender is accepted shall establish to the Procuring entity’s satisfaction that the Tenderer has the financial and technical capability necessary to perform the contract.


1.13.1. Pursuant paragraph 1.2 of this section, the Tenderer shall furnish, as part of its tender, documents establishing the eligibility and conformity to the tender documents of all materials and spares which the Tenderer proposes to use under the contract.

1.13.2. The documentary evidence of the eligibility of the materials and spares shall consist of a statement in the Price Schedule of the country of origin of the materials and spares offered which shall be confirmed by a certificate of origin issued at the time of shipment.

1.13.3. The documentary evidence of conformity of the materials and spares to the tender documents may be in the form of literature, drawings, and data, and shall consist of:
   a) A detailed description of the essential technical and performance characteristic of the equipment;
   b) A list giving full particulars, including available source and current prices of spare parts, special tools, etc., necessary for the proper and continuing functioning of the equipment for a period of two (2) years, following commencement of the use of the equipment by the Procuring entity; and
   c) A clause-by-clause commentary on the Procuring entity’s Technical
Specifications demonstrating substantial responsiveness of the goods and service to those specifications, or a statement of deviations and exceptions to the provisions of the Technical Specifications.

1.13.4. For purposes of the commentary to be furnished pursuant to paragraph 13.3(b) above, the Tenderer shall note that standards for workmanship, material, and equipment, as well as references to brand names or catalogue numbers designated by the Procurement entity in its Technical Specifications, are intended to be descriptive only and not restrictive. The Tenderer may substitute alternative standards, brand names, and/or catalogue numbers in its tender, provided that it demonstrates to the Procurement entity’s satisfaction that the substitutions ensure substantial equivalence to those designated in the Technical Specifications.

1.14. Tender Security

1.14.1. The Tenderer shall furnish, as part of its tender, a tender security for the amount specified in the Invitation to tender.

1.14.2. The tender security is required to protect the Procuring entity against the risk of Tenderer’s conduct which would warrant the security’s forfeiture, pursuant to paragraph 1.14.7.

1.14.3. The tender security shall be denominated in Kenya Shillings or in another freely convertible currency, and shall be in the form of a bank guarantee or a bank draft issued by a reputable bank located in Kenya or abroad, in the form provided in the tender documents or another form acceptable to the Procuring entity and valid for thirty (30) days beyond the validity of the tender.

1.14.4. Any tender not secured in accordance with paragraph 1.14.1 and 1.14.3 will be rejected by the Procuring entity as nonresponsive, pursuant to paragraph 1.22.

1.14.5. Unsuccessful Tenderer’s tender security will be discharged or returned as promptly as possible as but not later than thirty (30) days after the expiration of the period of tender validity prescribed by the Procuring entity.

1.14.6. The successful Tenderer’s tender security will be discharged upon the Tenderer signing the contract, pursuant to paragraph 1.30, and furnishing the performance security, pursuant to paragraph 1.31.

1.14.7. The tender security may be forfeited:

a) If a Tenderer withdraws its tender during the period of tender validity specified by the procuring entity on the Tender Form; or
b) in the case of a successful Tenderer, if the Tenderer fails:
   i) to sign the contract in accordance with paragraph 1.30 or
   ii) to furnish performance security in accordance with paragraph 1.31
   c) If the Tenderer rejects correction of an arithmetic error in the tender.
1.15. Validity of Tenders

1.15.1. Tenders shall remain valid for 120 days or as specified in the tender documents after date of tender opening prescribed by the Procuring entity, pursuant to paragraph 1.18. A tender valid for a shorter period shall be rejected by the Procuring entity as nonresponsive.

1.15.2. In exceptional circumstances, the Procuring entity may solicit the Tenderer’s consent to an extension of the period of validity. The request and the responses thereto shall be made in writing. The tender security provided under paragraph 1.14 shall also be suitably extended. A Tenderer may refuse the request without forfeiting its tender security. A Tenderer granting the request will not be required nor permitted to modify its tender.

1.16. Format and Signing of Tender

1.16.1. The Tenderer shall prepare two copies of the tender, clearly marking each “ORIGINAL TENDER” and “COPY OF TENDER,” as appropriate. In the event of any discrepancy between them, the original shall govern.

1.16.2. The original and all copies of the tender shall be typed or written in indelible ink and shall be signed by the Tenderer or a person or persons duly authorized to bind the Tenderer to the contract. Written power-of-attorney accompanying the tender shall indicate the latter authorization. The person or persons signing the tender shall initial all pages of the tender, except for un-amended printed literature.

1.16.3. The tender shall have no interlineations, erasures, or overwriting except as necessary to correct errors made by the Tenderer, in which case such corrections shall be initialled by the person or persons signing the tender.

1.17. Sealing and Marking of Tenders

1.17.1. The Tenderer shall seal the original and each copy of the tender in separate envelopes, duly marking the envelopes as “ORIGINAL” and “COPY.” The envelopes shall then be sealed in an outer envelope.

1.17.2. The inner and outer envelopes shall:
   (a) be addressed to the Procuring entity at the following address:
       PRINCIPAL SECRETARY,
       MINISTRY OF ENVIRONMENT, WATER AND NATURAL RESOURCES
       P.O. Box 30126 – 00100 GPO,
       NAIROBI.
   (b) Bear: Tender No: MEWNR/T/18/2013-2014
       Supply, Delivery, Installation and Commissioning of Automatic Weather Stations (AWS), and the words: “DO NOT OPEN BEFORE,” 8TH NOVEMBER, 2013 at 10.00 AM
1.17.3. The inner envelopes shall also indicate the name and address of the Tenderer to enable the tender to be returned unopened in case it is declared “late” or unsuccessful at the Technical Evaluation stage.

1.17.4. If the outer envelope is not sealed and marked as required by paragraph 17.2, the Procuring entity will assume no responsibility for the tender’s misplacement or premature opening.

1.17.5. Bidders **MUST** provide (2) sealed envelopes containing the Technical and Financial Proposals clearly marked as stipulated under section C.(1.17) of the Instructions to Tenderers. The Financial Proposal should be submitted in the format stipulated under section F (ii) i.e Price Schedule. The mandatory requirements must form part of the technical proposal.

**1.18. Deadline for Submission of Tenders**

1.18.1. Tenders must be received by the Procuring entity at the address specified under paragraph 15.2 no later than **8TH NOVEMBER 2013 at 10.00 AM**.

1.18.2. The Procuring entity may, at its discretion, extend this deadline for the submission of tenders by amending the tender documents in accordance with paragraph 1.6, in which case all rights and obligations of the Procuring entity and candidates previously subject to the deadline will thereafter be subject to the deadline as extended.

**1.19. Modification and Withdrawal of Tenders**

1.19.1. The Tenderer may modify or withdraw its tender after the tender’s submission, provided that written notice of the modification, including substitution or withdrawal of the tenders, is received by the Procuring prior to the deadline prescribed for submission of tenders.

1.19.2. The Tenderer’s modification or withdrawal notice shall be prepared, sealed, marked, and dispatched in accordance with the provisions of paragraph 1.17. A withdrawal notice may also be sent by cable, but followed by a signed confirmation copy, postmarked not later than the deadline for submission of tenders.

1.19.3. No tender may be modified after the deadline for submission of tenders.

1.19.4. No tender may be withdrawn in the interval between the deadline for submission of tenders and the expiration of the period of tender validity specified by the Tenderer on the Tender Form. Withdrawal of a tender during this interval may result in the Tenderer’s forfeiture of its tender security, pursuant to paragraph 1.14.7.

**1.20. Preliminary Examination**

1.20.1. The Procuring entity will examine the tenders to determine whether they are complete, whether required sureties have been furnished, whether the
documents have been properly signed, whether there is statutory compliance and whether the tenders are generally in order.

1.20.2. Arithmetical errors will be rectified on the following basis. If there is a discrepancy between the unit price and the total price that is obtained by multiplying the unit price and quantity, the unit price shall prevail, and the total price shall be corrected. If the candidate does not accept the correction of the errors, its tender will be rejected, and its tender security may be forfeited. If there is a discrepancy between words and figures the amount in words will prevail.

1.20.3. The Procuring entity may waive any minor informality or non-conformity or irregularity in a tender which does not constitute a material deviation, provided such waiver does not prejudice or affect the relative ranking of any Tenderer.

1.21. Tenderer’s Responsiveness

1.21.1. Prior to the detailed evaluation, pursuant to paragraph 1.21, the Procuring entity will determine the substantial responsiveness of each tender to the tender documents. For purposes of these paragraphs, a substantially responsive tender is one which conforms to all the terms and conditions of the tender documents without material deviations. The Procuring entity’s determination of a tender’s responsiveness is to be based on the contents of the tender itself without recourse to extrinsic evidence.

1.21.2. If a tender is not substantially responsive, it will be rejected by the Procuring entity and may not subsequently be made responsive by the Tenderer by correction of the non-conformity.

1.22. Opening and Evaluation of Tenders

1.22.1. The Procuring entity will evaluate and compare the tenders which have been determined to be substantially responsive, pursuant to paragraph 1.21.

1.22.2. In addition, the bidders will be evaluated on the following:

   a) Bid security
   b) Evidence of dealership
   c) Payment terms including credit period
   d) Financial capacity
   e) Past performance

1.22.3. The comparison shall be of the price to include all costs, as well as duties and taxes payable on all the materials to be used in the provision of the services.

