

GLOSSARY

Unless the context otherwise requires, the following words and expressions used within this Specification shall have the following meanings (to be interpreted in the singular or plural as the context requires):

TERM	MEANING
"AAM"	the Authority's Ambient Air Monitoring Team
"Affiliates"	in relation to a body corporate, any other entity which directly or indirectly Controls, is Controlled by, or is under direct or indirect common Control of that body corporate from time to time;
"Affiliate Memorandum of Understanding"	the agreed non-binding document between The Authority and the Affiliate partner regarding the funding and operation of a specific AURN site
"Affiliate Sites"	PM _{2.5} AURN sites that owned by Local Authorities but complying with the siting criteria for the AURN network.
"[(AQSR) Air Quality Standards Regulations"	the Air Quality Standards Regulations 2010, and amendments (separated for England, Wales, Scotland and Northern Ireland, in legislation), where the AQD 2008 is transposed into UK legislation. This includes EU exit amendments, separately provided for each Devolved Administration.
"Annual Mean Concentration Target (AMCT)"	the Annual Mean Concentration Target ('concentration target') - a maximum concentration of 10µg/m ³ to be met across England by 2040 as defined at: Development of the Environment Act Targets - Defra, UK
"Air Pollution Episode (APE)"	Air Pollution Episode, is a period of high pollution triggered by high PM / Ozone information alerts or other pollutant and as notified by the Met Office and Defra for DAQI 7 or higher status
"Automatic London Network - ALN"	the Automatic London Network- a collection of affiliate sites in or near London
"AQD2008"	the Directive 2008/50/EC of the European Parliament and of the Council of 21st May 2008, on Ambient Air Quality and Cleaner Air for Europe, was adopted in June 2008 and was amended in in 2015. The contents of the AQD 2008 are still referred to in AQSR and UK Air Guidance.
"AQEG - Air Quality Expert Group"	the Air Quality Expert Group – a scientific advisory body operated by Defra to advise on Air Quality matters.
"Asset Register"	a list of the fixed assets owned by an organisation containing pertinent details about each fixed asset to track their value and physical location.

TERM	MEANING
"AURN -Automatic Urban and Rural Air Quality Monitoring Network "	Automatic Urban and Rural Air Quality Monitoring Network, that operates hourly data for AQD 2008 directive Gaseous and PM instruments and feed the data into the Daily Air Quality Index
"BSI - British Standards Institute "	British Standards Institute
"CDM Regulations"	the The Construction (Design and Management) Regulations 2015
"CEN"	the European Committee for Standardisation
"CMCU - Central Management and Co-ordination Unit"	the Central Unit for the Automatic Management and Co-Ordination Urban and Rural Network being tendered in Lot 1 of this specification. It does not in the context of this contract refer to sites or management of the Automatic London Network
"Data Ratification"	any quality assurance requirements for analysers, final flow or analytical corrections and an overall consistency check using long and short term trends analysis before final submission to the DDU
"Data Exception Report"	<p>notifying the Authority based on triggers for the network being at either</p> <ul style="list-style-type: none"> • low operational capacity (10% sites non-operational) • data errors being issued to UK- air. • a PM_{2.5} AURN site being non-operational on UK air for more than ten (10) working days. <p>The triggers and causal factors are detailed in the specification, and the notification report must be sent within 2 working days to notify the Authority of the issue, as well as being listed in the Quarterly reports</p>
"Data Exception Report – High Pollution Mode"	<p>notifying the Authority based on triggers for the network being during a high pollution event that</p> <p>low operational capacity (10% sites non-operational) data errors being issued to UK- air.</p> <p>The triggers and causal factors are detailed in the specification relating to High Pollution Mode and the notification report must be sent within 12 hours to notify the Authority of the issue, as well as being listed in the Quarterly reports</p>
"Data Validation"	the process of initially checking data automatically (and as required manual checks) before it goes onto "UK Air" and is nominally a process to "cleanup" raw data to ensure it is not containing significant errors before being issued to the public.
"DAQI - the Daily Air Quality Index"	the Daily Air Quality Index https://uk-air.defra.gov.uk/air-pollution/daq
"DA - Devolved Administrations"	the Devolved Administrations (DAERA, SG, WG)
"DDU - Data Dissemination Unit"	the Data Dissemination Unit – Defra managed contractor
"DEFRA - Department for Environment, Food and Rural Affairs in England "	the Department for Environment, Food and Rural Affairs in England.

