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| **Appendix Number** | **Title** |
| **Appendix 1** | Environment Agency - MEICA - Documentation  |
| **Appendix 2** | Environment Agency – MEICA - Standard Specification |
| **Appendix 3** | AQ H&S Guidance – Version 1 |
| **Appendix 4** | Contract Tender Questionnaire |
| **Appendix 5** | Delivery Checklist  |
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# Schedule 1 Specification

# This schedule details the goods and the location, and delivery, installation and commissioning requirements.

# Section 1 - Company and Product Certifications

1. Contractor’s supplying instruments must pass the following pre-requisite requirements:

“Registered to ISO 9001:2015, where the certification body is accredited by either UKAS or an equivalent body from outside the UK, to ISO/IEC 17021.”

It is a requirement for contractor’s supplying instruments to meet this pre-requisite pass/fail requirement and bids which do not pass this criteria will not be reviewed.

1. The analyser must measure nitrogen dioxide (NO2) directly and have passed ISO/IEC 17021 type approval tests so that the Agency can provide sample results equivalent to the reference method standard BS EN 14211:2012 for the measurement of the concentration of nitrogen dioxide and nitrogen monoxide.
2. The 2 instruments provided are required to be new. Refurbished second hand equipment offers will not be accepted.

# Section 2 - Sampling resolution, response times, limits of detection and stability on baseline

1. The instrument must be able to make hourly measurements of NO2 and have passed conformity at 0 – 500ug/m3 range. The instrument must be able to demonstrate low limits of detection <1.0ppb for NO2.
2. The Instrument will also provide an hourly measurement of nitrogen monoxide (NO) and have passed conformity at the 0 – 1200 ug/m3 range. The instrument must be able to demonstrate low limits of detection <1.0ppb for NO.
3. The instrument must measure nitrogen dioxide ‘direct’ so it is not measured by calculation using measurements of nitrogen monoxide and total oxides of nitrogen (NOX).
4. The instrument should be able to demonstrate good long term zero drift and span that meets reference method standard BS EN 14211:2012. As this is a rural site, it is expected the zero and span drift will achieve less than 1ppb over 2 weeks and as a minimum meet the BS EN 14211- 2012 standard.
5. The instrument response time should be to measure 95% of span gas in less than <120 seconds.
6. The equipment must be highly reliable and proven in performance that the instrument can justifiably achieve above 90% annual data capture (taking account of maintenance and calibration). Ideally evidence should be for a field site, over as long a period as possible, to demonstrate the instrument’s reliability would be maintained for the required minimum 18-year life cycle.
7. The instrument must be able to operate continuously for at least 6 weeks without the need for manual intervention.

# Section 3 - Calibration requirements

1. It must be possible to calibrate the instrument nitrogen dioxide and nitrogen monoxide channels measured as per the BS EN 14211- 2012 standard, and for a rural site these visits should be minimised, at least every 2 weeks, but ideally 6 weeks between manned calibration visits. Daily checks via cylinder or internal zero span are required.

# Section 4 - Operational Needs

1. Interrogation of the instrument via remote connection to relevant CMCU (Central Management Co-ordination Unit) is required so as to establish operational performance of the instrument and minimise data loss
2. The operator should be able to make or configure appropriate manual or automated checks for items such as routine flow, temperature, pressure and humidity checks.
3. Optimal operation temperature for the instrument should be between 0 and 30 °C. The instrument should be safe to be use in the event of an air conditioning failure on site or must have automated shutdown or similar to prevent damage if safe operating temperature is exceeded. Our recommended extreme temperature range is expected between 0 – 50 °C.
4. Any known limitations for the instrument to operate based on tolerances must be specified (e.g. operating temperature ranges or other environmental factors).
5. Data pertaining to faults / settings and other diagnostics must be available to review. If this data cannot be viewed remotely, this must be stated.
6. Communication should allow direct access by the Network Management team, and not be reliant on any 3rd party infrastructure (for example a 3rd party-controlled cloud system). It must be possible to access and download data from the instrument to enable hourly dissemination to the UK’s Data Portal.
7. The Compatible software that enables relevant data is logged and accessible (e.g. flow rate, sampling time, sampled volume, etc.)
8. Appropriate hardware and software for data handling and processing of both the nitrogen dioxide and nitrogen oxide samples must be included with the instrument must be provided. The instrument hardware and software are expected to be able to run for at least 6 weeks under normal conditions without any need for re-booting. Any hardware operating systems and software packages provided should be supported for the proposed 18-year life of the instrument and any updates provided would be provided free of charge.