1.22.4. The Procuring entity’s evaluation of a tender will take into account, in addition to the Tender price, the following factors, in the manner and to the extend indicated in Paragraph 1.22.2 and in the technical specifications:

   a) Operational plan proposed in the tender;
b) Payment schedule;

1.22.5. Pursuant to paragraph 1.23.1 the following evaluation methods will be applied:

a) Operational Plan

(i) The Procuring entity requires that the services under the Invitation for Tenders shall be performed at the time specified in the Schedule of requirements. A tender offering to perform longer than the procuring entity’s required delivery time will be treated as non-responsive and rejected.

b) Payment Schedule

Tenderers shall state their tender price and terms for the payment. Tenderers will be evaluated on the basis of this base price.

1.23. Contacting the Procuring entity

1.23.1. Subject to paragraph 1.19, no Tenderer shall contact the Procuring entity on any matter relating to its tender, from the time of the tender opening to the time the contract is awarded.

1.23.2. Any effort by a Tenderer to influence the Procuring entity in its decisions on tender evaluation, tender comparison, or contract award may result in the rejection of the Tenderer’s tender.

1.24. Award of Contract

(a) Post-qualification

1.24.1. In the absence of pre-qualification, the Procuring entity will determine to its satisfaction whether the Tenderer that is selected as having submitted the lowest evaluated responsive tender is qualified to perform the contract satisfactorily.

1.24.2. The determination will take into account the Tenderer financial and technical capabilities. It will be based upon an examination of the documentary evidence of the Tenderers qualifications submitted by the Tenderer, pursuant to paragraph 12.3, as well as such other information as the Procuring entity deems necessary and appropriate.

1.24.3. An affirmative determination will be a prerequisite for award of the contract to the Tenderer. A negative determination will result in rejection of the Tenderer’s tender, in which event the Procuring entity will proceed to the next lowest evaluated tender to make a similar determination of that Tenderer’s capabilities to perform satisfactorily.

1.25. Award Criteria
1.25.1. Subject to paragraph 1.10, 1.23 and 1.28 the Procuring entity will award the contract to the successful Tenderer whose tender has been determined to be substantially responsive and has been determined to be the lowest evaluated tender, provided further that the Tenderer is determined to be qualified to perform the contract satisfactorily.

1.26. **Evaluation criteria**
   
   **1.26.1.** Preliminary or Administrative Compliance Examination (Mandatory to proceed for further evaluation)
   
   **1.26.2.** Technical Evaluation – (75% of total marks) Bidders who obtain 75% score and above at the Technical stage shall proceed to financial evaluation Stage.
   
   **1.26.3.** Financial and Commercial Evaluation - lowest evaluated bidder (25% of total marks)

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<th>1.26.4.</th>
<th><strong>MANDATORY REQUIREMENTS:</strong></th>
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<td>o Certificate of Incorporation/Registration</td>
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<td>o Tax compliance certificate</td>
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<td>o PIN and VAT certificates</td>
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<td>o Tender security equivalent to 2% of the total Bid Amount in form of Bankers cheque or Bank guarantee, and should be valid for (30) Thirty days beyond the tender validity period.</td>
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<td>o The tender shall remain valid for a period of One hundred and fifty (180) days from the date of opening.</td>
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<td>o Tenderers MUST provide Manufacturers Authorization for the product quoted for.</td>
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<td>o The equipment should meet EU, KEBS standards with proof of ISO standardization.</td>
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<th>TECHNICAL REQUIREMENTS</th>
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<td>The product offered MUST conform to the tender technical specifications.</td>
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<th><strong>FINANCIAL AND COMMERCIAL EVALUATION</strong></th>
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<td>The formulae for determining the Financial Score (Sf) shall, be as follows:- Sf = 100 X ( \frac{F_m}{F} ) where Sf is the financial score; Fm is the lowest priced financial tender and F is the price of the tender under consideration. Tenders will be ranked according to their combined technical (St) and financial (Sf) scores using the weights ( T = \text{the weight given to the Technical Proposal}; \ P = \text{the weight given to the Financial Proposal}; \ T + p = 1 ). The combined technical and financial score, S, is calculated as follows:- S = St x T % + Sf x P %. Commercial evaluation will be based on the formula given. This will attract a maximum of 25% marks.</td>
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1.27. Procuring entity’s Right to Vary quantities

1.27.1. The Procuring entity reserves the right at the time of contract award to increase or decrease the quantity of services originally specified in the Schedule of requirements without any change in unit price or other terms and conditions.

1.28. Procuring entity’s Right to Accept or Reject Any or All Tenders

1.28.1. The Procuring entity reserves the right to accept or reject any tender, and to annul the tendering process and reject all tenders at any time prior to contract award, without thereby incurring any liability to the affected Tenderer or Tenderers or any obligation to inform the affected Tenderer or Tenderers of the grounds for the Procuring entity’s action.

1.29. Notification of Award

1.29.1. Prior to the expiration of the period of tender validity, the Procuring entity will notify the successful Tenderer in writing that its tender has been accepted.

1.29.2. The notification of award will constitute the formation of the Contract.

1.29.3. Upon the successful Tenderer’s furnishing of the performance security pursuant to paragraph 1.31, the Procuring entity will promptly notify each unsuccessful Tenderer and will discharge its tender security, pursuant to paragraph 1.14.

1.30. Signing of Contract

1.30.1. At the same time as the Procuring entity notifies the successful Tenderer that its tender has been accepted, the Procuring entity will send the Tenderer the Contract Form provided in the tender documents, incorporating all agreements between the parties.

1.30.2. Within thirty (30) days of receipt of the Contract Form, the successful Tenderer shall sign and date the contract and return it to the Procuring entity.

1.31. Performance Security

1.31.1. Within thirty (30) days of the receipt of notification of award from the Procuring entity, the successful Tenderer shall furnish the performance security in accordance with the Conditions of Contract, in the Performance Security Form provided in the tender documents, or in another form acceptable to the Procuring entity.

1.31.2. Failure of the successful Tenderer to comply with the requirement of paragraph 1.30 or paragraph 1.31 shall constitute sufficient grounds for the annulment of the award and forfeiture of the tender security, in which event the Procuring entity may make the award to the next lowest evaluated Candidate or call for new tenders.
1.32. Corrupt Fraudulent Practices

1.32.1. The Procuring entity requires that Tenderers observe the highest standard of ethics during the procurement process and execution of contracts. In pursuance of this policy, the Procuring entity:

(a) defines, for the purposes of this provision, the terms set forth below as follows:

(i) “corrupt practice” means the offering, giving, receiving or soliciting of anything of value to influence the action of a public official in the procurement process or in contract execution; and

(ii) “fraudulent practice” means a misrepresentation of facts in order to influence a procurement process or the execution of a contract to the detriment of the Procuring entity, and includes collusive practice among Tenderer (prior to or after tender submission) designed to establish tender prices at artificial non-competitive levels and to deprive the Procuring entity of the benefits of free and open competition;

(b) will reject a proposal for award if it determines that the Tenderer recommended for award has engaged in corrupt or fraudulent practices in competing for the contract in question;

(c) will declare a firm ineligible, either indefinitely or for a stated period of time, to be awarded any contract if it at any time determines that the firm has engaged in corrupt or fraudulent practices in competing for, or in executing, a contract.

1.32.2. Furthermore, Tenderers shall be aware of the provision stated in the General Conditions of Contract.
2. **SECTION D –GENERAL CONDITIONS OF CONTRACT**

2.1. **Definitions**

2.1.1. In this Contract, the following terms shall be interpreted as indicated:

(a) “The Contract” means the agreement entered into between the Procuring entity and the Tenderer, as recorded in the Contract Form signed by the parties, including all attachments and appendices thereto and all documents incorporated by reference therein.

(b) “The Contract Price” means the price payable to the Tenderer under the Contract for the full and proper performance of its contractual obligations.

(c) “The services” means services to be provided by the Tenderer including materials and spare parts which the Tenderer is required to provide to the Procuring entity under the Contract.

(d) “The Procuring entity” means the organization sourcing for the services under this Contract.

(e) “The Tenderer” means the individual or firm providing the services under this Contract.

2.2. **Application**

2.2.1. In this Contract, the following terms shall be interpreted as indicated:

2.2.2. These General Conditions shall apply in all Contracts made by the Procuring entity for the procurement of services.

2.3. **Country of Origin**

2.3.1. For purposes of this Clause, “origin” means the place where the consumable materials and spares used for the provision of services were mined, grown, or produced.

2.3.2. The origin of Materials is distinct from the nationality of the Tenderer.

2.4. **Standards**

2.4.1. The services provided under this Contract shall conform to the standards mentioned in the Technical Specifications.

2.5. **Use of Contract Documents and Information**
2.5.1. The Candidate shall not, without the Procuring entity’s prior written consent, disclose the Contract, or any provision thereof, or any specification, plan, drawing, pattern, sample, or information furnished by or on behalf of the Procuring entity in connection therewith, to any person other than a person employed by the Tenderer in the performance of the Contract.

2.5.2. The Tenderer shall not, without the Procuring entity’s prior written consent, make use of any document or information enumerated in paragraph 5.1 above.

2.5.3. Any document, other than the Contract itself, enumerated in paragraph 1.5.1 shall remain the property of the Procuring entity and shall be returned (all copies) to the Procuring entity on completion of the Tenderer’s performance under the Contract if so required by the Procuring entity.

2.6. Patent Rights

2.6.1. The Tenderer shall indemnify the Procuring entity against all third-party claims of infringement of patent, trademark, or industrial design rights arising from use of the services or any part thereof in the Procuring entity’s country.

2.7. Performance Security

2.7.1. Within thirty (30) days of receipt of the notification of Contract award, the successful Tenderer shall furnish to the Procuring entity the performance security in the amount specified in Special Conditions of Contract.

2.7.2. The proceeds of the performance security shall be payable to the Procuring entity as compensation for any loss resulting from the Tenderer’s failure to complete its obligations under the Contract.