TERM	MEANING
"DAERA - Department of Agriculture Environment and Rural Affairs in Northern Ireland "	the Department of Agriculture Environment and Rural Affairs in Northern Ireland.
"DQO - Data Quality Objective "	The Data Quality Objective for all PM _{2.5} AURN measurement uncertainty is ±25% with a minimum data capture of 90%. A further 5% of calibration and planned equipment maintenance and calibration time may be deducted from the data capture objective for automatic measurements during the ratification process. The subtraction of planned maintenance and calibration is permitted in the AQSR
"EET - Electrical Equipment Testing"	Electrical Equipment Testing
"EICR - Electrical Installation Condition Report"	Electrical Installation Condition Report
"E-Reporting"	the European initiative designed to modernise data sharing and reporting on air quality information
"ESU - Equipment Support Unit"	Equipment Support Unit.
"Exception Risk Report"	notifying the Authority of expected data loss to an PM _{2.5} AURN site below the Data Quality Objectives. The triggers and causal factors are detailed in the specification, and the report must be sent within ten (10) working days to notify the Authority of the issue, as well as being listed in the Quarterly reports
"Flow through costs"	The Buyer will pay Pass Through Cost invoices from third parties, where agreed in Schedule 3 and no profit can be added by the Supplier. Please provide acceptable evidence such as (i) invoices (ii) sub contractor checks (iii) ad hoc validation checking how the cost is made up if requested
"Fully Funded Sites"	fully funded sites are directly under the control of the Authority and managed by the CMCU supplier.
"High Pollution Mode"	Suppliers enhanced alerts status to minimise data disruption during an Air Pollution Episode (a period of high pollution triggered by high PM / Ozone information alerts or other pollutant and as notified by the Met Office and Defra for DAQI 7 or higher status)
"ISO - International Organization for Standardization"	International Organization for Standardization
"ISO/ IEC 17025:2017"	accreditation of calibration services on the Contract to this ISO 17025:2017 standard by a recognised Accrediation body mutually recognised under the International Laboratory Accreditation Cooperation (ILAC)
"KPI's - Key Performance Indicators"	Key Performance Indicators
"LA - Local Authority"	the Local Authority
"LSO - Local Site Operators"	Local Site Operators
"LSO - Calibration"	the agreed tasks an LSO must undertake to calibrate and submit data to the CMCU, to check the functionality of the instrument operating on this network. The tasks are described in the LSO Manual – Part B for each instrument. Minimum 1 month for background sites, and every 2 weeks for traffic sites.
"LSO Newsletter"	the local site operator newsletter issued on the PM _{2.5} AURN by the existing UK wide quality assurance contractor

TERM	MEANING
"MCERTS"	the Authority's Monitoring Certification Scheme, for ambient monitoring of air quality relating to Continuous Ambient Measurement Systems (CAMS)
"META Data"	the make and model of the PM _{2.5} instrument (please note that this is different to QAQC submitted 'SITE META' data required when submitting ratified data.
"PM - Particulate Matter"	Particulate Matter
"PERT - Population Exposure Reduction Target"	that there is at least a 35% reduction in population exposure by the end of 31 st December 2040 as compared with the average population exposure in the three-year period from January 2016 to 31 st December 2018 determined in accordance with The Environmental Targets (Fine Particulate Matter) Regulations 2022
"QAQC - Quality Assurance Quality Control "	the Quality Assurance Quality Control Services
"Responsible Officer"	an officer nominated and responsible by the Authority as the supervising contract manager for this contract
"SG - Scottish Government "	the Scottish Government
"Tracked costs"	a cost for which there is a direct, cause-and-effect relationship with a process, product, geographical area, or other cost object. These costs are identified in Schedule 3 Charges
"UK - United Kingdom"	United Kingdom
"UK AIR"	the website where government-based UK air measurements, modelling and reporting data can be accessed - https://uk-air.defra.gov.uk
"UKAS "	the United Kingdom Accreditation Scheme, although accreditation by international certification bodies of equivalent standing can be deemed equivalent with regards to certification requirements to ISO 17021 / ISO 17025 stipulations.
"UK Equivalence Monitoring Programme"	the programme seeks to determine whether the original declaration of equivalence for particulate monitoring instruments to the reference method remains in force, or whether there is potential for the original relationship to change over time.
"WG - Welsh Government "	the Welsh Government
"Zones & Agglomerations"	the UK is divided into forty-three (43) zones for air quality assessment. There are twenty-eight (28) agglomeration zones (large urban areas) and fifteen (15) non-agglomeration zones.