The instrument must have internal storage for at least 3 months hourly measurement data. Additional hardware, software and communication packages that are required to achieve this should be detailed and included in the Pricing Schedule and should be provided as a one-off cost rather than any ongoing fees.

1. Diagnostic information should include key operational information for the instrument for its ongoing performance as per the user manual. Fault diagnostic procedure should be available and easy to follow - Manuals for all servicing and operation, and fault diagnostics for common errors, must be provided with instruments.

Diagnostic information should include sampling flow rate, instrument temperature and any relevant pressure errors as a minimum.

1. The instrument must be provided with an internal clock that will follow GMT and BST and will be easily programmable both remotely and on site. The instrument will be designed to be reset remotely following a power cut. The instrument’s firmware must also have the ability for the instrument time to be checked and synchronised remotely through command sequences or routinely through reference to an internet time source.
2. Data requirements of the equipment should be specified for the equipment offered around the needs for any remote updates of firmware and time synchronisation. A method to limit data usage to restrict remote updates that might breach data allowances and a method to prevent any unwanted cyber-attacks should be presented

# Section 5 - Dimensions – size and existing infrastructure alignment

1. Analysers shall fit standard racking systems used on the AURN (nominal racking size (W x D x H) 600mm x 800mm x 1800mm). Analysers shall be able to operate and be fitted with UK plugs compatible with legal requirements, electrical circuits and sockets standard to the United Kingdom, with a relevant in-service test before installation and testing to demonstrate they are electrically safe as per the requirements of UK law
2. If gas lines and calibration gases are required, please specify all technical details of gas calibration cylinder recommended sizes, gas regulator needs, gas lines length and size (external and internal) and material, which are needed and any health and safety risks (such as oxygen reduced atmosphere).

# Section 6 - Alignment with AURN standards – comms; software, electrical safety; operating manuals; etc

1. The instrument must have electrical circuits and sockets standards that meet UK legal requirements. The instrument must be compatible with UK electricity supplies (220-240V Alternating Current (AC) and include plug adaptors if applicable. The UKCA (UK Conformity Assessed) Marking is now in effect subject to certain requirements. It is the responsibility of the Contractor to ensure that the instrument is marked appropriately and any necessary declaration of conformity.
2. The instrument must be delivered with detailed service and maintenance procedures to be aligned with the development of Operation and Maintenance (O&M) manuals and relevant documentation for the Environment Agency’s air quality equipment portfolio, as required in **Appendix 1**. This should include a detailed operational manual, a detailed service manual, and a service check ‘Planned Preventative Maintenance’ list, noting the items that must be serviced and replaced or checked at service, along with any parameters for pass / fail and corrective action requirements. The instrument should have been designed and manufactured using appropriately qualified engineers and include information on electrical and all other components, to be included in future Operation and Maintenance Manuals. This is set out in the Agency’s COPES (Code of Practice for Electrical Safety).
3. The design and construction of the instrument and systems must meet all relevant statutory regulations, environmental legislation and all relevant British and harmonised European and International Standards. The relevant MEICA standard specifications (2018) set out in **Appendix 2** should also be met. These standards are not retrospective, so, if the installation complies with superseded British or European standards, you can continue to use them provided it is legal, safe and operable.
4. Information from the supplier, to answer queries and provide information on the operation of the analyser, to assist the network contractor (currently Bureau Veritas for Management and Ricardo AEA / National Physical Laboratory for Quality Assurance and Quality Control, depending on site location) in producing information for the LSO (Local Site Operator) manual and to help ratify the data. Help if needed, will be provided at no additional cost for up to 10 queries. Information and responses, to assist the network contractor in producing written protocols to retrieve and interrogate data, will also need to be provided at no additional cost. Responses to queries should be timely and within 5 working days. Data protocols required for remote data retrieval from the sampling system, should not be subject to any confidentiality restrictions from the supplier that limit the Network Contractor’s ability to communicate with the instrument remotely. Additionally, full transparency of availability of data for coding from the analyser must be offered at Tender.
5. The instrument should be compatible with 4G and ethernet style modems / and or communication servers, and the supplier shall provide options to communicate with the instrument if the site communications that are already in place prove incompatible.