2.7.3. The performance security shall be denominated in the currency of the Contract, or in a freely convertible currency acceptable to the Procuring entity and shall be in the form of a bank guarantee or an irrevocable letter of credit issued by a reputable bank located in Kenya or abroad, acceptable to the Procuring entity, in the form provided in the tender documents.

2.7.4. The performance security will be discharged by the Procuring entity and returned to the Candidate not later than thirty (30) days following the date of completion of the Tenderer’s performance obligations under the Contract, including any warranty obligations, under the Contract.

2.8. Inspection and Tests

2.8.1. The Procuring entity or its representative shall have the right to inspect and/or to test the services to confirm their conformity to the Contract specifications. The Procuring entity shall notify the Tenderer in writing, in a timely manner, of the identity of any representatives retained for these purposes.

2.8.2. The inspections and tests may be conducted on the premises of the Tenderer or
its subcontractor(s). If conducted on the premises of the Tenderer or its subcontractor(s), all reasonable facilities and assistance, including access to drawings and production data, shall be furnished to the inspectors at no charge to the Procuring entity.

2.8.3. Should any inspected or tested services fail to conform to the Specifications, the Procuring entity may reject the services, and the Tenderer shall either replace the rejected services or make alterations necessary to meet specification requirements free of cost to the Procuring entity.

2.8.4. Nothing in paragraph 2.8 shall in any way release the Tenderer from any warranty or other obligations under this Contract.

2.9. Payment

2.9.1. The method and conditions of payment to be made to the Tenderer under this Contract shall be specified in Special Conditions of Contract.

2.9.2. Payments shall be made promptly by the Procuring entity as specified in the contract.

2.10. Prices

2.10.1. Prices charged by the Tenderer for Services performed under the Contract shall not, with the exception of any price adjustments authorized in Special Conditions of Contract, vary from the prices by the Tenderer in its tender.

2.11. Assignment

2.11.1. The Tenderer shall not assign, in whole or in part, its obligations to perform under this Contract, except with the Procuring entity’s prior written consent.

2.12. Subcontracts

2.12.1. The Tenderer shall notify the Procuring entity in writing of all subcontracts awarded under this Contract if not already specified in the tender. Such notification, in the original tender or later, shall not relieve the Tenderer from any liability or obligation under the Contract.

2.13. Termination for Default

2.13.1. The Procuring entity may, without prejudice to any other remedy for breach of Contract, by written notice of default sent to the Tenderer, terminate this Contract in whole or in part:

(a) If the Tenderer fails to provide any or all of the services within the period(s) specified in the Contract, or within any extension thereof granted by the Procuring entity.
(b) If the Tenderer fails to perform any other obligation(s) under the Contract.

c) If the Tenderer, in the judgment of the Procuring entity has engaged in corrupt or fraudulent practices in competing for or in executing the Contract.

2.13.2. In the event the Procuring entity terminates the Contract in whole or in part, it may procure, upon such terms and in such manner as it deems appropriate, services similar to those undelivered, and the Tenderer shall be liable to the Procuring entity for any excess costs for such similar services.

2.14. Liquidated Damages

2.14.1. If the Tenderer fails to provide any or all of the services within the period(s) specified in the contract, the procuring entity shall, without prejudice to its other remedies under the contract, deduct from the contract prices liquidated damages sum equivalent to 0.5% of the price of the unperformed services up to a maximum deduction of 10% of the unperformed services. After this the procuring entity may consider termination of the contract.

2.15. Resolution of Disputes

2.15.1. The procuring entity and the Tenderer shall make every effort to resolve amicably by direct informal negotiation any disagreement or dispute arising between them under or in connection with the Contract.

2.15.2. If, after thirty (30) days from the commencement of such informal negotiations both parties have been unable to resolve amicably a contract dispute the provisions of the Arbitration Act of the Laws of Kenya shall apply.

2.16. Language and Law

2.16.1. The language of the contract and the law governing the contract shall be English language and the Laws of Kenya respectively unless otherwise stated.

2.17. Force Majeure

2.17.1. The Tenderer shall not be liable for forfeiture of its performance security, or termination for default if and to the extent that it’s delay in performance or other failure to perform its obligations under the Contract is the result of an event of Force Majeure.
3. **SECTION E - SPECIAL CONDITIONS OF CONTRACT**

3.1. Special Conditions of Contract shall supplement the General Conditions of Contract. Whenever there is a conflict, between the GCC and the SCC, the provisions of the SCC herein shall prevail over these in the GCC.

a) Prices quoted must be net, inclusive of all Government Taxes, civil works, factory acceptance tests, Training Costs, Site acceptance Tests, spare parts and delivery, Installation and commissioning costs to the site identified by the Kenya Meteorological Service.

b) The unit prices quoted must be in Kenya Shillings or another freely convertible currency e.g. US Dollar.

c) No tender document will be accepted after the official closing date/time as specified in the tender notice.

d) Tenderers are required to attach certificates of Registration/Incorporation plus Tax compliance certificate/VAT to tender documents.

e) Form of Tender, Price Schedule and Schedule of Requirements should be duly filled, signed and stamped.

f) The bidders must indicate their payment terms including the credit period.

g) Bidders must provide evidence of financial capability to execute the contract from the bank.

h) Bidders must attach a brochure to accompany their bids.

i) Successful bidders shall provide a performance bond equivalent to 10% of the bid price within (30) thirty days from notification of Award.

j) All deliveries shall be verified against the approved Technical Specifications and any deviations from the approved shall be rejected and contract cancelled.

k) Bidders must provide proof that the equipment meets the world meteorological Organization standards.

l) Bidders are required to submit a requirement for fast moving spare parts to form part of their proposal for the bid.

m) Where a Tenderer is not a manufacturer of the System, documentary commitment of the manufacturer to supply the equipment and after-sale support is necessary Manufacturer’s Authorization must be provided.

n) Bidders MUST provide (2) sealed envelopes containing the Technical and Financial Proposals clearly marked as stipulated under section c,(17) of the General conditions of Contract. The Financial Proposal should be submitted in the format stipulated under section F (ii) i.e Price Schedule. The mandatory requirements must form part of the technical proposal.

o) Bidder shall provide a detailed course syllabus and undertake training both at the factory and on-site for maintenance Engineers/Technicians and operators/end users.

p) Bidder shall include in their bid detailed proposals for acceptance test procedure both at the Factory of Manufacture and on site after installation that must be of such nature that they demonstrate that all requirements of the relevant specifications have been met.

q) The installation, testing, on site provisional acceptance and commissioning of
the System shall be executed under the supervision of departmental representative(s) who shall at all times have access to the works.

r) In carrying out the installation, the Bidder shall be responsible for the Civil Works. In so doing every precaution shall be taken to avoid damage to existing property. The bidder will be held responsible for all damage hereto, arising from execution of the contract and shall make good all such damage when directed at bidders’ own expense.

s) The after-installation site clearance shall be the responsibility of the bidder. The bidder shall ensure that the site and if necessary the equipment, is properly cleaned and kept tidy.

t) Bidder shall provide all the relevant brochures and the proposed AWS configuration.

u) Period of guarantee of availability of spares for the AWS should not be less than ten (10) years.

v) The Procuring entity has the discretion to subject this tender to the preferential treatment in compliance with the Government initiative to restrict 30% of Government procurement opportunities for the youth, women and the disabled.

w) **3.2. WORK SCHEDULE AND GUARANTEES**

The bidder shall provide information for work schedules and guarantees as given below:

3.2.1. Period for Design and Configuration of AWS _____ Days

3.2.2. Period of manufacture of AWS ________________ Days

3.2.3. Period of Factory Acceptance Tests ________________________ Days

3.2.4. Period for Factory Training______________________________ Days

3.2.5. Shipping Period (By Air) ________________________________ Days

3.2.6. Civil Works ___________________________________________ Days

3.2.7. Installation and On-Site Training for 2 sites______________ Days

3.2.8. Training of operators at KMS HQS ______________________ Days

3.2.9. Testing, provisional acceptance and commissioning ________ Days

3.2.10. The warranty period of the offered equipment shall be twelve (12) months from the date of commissioning. The warranty shall cover spares, transport
cost, maintenance and repair performed both locally and at the factory
4. SECTION F - SCHEDULE OF REQUIREMENTS

4.1. Bidders will be expected to deliver within the period specified in the Bid documents. The department reserves the right to assess the bidders’ capability on the same.

4.2. All tenderers must quote and give a breakdown of prices for each item/sub-item provided in Kenya shillings including delivery to the Kenya Meteorological department.