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1 Overview - Contract background

- 1.1 The Authority manages and maintains national air quality monitoring networks including the Automatic Urban and Rural Network (AURN)) to meet the requirements of UK legislation. The air quality monitors are located around the UK within the Zones and Agglomerations and are housed in standalone enclosures of varying sizes.
- 1.2 The Authority wishes to let the Central Management and Co-ordination Unit (CMCU) for the PM_{2.5} AURN expansion (across England only currently).
- 1.3 The AURN provides national monitoring arrangements including those areas covered by Department for Environment, Food and Rural Affairs (DEFRA) Scottish Government (SG), Welsh Government (WG) and Department of Agriculture Environment and Rural Affairs in Northern Ireland (DAERA) collectively known as the Devolved Administrations (DAs) for Automated data regarding Oxides of Nitrogen (NO_x), Nitric Oxide (NO), Particulate Matter (PM₁₀), PM_{2.5}, SO₂, Ozone and CO. The current configuration of the AURN network has two CMCU functions one for the AURN and one for the Automatic London Network (ALN) however at the point of writing this contract they are both the same contractor. This new PM_{2.5} AURN CMCU contract will be the third CMCU and is let by the Authority on behalf of Defra and is specifically relates to the expansion of (currently planned to be 104) PM_{2.5} total mass sites.
- 1.4 The CMCU's are responsible for the management of the national network air pollution monitoring sites throughout the United Kingdom (UK), the automatic collection and retrieval of data from these sites and forward passage of data (to a separate Defra Supplier, the DDU Supplier, who has responsibility for wider dissemination of data , and to the QAQC Supplier for ratification). The PM_{2.5} AURN Expansion CMCU contract is currently planned to be for 104 new sites anticipated to be established between 2023 - 2025.
- 1.5 The QAQC Supplier has responsibility for all quality assurance and quality control for collection, validation and ratification of data on the networks prior to transmission to the DDU. The QAQC Supplier has other roles, for example the UK air health and safety co-coordinator and training of PM_{2.5} AURN Local Site Operator (LSOs) on site. Currently this service is provided by Ricardo plc for all of the UK with the exception of London which is provided by the National Physical Laboratory. Depending on the location of the new 104 PM_{2.5} expansion sites QAQC services will be provided by these contractors.
- 1.6 The AURN aim to:
- 1.7 Inform the public about air quality in near-real time.
 - 1.7.1 Provide data for comparison with statutory air quality standards, objectives, target and limit values.
 - 1.7.2 Inform and support the development of cost-effective planning solutions and identify long-term trends and sources of pollution.
 - 1.7.3 Inform policy development.
 - 1.7.4 Provide data for use by the scientific community in research.
 - 1.7.5 Enhance our understanding of atmospheric chemistry.
- 1.8 To ensure separation of quality assurance for the operation of the PM_{2.5} AURN, Suppliers who already provide Quality Assurance for AURN sites cannot bid for this work. This is so quality assurance and central management can be undertaken by separate entities to ensure the integrity of the network.