# Section 7 - Training

1. Training is required for the AURN network operators, the Quality Assurance operator, Equipment Service Units (ESU - which are subcontracted to 3rd parties) and Local Site Operators (LSO - which are subcontracted to 3rd parties). This must be made available and delivered within 1 month of any request, for the first two years after the instrument has been delivered and to enable the instrument to be used successfully on the Network up to 2040.

# Section 8 - 1 Month Trial Test, Delivery prior to Final Purchase

1. The 2 instruments will need to include a 1-month rental after delivery so as to be tested by our Quality Assurance contractor on contract 25952 Lot 2, for up to 1 month prior to delivery being accepted for the purchase of the 2 instruments. Payment for delivery completion is once the instrument has met the pass/ fail criteria. This pass / fail test includes:

**Table 1**

|  |  |
| --- | --- |
| **Test** | **Pass / Fail Criteria** |
| Check Span Drift Meets EN 14211 needs using periodic calibrations (Bi- weekly) | ≤5 nmol/mol (data will be extrapolated from one month to 3 months) |
| Check Long Term Zero Drift Meets EN 14211 needs using periodic calibrations (Bi- weekly) | ≤5 nmol/mol (data will be extrapolated from one month to 3 months) |
| Check against a BS EN 14211 instrument used already on the network | Instrument measurement result passes expanded uncertainty and there is no obvious bias greater than the repeatability at our limit of ≤3 nmol/mol |
| Check ‘auto-cals’ | Instrument can be calibrated remotely to check performance |
| Establish remote communications | Instrument can send remote data every 1 hour to a data collection system used on the AURN network. |
| Other BS EN 14211 criteria if any performance doubted. | As per BS EN 14211 -8.2 Relevant performance characteristics and performance criteria  |

1. The Contractor is required to ensure delivery of both instruments to Chilbolton AURN station and commission them for the 1-month trial by 13th February 2023. Access will be arranged via the AURN contractor Bureau Veritas who manage the site.
2. Instrument checks should be carried out at one of the Contractor’s UK based workshops to confirm the instruments functionality as per the specifications prior to delivery as per **Appendix *5*** and the site commissioning checks as per **Appendix *6*** and copies sent to aqmonitoringuk@environment-agency.gov.uk.
3. Following the successful delivery and receipt of ***Appendix 5*** and **Appendix *6***, the Contractor can be paid for the 1 month trial cost supplied in our commercial sheet to be submitted in ***Appendix 8***
4. The financial year end for the Environment Agency is 31st March each year. The purchasing of the instrument is subject to commercial budgets being available, with the contract for purchase running until 28th March 2023. If the instruments have not passed the pass / fail criteria, prior to the 28th of March 2023, due to the instrument’s actual performance (not due to circumstances beyond the control of the manufacturer), the Agency reserves the right for the order to be cancelled, as funding may no longer be available.
5. The instruments must be supplied to the stated delivery address by the 13th February 2023. Should this delivery date not be met, or evidence the equipment is not in transit or in existence, then the parties will refer to the negotiated terms and conditions in ***Appendix 9***