<table>
<thead>
<tr>
<th>ITEM</th>
<th>ITEM DESCRIPTION</th>
<th>QUANTITY</th>
<th>BRAND/PART NUMBER</th>
<th>UNIT PRICE</th>
<th>TOTAL COST</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Datalogger with Display and 32 Mb flash Memory</td>
<td>36</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Radio Modems with Complete Accessories to display real-time data on observer PC</td>
<td>36</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>GSM/GPRS Modem</td>
<td>36</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Enclosure, NEMA-4, Fiberglass with Military Connectors and all internal connections</td>
<td>36</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Rain Gauge, Stainless Steel, 0.2 mm/Tip 15 meters cable and connector</td>
<td>36</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Wind Sensor, Ultrasonic, 0-5V or SDI-12</td>
<td>36</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Temperature/Humidity, Sensor with PRT temperature</td>
<td>36</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>7</td>
<td>Radiation Shield, AT/RH sensor</td>
<td>36</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>8</td>
<td>Barometric Pressure Sensor</td>
<td>36</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Pyranometer, WMO First Class, 3 meters cable and connectors</td>
<td>36</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ITEM</td>
<td>ITEM DESCRIPTION</td>
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</tr>
<tr>
<td>10</td>
<td>Net Radiation Sensor</td>
<td>36</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>Enclosure Mounting Hardware</td>
<td>36</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>Mounting Kit, RG Tipping Bucket to 2” Pipe</td>
<td>36</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>Mounting Kit, Wind sensor</td>
<td>36</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>Tower, Galvanized Steel, 10 meter Guyed</td>
<td>36</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>Solar Panel, 30 Watt with cable and connector</td>
<td>36</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>16</td>
<td>Battery, 12VDC, 100AH</td>
<td>36</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>17</td>
<td>Solar Panel Charger Ctrl, 4 amp</td>
<td>36</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>18</td>
<td>Battery Charger for AC Power</td>
<td>36</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>19</td>
<td>Computers with Display and Software for Meteorological Observations</td>
<td>36</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>20</td>
<td>Central Computer Base Station with data collection software, data management software and meteorological messages generating software</td>
<td>36</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>21</td>
<td>Civil works</td>
<td>1 Lot</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>22</td>
<td>Installation and Engineering</td>
<td>1 Lot</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>23</td>
<td>10 % Spares For AWS</td>
<td>N/A</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

TOTAL COST
5. SECTION G - TECHNICAL SPECIFICATIONS

5.1. OVERVIEW

The AWS network shall consist of 36 Automatic Weather Stations (AWS) with manual input of the WMO observer data (clouds, visibility, and ceiling). The weather stations should be totally WMO compliant. The 36 stations shall be connected to a central station. Each station shall have a local display with the present data and can create the local METAR/SYNOP reports. The stations shall also be polled by the existing central site using GSM/GPRS communications module where the data shall be available to the KMS for inclusion with the WMO GTS Synoptic Reports and weather forecasting system as per latest WMO recommendations on GTS including BUFR via FTP or telnet. The data from all 36 AWS shall be polled using existing Central Base Station computer at KMS headquarters. The entire AWS database shall be stored in a common database. All data must be automatically via FTP or telnet must be transmitted to the GTS system. The network topology is shown in the figure below:

KMS AWS Network Topology (the deliverables under the AWS portion are shown in green)
5.2. METEOROLOGICAL NETWORK CONFIGURATION

5.2.1. Requirements for the AWS.

5.2.1.1. The AWS equipment should incorporate the state-of-the-art and provide capability for unattended operation for at least one year at remote places using a 12V single sealed maintenance-free battery, rechargeable through a solar panel. All equipment should be suitable for outdoor applications. The AWS must be housed in weatherproof enclosure and shall meet all specified environmental specifications.

5.2.1.2. The chassis/enclosure should be stainless steel and withstand hostile environment and its molding should be completely sealed by suitable gasket to avoid penetration of moisture, salinity etc.

5.2.1.3. AWS system should have in-built memory of storing data for at least 12 months period.

5.2.1.4. SD memory card slot or any other commercially available latest technology memory device for data retrieval and transfer of set up of the system. All set up and configuration files should be transferable through the solid state memory device to the data logger and vice versa.

5.2.1.5. The system should have inbuilt test facility to monitor and display the configuration and functions of various subsystems including present and past data.

5.2.1.6. The proposed Base Station PC at the KMS headquarters using GSM/GPRS network shall poll the AWS. The AWS hardware should have RS-232, RS-485 and USB interface. The ports are also to be used for programming and data retrieval, thus making the system fully compatible with a Personal Computer (PC) / Laptop, as and when required.

5.2.1.7. System should have a dedicated port to interface a remote display unit and facilitate values of meteorological parameters to be displayed in real time basis at user-defined intervals.

5.2.1.8. Facility to give manual commands to transmit data for testing purpose.

5.2.1.9. System to have facility / capability to add Satellite telemetry such as METEOSAT and/or UHF/VHF radio system and or both in the future.

5.2.1.10. System must have ability to simultaneously transmit on all communications devices without any scheduling conflicts. No shared serial ports permissible.
5.2.2. **Automatic Weather Station Deliverables**

The AWS shall be configured as WMO Synoptic stations. Data collection and processing/reporting shall be according to WMO methods. The 36 stations shall communicate every hour (or more frequent) via GSM/GPRS modem or VPN network to the KMS Headquarters. The station data shall be displayed locally at the Meteorological Office and also be available for WMO GTS transmission and to the forecasting system.

The following table lists the AWS deliverables.

<table>
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<tr>
<td>23</td>
<td>10 % Spares For AWS</td>
<td>N/A</td>
</tr>
</tbody>
</table>

Table 1

5.2.3. **Communications**

KMS proposes to use the GSM/GPRS communication and VPN network for data communications. KMS shall be responsible for providing SIM cards with Circuit Switched Data to operate on the GSM/GPRS and VPN network.

5.2.4. **Meteorological Stations (AWS)**

The Automatic Weather Station (AWS) shall consist of a robust Data logger, modem, battery, solar panels, voltage regulator, meteorological sensors, tower and mounting accessories. It is also anticipated that some of these stations could be located at Airports. The stations shall be configured with all meteorological sensors listed on table 1 above plus computers with METAR generating software. Besides solar power for back-up, AC power shall also be used for redundancy. The AWS shall transmit the METAR/SYNOP messages back to the Observer Station PC via Ethernet LAN and to the central server via modem and/or VPN network. Since the AWS system shall have to operate under tropical weather conditions the system shall be rugged and environmentally sealed to the outside. All the electronics shall be sealed in a NEMA 4 enclosure and all connections made with military type connectors.

Each AWS installation shall be composed of the following:

- Data logger.
- Modem (GSM/GPRS/EDGE) necessary cabling and mounting hardware
- Radio Modem to communicate with the Observer Station PC.
- Ethernet port for LAN and VPN connection
- NEMA 4 type housing containing Data logger, Voltage Regulator and other electronic peripherals and locking mechanism
- Power supply system including solar panel, battery, regulator, and all necessary cabling
- AC power regulator for the AWS stations
- Tower Computers with Display for the METAR and SYNOPTIC stations
- Software for manual entry of Visibility, Ceiling and Cloud/Type cover
- Precipitation Sensors
- Combined Air Temperature/Relative Humidity Sensor
- Atmospheric Pressure Sensor
- Combined Wind Speed Sensor/Wind Direction Sensor
- Solar Radiation Sensor
- Tower and all mounting hardware
- Civil works including all installation services and materials
- Fencing and gates where required

5.3. METAR/SYNOPTIC SOFTWARE

For the AWS stations a METAR / SYNOPS generating software shall be provided along with computers and displays. The computer and software serves two functions, first as a local data display of the AWS data for meteorological operations and/or AWS data for automatic weather stations. Second is the ability to manually enter the WMO observer parameters of Visibility, Ceiling and Cloud/Type Cover for the METAR stations and/or WMO observer weather data for the SYNOPTIC stations.

The software shall automatically interact by means of the computer with the AWS via suitable port and shall hourly collect and display the automatic data such as: Rain, Barometric pressure, Air Temperature and Relative Humidity, Solar Radiation (sunshine duration), Wind Speed and Wind direction. The observer shall be notified that the computer has performed such activity by means of a blinking display and sound, then the observer should enter the desired data such as: Visibility, Ceiling and Cloud/Type Cover for the METAR stations or WMO observed data for the SYNOPTIC stations. The manual data then shall be appended to the automatic data and recorded to the Data logger so it can be transmitted to the command center via VPN network.

The Primary data collection equipment shall be the Data logger. If there is any failure of the PC or the observer fails to enter the data then the PC shall not be a single point of failure. Automated data shall still be recorded every hour.
The software should automatically collect and compute the following parameters as minimum:

- Rain (Accumulated Rain)
- Barometric Pressure (QNH, QFE, Tendency)
- Solar Radiation (W/m², Hours of Sun)
- Wind Speed (Gust, Instantaneous, Average)
- Wind Direction (Instantaneous, 2minute Average, 10 minute Average)
- Air Temperature (Ambient Temperature, Maximum, Minimum, Temp. of Evap.)
- Relative Humidity (Humidity, Dew Point)

5.4. DATALOGGER

The Data logger shall incorporate state-of–the-art technology and consume low power. It should also have embedded operating system software in order to facilitate the interaction and programming, data retrieval, interrogation of the Datalogger. This software shall provide the option of creating setups files without being physically connected to the Datalogger, thus enabling the user to create setups at the office and then download them to the Datalogger in the field. The Datalogger should have an integrated LCD display in order for the user to interrogate the unit and see the data onsite. It must also provide the means to download the data using a memory card.

Datalogger Specifications:

<table>
<thead>
<tr>
<th>PARAMETER</th>
<th>SPECIFICATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating Temperature</td>
<td>From -40 +60 °C</td>
</tr>
<tr>
<td>Humidity</td>
<td>0 to 100%</td>
</tr>
<tr>
<td>Memory:</td>
<td>Flash Memory &gt; 16MB</td>
</tr>
<tr>
<td>Sample Intervals:</td>
<td>Selectable by user. From 1 second to 24 hours</td>
</tr>
<tr>
<td>Serial Ports:</td>
<td>At least 3 ports RS232 and a true USB port</td>
</tr>
<tr>
<td>Other Ports:</td>
<td>1 RS485 and 1 SDI-12 port</td>
</tr>
<tr>
<td><strong>PARAMETER</strong></td>
<td><strong>SPECIFICATION</strong></td>
</tr>
<tr>
<td>-------------------------------</td>
<td>-----------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Storage Card:</td>
<td>SD-RAM Card or industry standard PCMCIA slot to download data/setups etc.</td>
</tr>
<tr>
<td>Integrated Keypad and Display:</td>
<td>Keypad-buttons, Display and Datalogger should be all one integrated unit.</td>
</tr>
<tr>
<td></td>
<td>Type LCD 2 lines by 20 characters as minimum.</td>
</tr>
<tr>
<td>Power:</td>
<td>The Datalogger should work with a supplied voltage of 8 to 15 VDC</td>
</tr>
<tr>
<td>Power Consumption:</td>
<td>&lt;10mA/12V</td>
</tr>
<tr>
<td>Protection:</td>
<td>reverse polarity protection</td>
</tr>
<tr>
<td>Datalogger Input / Outputs:</td>
<td></td>
</tr>
<tr>
<td>Protection:</td>
<td>All Digital and Analog Input shall be protected against electro static discharge</td>
</tr>
<tr>
<td></td>
<td>and reverse polarity with self-resetting circuitry.</td>
</tr>
<tr>
<td>Analog Inputs</td>
<td>≥8 single-ended Analog channels thus producing 4 differential channels.</td>
</tr>
<tr>
<td></td>
<td>Resolution ≥ 16 bits</td>
</tr>
<tr>
<td></td>
<td>Absolute Accuracy of ± 0.1% of full scale.</td>
</tr>
<tr>
<td></td>
<td>Must be expandable</td>
</tr>
<tr>
<td>Digital I/O</td>
<td>Digital Input Output ports ≥ 6. Must be expandable</td>
</tr>
<tr>
<td></td>
<td>Resolution ≥ 24 bits</td>
</tr>
<tr>
<td>SDI-12 Port:</td>
<td>≥ 1 SDI-12 Interface port.</td>
</tr>
<tr>
<td></td>
<td>It must be able to communicate with at least 9 sensors. It shall be at least have</td>
</tr>
<tr>
<td></td>
<td>software V1.3</td>
</tr>
<tr>
<td>Ethernet</td>
<td>IEEE 802.310BaseT, with capability to also connect at 100/1000Mbps Base-T, Full/half</td>
</tr>
<tr>
<td></td>
<td>Duplex with auto-negotiate</td>
</tr>
<tr>
<td>DC Excitation Output</td>
<td>+2.5v and +12V</td>
</tr>
<tr>
<td>Memory</td>
<td>32MB Flash ROM expandable to 1GB</td>
</tr>
<tr>
<td>PARAMETER</td>
<td>SPECIFICATION</td>
</tr>
<tr>
<td>--------------</td>
<td>-------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>RTC Clock</td>
<td>RTC accuracy of better than 10 -20s per month with lithium battery with minimum 2 year back-up time</td>
</tr>
</tbody>
</table>

5.5. GSM OR OTHER MODEMS

The GSM/GPRS wireless modem shall be multi-band GSM/GPRS Class 10 performance. This standalone modem provides wireless data communication and should integrate seamlessly with virtually any application.

GSM/GPRS Model Features:

- GPRS Class 10
- Dual-band 850/1900 or 900/1800 MHz GSM/GPRS
- Packet data up to 85.6K bps
- Embedded TCP/IP stack
- GSM Class 1 and Class 2 Group 3 Fax
- MNP 2 error correction, V.42bis compression
- SMA antenna connector and SIM socket
- Serial interface supports DTE speeds to 115.2K bps
- 12-channel GPS functionality
- AT command compatible
- MNP2 error correction, V.42bis compression
- Numerous LEDs provide operational status
- Desktop or panel mounting
- PTCRB certified
- Carrier approved
- Two-year warranty

5.6. TOWER

Equilateral triangle guyed 10 Meter tower. This tower shall be constructed with high strength steel tubing and feature Zig-Zag solid rod bracing to provide exceptional strength. The Tower should be hot dip galvanized after fabrication. The tower and guys should withstand winds of up to 150 knots.

Tower Lightning and Grounding Protection

The following lightning protection system shall be provided for the tower:

- 2m Aerial rod at the top of the tower;
• The tower shall be used as the isolator;

• 3 ground rods shall be installed in the ground about 2 meters deep and the 3 legs of the tower shall be connected to its respective ground rod.

5.7. ENCLOSURE

The DCP and battery shall be mounted in a stainless Steel NEMA 4X enclosure. This enclosure shall be sealed to protect the equipment against rain, high humidity, dust and insects. All the electrical connections outside this enclosure shall be made through waterproof ambient sealed connectors type MS, one for each sensor, this connectors shall be keyed differently by the number of pins for each sensor to avoid confusion during installation. The connectors shall be installed in the bottom of the enclosure to reduce the risks of water and humidity penetration. Outside connectors are provided to eliminate the need to ever open the enclosure.

All data recorder/transmitter printed circuit boards shall be conformal coated to protect the system from humidity and moisture.

5.8. AWS SENSORS

All sensors shall provide an electric signal directly related to the measuring magnitude. The sensors provided should come calibrated from the factory with Certificates of Calibration, upon station delivery and commissioning. All sensors should be supply with cables that are UV proof to ensure good performance in the tropical environment. All sensors should have military style connectors specially keyed for each sensor to ensure proper connection between the sensor and the Datalogger.

All support arms holding sensors should be manufactured from anodized aluminium or galvanized steel and fitted to the tower-scaffold by means of stainless steel and/or hot galvanized clamps and stock of screws. Consideration should be taken to avoid vibrations due to high winds. All sensors that shall be connected to the Datalogger should be easily identifiable with labels for each cable.

5.9. AIR TEMPERATURE AND RELATIVE HUMIDITY

The AT/RH sensor should be combine in a single unit and suitable for remote monitoring applications. This sensor should be housed on a Ventilated radiation shield made of thermoplastics. The supplier must provide a Radiation Shield mounted at 2 meters following WMO standards.

AT/RH Specifications:

Humidity: 0 to 100%
Temperature: -40 to +60°C
5.10. **WIND SPEED AND WIND DIRECTION**

The AT/RH sensor shall have no moving parts and be of ultrasonic type sensor resistant to harsh environments. This sensor should be mounted at 10 meters as per WMO standards.

**Wind Speed Wind Direction Specifications:**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wind Speed</td>
<td>Range: 0 – 65m/sec</td>
</tr>
<tr>
<td></td>
<td>Accuracy: 2%</td>
</tr>
<tr>
<td></td>
<td>Resolution: 0.01m/sec</td>
</tr>
<tr>
<td></td>
<td>Operating temperature: -50 to +70°C</td>
</tr>
<tr>
<td>Humidity</td>
<td>0 to 100%</td>
</tr>
<tr>
<td>Wind Direction</td>
<td>Range: 0 to 359° (no dead band)</td>
</tr>
<tr>
<td></td>
<td>Accuracy: 3%</td>
</tr>
<tr>
<td></td>
<td>Resolution: 1°</td>
</tr>
</tbody>
</table>

5.11. **RAIN GAUGE**

The Rain Gauge sensor should be made of material resistant to corrosion and the environment such as Stainless Steel. The sensor should not require external power other than the power provided by the Datalogger. The Rain Gauge must use a Tipping Bucket mechanism and a rugged proximity switch to transmit pulses to the Datalogger. When a giving amount of rain collects the bucket shall tip and cause the magnetic switch to send a pulse to the Datalogger, this amount shall be predetermined by factory calibration. After the first tip, the second bucket should position automatically under the funnel to collect rain. All installation items shall be provided and should be of fabricated of materials resistant to corrosion. The top of the rain gage should be at 1 meter above ground following WMO standards.

**Tipping Bucket Rain Gauge Specifications:**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Orifice size</td>
<td>20cm</td>
</tr>
<tr>
<td>Resolution</td>
<td>0.2mm</td>
</tr>
<tr>
<td>Switch</td>
<td>Magnetic Proximity Switch</td>
</tr>
</tbody>
</table>
Output: 0.1 second switch closure
Accuracy: ±2% @ 50.8 mm/hour
Operating temperature: 0 to +60°C
Humidity 0 to 100%

5.12. BAROMETRIC SENSOR

The barometric pressure sensor should be installed in a Nema 4 enclosure with the Datalogger and it should have a pressure port to minimize the effects that the wind can cause. This sensor should be capable of working in elevations from -200 feet to 10,000 feet. The sensor shall be mounted inside the NEMA 4 enclosure vented to the atmosphere.

**Barometric Pressure Sensor Specifications:**
- **Range:** 600 to 1100 hpa
- **Accuracy:** 0.25 hpa
- **Resolution:** 0.01 hpa
- **Output:** RS 232 or 0-5V or SDI-12
- **Pressure Units:** hpa
- **Operating Temperature:** -40 to +60°C
- **Humidity:** 0 to 100%

5.13. SOLAR RADIATION

The solar radiation sensor should be a First Class Pyranometer as defined by the World Meteorological Organization. It must include a white screen to prevent the Pyranometer from heating up. This sensor should be mounted at 2 meters above the ground following WMO standards.

**Solar Radiation Sensor Specifications:**
- **Spectral Range:** 300-2800nm
- **Sensitivity:** 10-15μV/W/m²
- **Accuracy:** ±5%
- **Maximum irradiance:** 3000 W/m²
- **Operating Temperature:** -40 to +80°C
- **Humidity:** 0 to 100%
5.13.1.1.2. **NET Radiation sensor specifications:**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spectral Range</td>
<td>.3-60 µm</td>
</tr>
<tr>
<td>Measurement range</td>
<td>150-1500 W/m²</td>
</tr>
<tr>
<td>Sensitivity</td>
<td>11-15µV/W/m²</td>
</tr>
<tr>
<td>Accuracy</td>
<td>±5% W/m²</td>
</tr>
<tr>
<td>Thermal Drift</td>
<td>(-10 to +40°C) &lt; 2%</td>
</tr>
<tr>
<td>Operating Temperature</td>
<td>-40 to +60°C</td>
</tr>
<tr>
<td>Humidity</td>
<td>0 to 100%</td>
</tr>
<tr>
<td>Response Time</td>
<td>2Sec</td>
</tr>
</tbody>
</table>

5.14. **POWER SUPPLY**

5.14.1.1.1. **Battery**

The battery shall have sufficient capacity to power the AWS, without charging from the solar panel, for a period of seven days (7 days).