# Section 9 - Spare Parts, Consumables, Warranty Guarantees and Service Capability

1. The Contractor must provide a UK based service support and the instrument must be serviceable for at least 18 years from date of installation with parts and consumables available throughout. These should be guaranteed from point of order as part of this supply contract to the Agency, as well as their contracted ESUs.
2. Spare parts and consumables shall be made available to the Authority within two-weeks of an order being placed, in order to ensure data capture is not compromised. The costs of the parts and their likely frequency of replacement for an instrument running continuously in an urban environment should be included in the Pricing Schedule of the contract and it is expected would only be subject to reasonable supplier adjustments during the life of the product.
3. The list of key consumable costs and spare parts listed in the tender must be provided to the Contractor to ensure the units can be maintained for the next 18 years. If there is a change or risk to the supply of spare parts, the supplier should instigate an exit plan to ensure component parts can be purchase or manufactured elsewhere.
4. The warranty for the instrument purchased will need to start at the date of installation, not the date of purchase and shall last at least 24 months and cover all non-consumable parts. Full details of the terms, limitations and any exclusions from the warranty and any additional cost should be detailed by the supplier prior to the award of the STA.
5. Warranty repairs should be undertaken in a timely way. If the instrument develops a fault, which cannot be fixed by a trained service engineer, the Contractor should be able to offer a free of charge, 48-hour field repair / fault diagnosis to the instrument at site during the warranty period. If the fault is not diagnosed remotely by a trained engineer, the Contractor is expected to offer complex repairs to the instrument at the manufacturer’s workshop, which should be completed within 10 working days, for shipment, investigation and repair, unless dispensation has been agreed for a longer repair with the Agency. Repairs are expected to be guaranteed for the remainder of the original warranty period or 6 months from the date of the repair, whichever is greatest.
6. If during a guaranteed warranty repair, any intermittent faults or instrument faults cannot be satisfactorily repaired under warranty by the supplier, and satisfactory performance of the analyser cannot be attained in a timely manner and at least within 10 days of the fault arising, it would be expected the instrument part or whole sampling system is replaced by a new part or new instrument under warranty repair, unless otherwise agreed. It is specified that Warranty repairs should use new replacement components / new instrument (used parts / instrument are not acceptable) unless an alternative warranty offer is detailed and accepted in your Tender submission.
7. A contingency arrangement for supply of parts, should be provided for scenarios where the supplier ceases to exist. Prices provided on the Tender for serviceable parts will be available to the Agency and the network contractor, who assist the Agency in the management and equipment support for the network. The Tenderers are required to provide a managed route for sub-contractor organisations to access these prices and equipment.
8. The Contractor shall keep the Agency informed of the following for a period of 18 years from the point of order:
* Cessation of manufacture of the goods.
* Changes in consumables and spare parts availability.
* Changes in availability of service support.
* Changes in firmware versions.
* Notifications within 3 months of product recall or updates recommended by the manufacturer.
1. Any updates in software or firmware versions over the 10-year lifetime of the instrument should be made available to the Agency at no extra cost.

# Section 10 - Health and Safety

1. The installation of the instrument should be undertaken by experienced and qualified engineers adhering to relevant UK Health and Safety legislation, and relevant Health and Safety Executive (HSE) guidance and risk assessments. Contractors should follow the guidance in the “UK AIR QUALITY NETWORKS– HEALTH AND SAFETY GUIDANCE” (**Appendix *3***). They will need to liaise with the relevant Agency contractors before going to site. The Agency has standard forms for contractors regarding health and safety.
2. The Ingress protection for the instrument casing must be appropriate for the environment in which the instrument is to be installed (Indoors – ‘dry’ area ≥ IP31) and have due regard to operator safety.
3. Any specific potential risks to the instrument user (for example high voltages or X-ray device workings of the instrument) should be designed out as much as possible in the supply of the instrument, using the ‘principles of prevention’, as per The Management of Health and Safety at Work Regulations 1999 and as detailed here:

<http://www.legislation.gov.uk/uksi/1999/3242/schedule/1/made>

Any elements of (g) prevention policy, (h) collective protective measures and (I) appropriate instructions to the user, from these regulations relevant to the design and supply of the instrument should be detailed in the Tender submission, and instrument operation manuals should be included, to demonstrate the instrument can be operated safely.