The battery enclosure should be a polypropylene type in order to reduce accidental breakage under normal use. All battery cells shall be housed in the main enclosure.

Battery terminals should be suitable for nut and bolt ring terminal connections onto a suitably sized copper wire pair. The Battery capacity shall be ≥ to 100Amp / hour, Sealed Rechargeable type. Protection between the Battery and the Datalogger should be provided in the form of fuses.

5.14.1.1.2. **Voltage Regulation**

A voltage regulator between the solar panel and battery shall be provided. This regulator shall provide diode coupling to prevent discharge of the battery through the solar wiring during night duration. The Datalogger shall monitor both the battery voltage and the solar cell output voltage before diode coupling. The solar panel voltage shall be monitored by the Datalogger and digitized as an analog sensor input.

5.14.1.1.3. **Solar Panel Specifications**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nominal Power</td>
<td>30 watts</td>
</tr>
<tr>
<td>Peak current</td>
<td>1.67 A</td>
</tr>
<tr>
<td>Open circuit voltage</td>
<td>22.1 VDC</td>
</tr>
<tr>
<td>Wind Resistance</td>
<td>≥200 km/h</td>
</tr>
<tr>
<td>Cable</td>
<td>length ≥ 6 m</td>
</tr>
<tr>
<td>Bracket</td>
<td>Installation Bracket should be supplied</td>
</tr>
</tbody>
</table>
5.15. MANUAL DATA INPUT PCS

As part of the AWS and Synoptic stations portion of the project a quantity of one(1) computer and software are required to allow the manual input of data at the stations.

**PC Specifications:**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>CPUs</td>
<td>Rack optimised Intel Xeon Quad Core min 3.0 GHz</td>
</tr>
<tr>
<td>RAM</td>
<td>12GB RAM,</td>
</tr>
<tr>
<td>Ethernet</td>
<td>10/100/1000 Mb Ethernet NIC</td>
</tr>
<tr>
<td>HDD</td>
<td>2x 1 TB HDD</td>
</tr>
<tr>
<td>Monitor</td>
<td>One 24 inch LCD displays</td>
</tr>
<tr>
<td>CD Drive</td>
<td>DVD/CD R/W,</td>
</tr>
<tr>
<td>Power Supply</td>
<td>240 V</td>
</tr>
<tr>
<td>UPS</td>
<td>1500 VA</td>
</tr>
<tr>
<td>Operating System</td>
<td>Windows 7 or latest/ Latest LinuxRedhat,CentOs)</td>
</tr>
</tbody>
</table>
5.16. CENTRAL BASE STATION AND SYSTEM SOFTWARE

The block diagram of central base station software is as shown below. The data shall be collected by the synoptic AWS as shown in the fig. The Central Server to be located at KMS headquarters with a cellular GSM modem or Internet VPN connection for each station shall then poll the data from each AWS. A PC at the local meteorological office that shall be provided by the supplier shall also collect the data from the AWS. The local PC shall every hour collect data from the AWS; the observer shall also make a manual entry for the manual observations. A synoptic observer window shall open at the top of every hour to allow manual observed entries. This data shall be then transferred to a Synoptic file.

The Central Base station at KMS headquarters shall store all the data in ORACLE Server. The hourly data then collected from all AWS shall then be transmitted to the GTS system using email or FTP or dedicated leased line or GPRS. KMS shall be responsible for providing FTP reliable FTP connection.

The suppliers must interface the AWS with existing server.

5.17. BASE STATION SOFTWARE

The functionality of the base station software is shown below. The software serves as an interface between the GTS Switch and meteorological forecasting systems. Data are received from the networks via the modem. The functionality of the software shall provide the following capabilities:

- Ability to receive simultaneous data reception from Satellite, Radio, Modem and direct Ethernet TCP/IP connection
- Provide real-time communication statistics on two-way systems
- Decode and parse the station data.
- Ability to perform quality checks and range checking on the data
- Store the AWS network data in a local database
- Store a metafile describing the AWS stations and network
- Store a data file with the transmission quality parameters for each network DCP station
- Pass the AWS network data to the central server for other applications
- Send alarm notification through email and SMS text
- Provide for data display through web interface
- Provide near-real-time access to data from anywhere in Kenya
- Provide for monitoring and display of station using web-technologies including Google map.
- Allow for integration with WMO GTS message switching system

### 5.18. BASE STATION SOFTWARE FEATURES

The following table lists the mandatory features and capabilities that the base station software possesses:

<table>
<thead>
<tr>
<th>Feature Description</th>
<th>Version Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Runs under Windows 2008/2012 Server or Linux OS(Redhat,CentOs,etc)</td>
<td></td>
</tr>
<tr>
<td>Ability to output data to Excel, Access, SQL Server, Oracle</td>
<td></td>
</tr>
<tr>
<td>DDE points for real-time access to data</td>
<td></td>
</tr>
<tr>
<td>Crystal Reports with basic reports pre-defined. Easy report additions by user</td>
<td></td>
</tr>
<tr>
<td>Quality and alarm flags</td>
<td></td>
</tr>
<tr>
<td>Real-time trend and tabular display</td>
<td></td>
</tr>
<tr>
<td>Easy interface to GIS</td>
<td></td>
</tr>
<tr>
<td>Simplified user interface GUIs</td>
<td></td>
</tr>
<tr>
<td>Post-processing capability</td>
<td></td>
</tr>
<tr>
<td>Enhanced site and sensor information in setup</td>
<td></td>
</tr>
<tr>
<td>Site and sensor filters to simplify navigation in large systems</td>
<td></td>
</tr>
<tr>
<td>Export data in HTML and XML format for easy posting of data to a Web site</td>
<td></td>
</tr>
</tbody>
</table>
5.18.1.1.13. Multiple Communication Protocol Support
5.18.1.1.14. Data time stamps set to the second. No separate files required for data with odd or random time intervals
5.18.1.1.15. Optional real-time error detection flags on data items. Supports two thresholds of alarm detection plus “no change” checks. Items carry quality flags to tell which data items and calculations may be suspect.
5.18.1.1.16. Event and alarm reporting on user defined criteria
5.18.1.1.17. Communications diagnostics tools
5.18.1.1.18. Intuitive user screens and tools
5.18.1.1.19. Optional historical data tables
5.18.1.1.20. Wide variety of calculations before and after data storage including:
   • Arbitrary Algebraic Operations
   • Multiple Table Lookups (often used to convert stream depth to discharge)
   • Automated Calculation and Storage of Statistics (MIN, MAX, SUM, MEAN, etc. post processing option)
5.18.1.1.21. Support Graphs and tabular Data formats

Central Server Configurations

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>CPUs</td>
<td>Intel core i7 Min 3.0 GHz</td>
</tr>
<tr>
<td>RAM</td>
<td>12GB RAM,</td>
</tr>
<tr>
<td>Ethernet</td>
<td>10/100/1000 Mb Ethernet NIC</td>
</tr>
<tr>
<td>HDD</td>
<td>1 TB SATA 7200 RPM</td>
</tr>
<tr>
<td>Video</td>
<td>1GB ATI Firepro V5800</td>
</tr>
<tr>
<td>Monitor</td>
<td>One 24 inch LCD displays</td>
</tr>
<tr>
<td>CD Drive</td>
<td>DVD/CD R/W,</td>
</tr>
<tr>
<td>Power Supply</td>
<td>240 V</td>
</tr>
<tr>
<td>UPS</td>
<td>1500 VA</td>
</tr>
<tr>
<td>Operating System</td>
<td>Windows 2008 server OS</td>
</tr>
<tr>
<td>Database</td>
<td>Oracle latest version</td>
</tr>
</tbody>
</table>
5.19. SYNOP/METAR (WMO) MESSAGE GENERATION

SYNOP supports manned (MOS) and unmanned (AWS) operations on a user-defined schedule.

Below is an example of how the data shall be collected and transmitted thru the telemetry system to the Central Receive Unit. The data shall then be processed by the WMO Application and generate SPECI, METAR and SYNOP messages.

5.19.1.1.1. Example of a Typical AWS Data Logging System

The AWS Data Logger shall measure a value (or compute an average) for the following sensors every 2 minutes. Measure or average values are logged every 30 minutes.

- **WDI** Wind Direction – Measured (Instantaneous)
- **RH** Relative Humidity – Measured (Instantaneous)
- **AT** Air Temperature – Measured (Instantaneous)
- **PSP** Pyranometer – Measured (Instantaneous)
- **TB** Tipping Bucket / Rain Gauge – Measured (Instantaneous)
- **WSI** Wind Speed – Measured (Instantaneous)
- **WSA** Wind Speed – Averaged
- **WDA** Wind Direction – Averaged
- **BARO** Barometer – Measured (Instantaneous)

Sensors that are setup for averaging can either be sampled 22 times, every 5 seconds or 120/100 samples, every second. The averaged values shall then be calculated when all sensors are logged. Additionally, AWS can be programmed to run and compute the following values every 10 seconds, in some cases with a 5 second offset.

- **RAIN** Amount of rain since last measurement
- **LAISTR** Holding variable for Tiny BASIC
- **R0** Amount of rain since midnight
- **P1** Sunlight threshold
- **P2** Unused
- **GUST** Peak instantaneous wind speed in a two-minute interval.
- **ONE** Used for processing unit vector wind direction
- **DP** Calculated Dew Point
- **PSP** Calculated solar radiation
- **HR** Hours of sunlight
The WMO Data Collection application should display current weather data from an Automatic Weather station(s) (AWS) and aids the Observer in generating automated weather reports (Synop, METAR, and SPECI).

The following functionality should exist in the software packages and individual applications supplied on the Observer's PC at all times.

Ability to poll the data logger every 2 minutes for current data via a radio modem or Direc Cable connection depending on the site configuration. This data shall be displayed on the Real Time Weather Data Display. The display includes Wind, Temperature, Pressure, Radiation and Precipitation readings.

Every hour the Observation Entry Window shall open to prompt the Observer to manually enter observed data. This window shall open at configured time and shall close 6 minutes later. The values shall automatically be saved as SYNOP and/or METAR formatted messages. This process shall occur automatically regardless of Observer input.

The software must create and send WMO messages on the following schedule:

<table>
<thead>
<tr>
<th>Message Type</th>
<th>Schedule</th>
</tr>
</thead>
<tbody>
<tr>
<td>METAR</td>
<td>Hourly</td>
</tr>
<tr>
<td>SPECI</td>
<td>When Requested</td>
</tr>
<tr>
<td>Main SYNOP</td>
<td>00:00, 06:00, 12:00, 18:00</td>
</tr>
<tr>
<td>Intermediate SYNOP</td>
<td>03:00, 09:00, 15:00, 21:00</td>
</tr>
<tr>
<td>Non Standard SYNOP</td>
<td>01:00, 02:00, 04:00, 05:00, 07:00, 08:00, 10:00, 11:00, 13:00, 14:00, 16:00, 17:00, 19:00, 20:00, 22:00, 23:00</td>
</tr>
</tbody>
</table>

**Note that these times correspond to GMT time.**

5.19.1.2. Processing Data & User Interaction

The Real Time Weather Data Display shall always be displayed on the PC's desktop and shall be continually updated with latest sensor readings, usually every 2 minutes. The "Last Update" field in the upper right-hand corner shall display the last time the AWS was polled.

Message formats must be compliant with guidelines by the World Meteorological Organization in Publications No. 49, Technical Regulations and No. 306, Manual on Codes. Message formats change from location to location as needed and/or required by local conditions and authorities.

The following WMO Publications must be used as a reference for the WMO Software application as well as the configuration of the Remote Automatic Weather Stations (AWS)

The Base Station should have a software module to enable transfer of data to GTS through Automatic Message Switch in format compliant with the latest WMO recommendation on GTS including BUFR.

5.20. TRAINING
Supplier shall carry out a training program to train all the KMS personnel involved in the operation, management and maintenance of the AWS stations network. After contract award and site survey, Supplier shall provide a detailed program, stating the number of courses per subject and the length of each one. There shall be a minimum of 10 participants per course.

The program and material required for each course shall be the Supplier deliverables. Procedures to be applied to evaluate the participant’s progress shall be established in conjunction with the KMS directive personnel.

This training program shall consider specific events for each kind of activity and include as a minimum:

5.21. METEOROLOGICAL NETWORK:
- 1 Week installation training
- 1 Week classroom Operations and Maintenance

5.22. WARRANTY
All provided components and services, including equipment, tower and computer programs shall be guaranteed for a 2 years period beginning at the acceptance date of the equipment. This warranty shall be against defects in workmanship, materials.

The supplier must keep a stock of replacement parts for a minimum of 5 years and should notify KMS if one or more parts have become obsolete and recommend a direct replacement.
The supplier must clearly specify the conditions when an item is not considered under warranty.

5.23. SPARES

The supplier shall provide as minimum a 10% of the total field stations as spares as an important part of the system. The spare parts to be supplied shall be of identical functionality, electrically and mechanically to the corresponding parts in the equipment supplied under Contract.

5.24. FIELD ACCEPTANCE AN SITE ACCEPTANCE TEST

The supplier should also indicate what kind of quality control certification the manufacturer of the said equipment meets such as ISO 9000.

As part of the project the supplier must perform a Site Acceptance Test for every site to verify if all the civil works were done correctly and according to drawing, and the datalogger, sensors and all other electronics were installed properly as per drawings / WMO specifications. A Document reflecting the results must be turned in with every installation. This test should look at the following items:

- Tower
- Civil works
- Datalogger Mechanical or Physical installation
- Sensor Mechanical or Physical installation
- External Cabling
- Solar Panel and Antenna Installation
- Proper functioning of the complete AWS system

The supplier must also perform a Field Acceptance Test of all of the equipment, datalogger, sensors independently as well as a whole system. This test shall perform a physical, electrical, test of all the electronic equipment related to the AWS. The station is considered installed when the correct data can be verify at the receive station at KMS. A document reflecting the results for every component in the station shall be supplied to KMS for the entire field AWS.

5.25. DOCUMENTATION

The Supplier/Contractor shall deliver all the installation instructions and User's Guides and Manuals for all of the software and equipment supplied.

The Supplier/Contractor will deliver the equipment/software technical documentation for all of the following topics: User’s Guide; System Administrator’s

5.26. SUPPORT
After installation, the Supplier/Contractor shall propose a yearly maintenance agreement, as an after sales support service that shall include: Trouble shooting; Minor updates; Major upgrades; any official releases of software.

The Supplier/Contractor shall give a “hot line” number (working hours and days) in case of problem; and propose any other solution that could ensure sustainable and continuous operation of equipment.

5.27. PROFILE OF BIDDER.
The selection of the successful bidder shall take into account the financial stability of the bidders and the capacity to do business with the Government of Kenya (GOK).

The bidder shall present its Company Profile that shall include its financial status, physical address, CVs of its technical staff, its capacity and any other relevant information. All information provided shall be backed by documentary proof.

5.28. BIDDER REFERENCES

The bidder shall indicate in the table below the references of similar projects it has implemented in the field of cluster data based system. For each reference, name of the project, beneficiary of the project as well as a description of the project shall be provided.

<table>
<thead>
<tr>
<th>Name of the project</th>
<th>Date of execution</th>
<th>Beneficiary of the project / contact</th>
<th>Description of functionalities supplied</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
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<td></td>
</tr>
</tbody>
</table>
Section H: Tender Form and Price Schedule

(i) Form of Tender

Tender No: MEWR/N/ T/18/2013-2014
To: ………………………………………
……………………………………………………
[Name and address of procuring entity]

Gentlemen and/or Ladies:
1. Having examined the tender documents including Addenda Nos………………………………
[Insert numbers],
The receipt of which is hereby duly acknowledged, we, the undersigned, offer to supply and deliver…………………………………………………………………………………………………………………………………
[Description of materials and spares]
In conformity with the said tender documents for the sum of………………………………………
[Total tender amount in words and figures]
or such other sums as may be ascertained in accordance with the Schedule of Prices attached herewith and made part of this Tender.
2. We undertake, if our Tender is accepted, to deliver the materials and spares in accordance with the delivery schedule specified in the Schedule of Requirements.
3. If our Tender is accepted, we will obtain the guarantee of a bank in a sum equivalent to _____ percent of the Contract Price for the due performance of the Contract, in the form prescribed by ………………………………………………………………(Procuring entity).
4. We agree to abide by this Tender for a period of…..[number] days from the date fixed for tender opening of the Instructions to Tenderers, and it shall remain binding upon us and may be accepted at any time before the expiration of that period.
5. Until a formal Contract is prepared and executed, this Tender, together with your written acceptance thereof and your notification of award, shall constitute a binding Contract between us.

6. We understand that you are not bound to accept the lowest or any tender you may receive.

Dated this _______________ day of ________________ 20______.

[Signature] [In the capacity of]

Duly authorized to sign tender for and on behalf of

Name of Tenderer ______________________  Tender Number ___________.
### ii) Price Schedule

<table>
<thead>
<tr>
<th>ITEM</th>
<th>ITEM DESCRIPTION</th>
<th>QUANTITY</th>
<th>UNIT PRICE</th>
<th>TOTAL COST</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Datalogger with Display and 32 Mb flash Memory</td>
<td>36</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Radio Modems with Complete Accessories to display real-time data on observer PC</td>
<td>36</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>GSM/GPRS Modem</td>
<td>36</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Enclosure, NEMA-4, Fiberglass with Military Connectors and all internal connections</td>
<td>36</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Rain Gauge, Stainless Steel, 0.2 mm/Tip 15 meters cable and connector</td>
<td>36</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Wind Sensor, Ultrasonic, 0-5V or SDI-12</td>
<td>36</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Temperature/Humidity, Sensor with PRT temperature</td>
<td>36</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Radiation Shield, AT/RH sensor</td>
<td>36</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Barometric Pressure Sensor</td>
<td>36</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Pyranometer, WMO First Class, 3 meters cable and connectors</td>
<td>36</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Net Radiation Sensor</td>
<td>36</td>
<td></td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>Enclosure Mounting Hardware</td>
<td>36</td>
<td></td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>Mounting Kit, RG Tipping Bucket to 2” Pipe</td>
<td>36</td>
<td></td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>Mounting Kit, Wind sensor</td>
<td>36</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ITEM</td>
<td>ITEM DESCRIPTION</td>
<td>QUANTITY</td>
<td>BRAND/PART NUMBER</td>
<td>UNIT PRICE</td>
</tr>
<tr>
<td>------</td>
<td>----------------------------------------------------------------------------------</td>
<td>----------</td>
<td>-------------------</td>
<td>------------</td>
</tr>
<tr>
<td>14</td>
<td>Tower, Galvanized Steel, 10 meter Guyed</td>
<td>36</td>
<td></td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>Solar Panel, 30 Watt with cable and connector</td>
<td>36</td>
<td></td>
<td></td>
</tr>
<tr>
<td>16</td>
<td>Battery, 12VDC, 100AH</td>
<td>36</td>
<td></td>
<td></td>
</tr>
<tr>
<td>17</td>
<td>Solar Panel Charger Ctrl, 4 amp</td>
<td>36</td>
<td></td>
<td></td>
</tr>
<tr>
<td>18</td>
<td>Battery Charger for AC Power</td>
<td>36</td>
<td></td>
<td></td>
</tr>
<tr>
<td>19</td>
<td>Computers with Display and Software for Meteorological Observations</td>
<td>36</td>
<td></td>
<td></td>
</tr>
<tr>
<td>20</td>
<td>Central Computer Base Station with data collection software, data management software and meteorological messages generating software</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>20</td>
<td>Civil works</td>
<td>1 Lot</td>
<td></td>
<td></td>
</tr>
<tr>
<td>21</td>
<td>Installation and Engineering</td>
<td>1 Lot</td>
<td></td>
<td></td>
</tr>
<tr>
<td>22</td>
<td>10 % Spares For AWS</td>
<td>N/A</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**TOTAL COST**