1. As part of the Environment Agency’s commitment to Health, Safety and Environmental compliance, the Contractor must complete a copy of the Standard Supplier questionnaire (**Appendix *4***) and submit as part of the Tender.
2. The Environment Agency expects that high standards of Equality, Diversity and Inclusion are met by its sub-contractors. We would expect that our sub-contractors deliver the work on behalf of the Agency in line with the requirements under the Equality Act 2010, matching our own ambitions to demonstrate the Agency is an equal, diverse and inclusive (EDI) organisation.

# Section 11 – Sustainability

1. The Environment Agency is reducing its environmental impact both in its direct operations and through its supply chain in the goods, works and services that others provide on its behalf. We are committed to improving our total environmental impact, and expect suppliers to consider minimising materials and energy use in the products they supply us
2. We have an environmental management system (EMS) that is certified to ISO14001:2015 standards which incorporates our procurement and supply chain activities. As part of our EMS, we take a full lifecycle approach to the identification and management of our significant environmental risks and opportunities. Our Contractors have a significant part to play in helping us achieve our commitment to reduce our total environmental impact.
3. As a supply contractors you will need to have a management system aligned or certified to ISO14001 accreditation and adopt a similar approach to the lifecycle identification, assessment and management of environmental risks and opportunities associated with the delivery of this contract.

The Contractor shall –

* Achieve compliance with all environmental legislation.
* Have robust environmental management processes and procedures in place including but not limited to pollution prevention and waste management.
* Have trained and competent staff to deliver these processes and procedures.
* Achieve continuous improvement in environmental management.
* Work to reduce the environmental impact of delivering the products

# Section 12 - Specifics of Payment

1. Invoice Instructions:

Alongside delivery and subject to passing the 1-month trial, an invoice for the goods will need to be provided prior to the 27th March 2023, referencing an issued Purchase Order for items delivered in Schedule 2, alongside evidence of the delivery and commissioning. The 1-month installation and trial hire can be invoiced separately upon installation after the delivery and commissioning after the 13th February if successfully delivered and installed.

Non-compliant invoices with no Purchase Order number will be rejected and returned to the supplier.

The invoices shall include:

i) Unique invoice number;

ii) Date of issue;

iii) Purchase order and reference to correct Purchase

iv) Date of delivery of services;

v) Agency contract number;

vi) The Environment Agency project officer;

vii) Qualitative description of the work being done;

viii) Excluding VAT unit price and total amount;

ix) Contractor contact name and details;

x) Payment information for supplier;

xi) Register company information;

xii) VAT registration number;

1. Invoice Submission Digital standards - Inbound invoices and emails must comply with our Payment processers (SSCL) submission standards otherwise your invoice will not be processed. For information the submission standards are summarised below;
* Email size must not exceed 4mb
* All files/invoices must be in PDF format attached directly to the email (No folders etc)
* One PDF per invoice – all supporting documentation must be included within the single PDF. Do not attach additional/separate supporting documentation as a separate file
* Multiple invoices can be attached to one email but each invoice must be in a separate PDF (with no additional supporting files as described above)
* "PASSWORD PROTECTED" Files cannot be processed.
* Please submit the invoices by Email to:

i) APinvoices-ENV-U@gov.sscl.com

ii) AQmonitoringUK <AQmonitoringUK@environment-agency.gov.uk>