Authorized Official: ___________________________  ___________________________
Name                                               Signature

___________________________
Date

*(amend format as necessary)*

*Note:* In case of discrepancy between unit price and total, the unit price shall prevail.
Section I: Tender Security Form

Whereas……………………………………………………… [Name of the Tenderer]
(Hereinafter called “the Tenderer”) has submitted its tender dated ………………… [Date of submission of tender] for the supply of………………………………………………………………………………
[Name and/or description of the materials and spares]
(Hereinafter called “the Tender”)…………………………………………………………………….
KNOW ALL PEOPLE by these presents that WE……………………………………………………………………
Of……………………………………………………..  Having our registered office at
……………………… (Hereinafter called “the Bank”), are bound unto………………. …
[Name of procuring entity] (Hereinafter called “the Procuring entity”) in the sum of
………………………
For which payment well and truly to be made to the said Procuring entity, the Bank binds itself, its successors, and assigns by these presents. Sealed with the Common Seal of the said Bank this
_____ day of _________20____.

THE CONDITIONS of this obligation are:

1. If the Tenderer withdraws its Tender during the period of tender validity specified by the Tenderer on the Tender Form; or

2. If the Tenderer, having been notified of the acceptance of its Tender by the Procuring entity during the period of tender validity:

   (a) Fails or refuses to execute the Contract Form, if required; or
   (b) Fails or refuses to furnish the performance security, in accordance with the Instructions to Tenderers;

we undertake to pay to the Procuring entity up to the above amount upon receipt of its first written demand, without the Procuring entity having to substantiate its demand, provided that in its demand the Procuring entity will note that the amount claimed by it is due to it, owing to the occurrence of one or both of the two conditions, specifying the occurred condition or conditions.

This guarantee will remain in force up to and including thirty (30) days after the period of tender validity, and any demand in respect thereof should reach the Bank not later than the above date.

[Signature of the bank]………………………………………………………………………………
5.29. SECTION J: CONTRACT FORM

THIS AGREEMENT made the _____ day of __________ 20_____ between…………. [name of Procurement entity] of……………… [Country of Procurement entity] (Hereinafter called “the Procuring entity”) of the one part and………………………… [Name of Tenderer] of…………. [City and country of Tenderer] (Hereinafter called “the Tenderer”) of the other part:

WHEREAS the Procuring entity invited tenders for Supply of Monitoring Tools, viz. [Brief description of materials and spares] and has accepted a tender by the Tenderer for the supply of those materials and spares in the sum of……………………………………… [Contract price in words and figures] (Hereinafter called “the Contract Price”).

NOW THIS AGREEMENT WITNESSETH AS FOLLOWS:

1. In this Agreement words and expressions shall have the same meanings as are respectively assigned to them in the Conditions of Contract referred to.

2. The following documents shall be deemed to form and be read and construed as part of this Agreement, viz.:
   (a) the Tender Form and the Price Schedule submitted by the Tenderer;
   (b) the Schedule of Requirements;
   (c) the Technical Specifications;
   (d) the General Conditions of Contract;
   (e) the Special Conditions of Contract; and
   (f) the Procuring entity’s Notification of Award.

3. In consideration of the payments to be made by the Procuring entity to the Tenderer as hereinafter mentioned, the Tenderer hereby covenants with the Procuring entity to provide the Printing of Monitoring Tools and to remedy defects therein in conformity in all respects with the provisions of the Contract.

4. The Procuring entity hereby covenants to pay the Tenderer in consideration of the provision of the Printing of Monitoring Tools and the remedying of defects therein, the Contract Price or such other sum as may become payable under the provisions of the contract at the times and in the manner prescribed by the contract.

IN WITNESS whereof the parties hereto have caused this Agreement to be executed in accordance with their respective laws the day and year first above written.

Signed, sealed, delivered by _________________ the ________ (for the Procuring entity)

Signed, sealed, delivered by _________________ the ________________ (for the Tenderer) in the presence of _______________
Section K: Performance Security Form

To: …………………….
[Name of procuring entity]

WHEREAS ………………………………………………………………………………………………………..[Name of Tenderer]
(Hereinafter called “the Tenderer”) has undertaken, in pursuance of Contract No.____________
[reference number of the contract] dated ____________ 20_____ to provide the Supply of
[Description of works] (Hereinafter called “the Contract”).

AND WHEREAS it has been stipulated by you in the said Contract that the Tenderer shall furnish you with a bank guarantee by a reputable bank for the sum specified therein as security for compliance with the Tenderer’s performance obligations in accordance with the Contract.

AND WHEREAS we have agreed to give the Tenderer a guarantee:

THEREFORE WE hereby affirm that we are Guarantors and responsible to you, on behalf of the Tenderer, up to a total of……………………………………………………………………………………………………..[Amount of the guarantee in words and figures], and we undertake to pay you, upon your first written demand declaring the Tenderer to be in default under the Contract and without cavil or argument, any sum or sums within the limits of……………………………………………………………………………………………………………………………………………………………………..
[Amount of guarantee] as aforesaid, without your needing to prove or to show grounds or reasons for your demand or the sum specified therein.

This guarantee is valid until the _____ day of __________20_____.

Signature and seal of the Guarantors

[Name of bank or financial institution]

[Address]

[Date]
5.30.

Section L: Bank Guarantee for Advance Payment

To: ………………………………………………………………………
[Name of procuring entity]

[Name of tender]…………………………………………………………

Gentlemen and/or Ladies:

In accordance with the payment provision included in the Special Conditions of Contract, which amends the General Conditions of Contract to provide for advance payment……………………………………………………………………………………………………………………………………
[Name and address of Tenderer] (hereinafter called “the Tenderer”) shall deposit with the Procuring entity a bank guarantee to guarantee its proper and faithful performance under the said Clause of the Contract in an amount of……………………………………………………………………………………………………………………………………
[Amount of guarantee in figures and words].

We, the………………………………………………………………
[bank or financial institution], as instructed by the Tenderer, agree unconditionally and irrevocably to guarantee as primary obligator and not as surety merely, the payment to the Procuring entity on its first demand without whatsoever right of objection on our part and without its first claim to the Tenderer, in the amount not exceeding ……………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………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Section M: Manufacturer’s Authorization Form

To: [name of the Procuring entity]..........................

WHEREAS .................................................................
[Name of the Manufacturer]
Who are established and reputable manufacturers of...........................................
[Name and/or description of the materials and spares]
and
having factories at.................................................................
[Address of factory]
Do hereby authorize.................................................................
[Name and address of Agent]
To submit a tender, and subsequently negotiate and sign the Contract with you against tender No.................................................................
[Reference of the Tender]
For the above materials and spares manufactured by us.

We hereby extend our full guarantee and warranty as per the General Conditions of Contract for the materials and spares offered for supply by the above firm against this Invitation for Tenders.

.................................................................
[Signature for and on behalf of Manufacturer]

Note: This letter of authority should be on the letterhead of the Manufacturer and should be signed by a person competent.
CONFIDENTIAL BUSINESS QUESTIONNAIRE

You are requested to give the particulars indicated in Part 1 and either Part 2 (a), 2 (b) or 2 (c) whichever applies to your type of business. You are advised that it is a serious offence to give false information on this Form.

**Part 1 – General:**
- Business Name ………………………………………………………………………………………………………………………………
- Location of business premises …………………………………………………………………………………………………………..
- Plot No …………………………………………… Street/Road …………………………………………………………………………
- Postal Address ……………………………………………… Tel. No ………………………………………………………………..
- Nature of Business ………………………………………………………………………………………………………………………
- Current Trade Licence No. …………………………………… Expiring Date ……………………………………………………..
- Maximum value of business which you can handle at any one time: K ……………………………………………………..
- Name of your bankers …………………………………………… Branch ……………………………………………………………
- Are you an agent of the Kenya National Trading Corporation? YES/NO. …………………………………………………..

**Part 2 (a) – Sole Proprietor:**
- Your name in full …………………………………………………… Age ……………………………………………………………
- Nationality …………………………………………… Country of origin ……………………………………………………………
- *Citizenship details …………………………………………………………………………………………………………………

**Part 2 (b) – Partnership:**
Give details of partners as follows:

<table>
<thead>
<tr>
<th>Name</th>
<th>Nationality</th>
<th>Citizenship Details</th>
<th>Shares</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.</td>
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<td>3.</td>
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<tr>
<td>4.</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Part 2 (c) – Registered Company:**
- Private or public …………………………………………………………………………………………………………………..
- State the nominal and issued capital of the company:
  - Nominal K ………………………………………
  - Issued K ………………………………………
- Give details of all directors as follows:

<table>
<thead>
<tr>
<th>Name</th>
<th>Nationality</th>
<th>Citizenship Details</th>
<th>Shares</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td></td>
<td></td>
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<tr>
<td>2.</td>
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<td>3.</td>
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<td>4.</td>
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</tr>
<tr>
<td>5.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
- Date …………………………………………… Signature of Tenderer ……………………………………………………………

*If Kenya Citizen, indicate under *Citizenship D