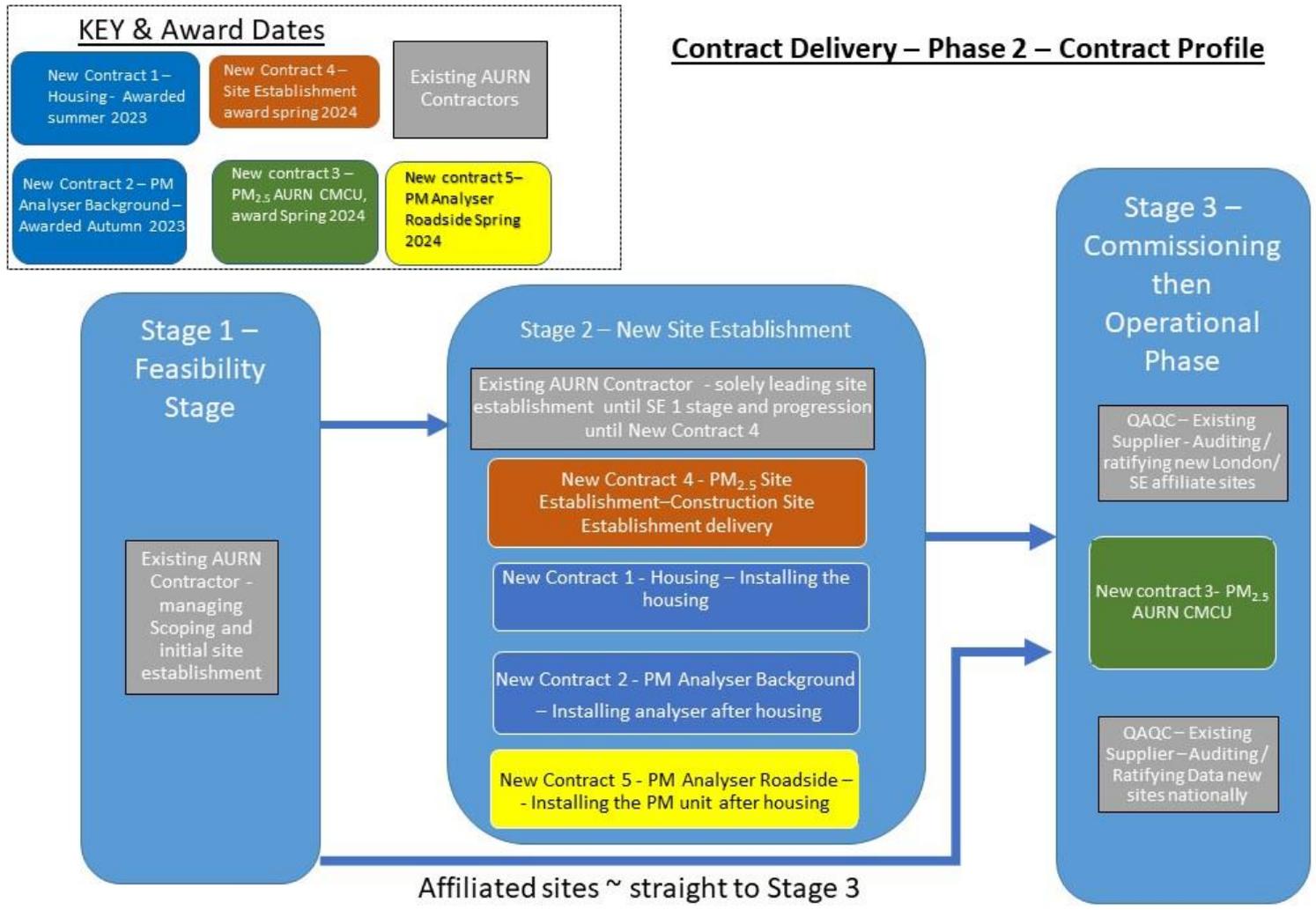
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- 1.9 The scope of activities associated with the Lots are described in is this Specification of Requirements in Sections 2 to 43.

Figure 1 - Graphic to Explain the 4 Stages and Contract interactions of PM_{2.5} Expansion.



2 The Objectives of PM_{2.5} expansion AURN Supplier(s)

- 2.1 The specification of the current automatic monitoring networks for CMCU is designed and configured to meet requirements for reporting data under the current EU Ambient Air Quality Directive (2008/50/EC) (AQD2008) and provide data about air quality levels to Defra/DAs, researchers and the public to inform policy development and evaluation. These are the priority overarching objectives of the contract lots. Changes to legislation or additional requirements may arise during the lifetime of this contract, which the Supplier will need to respond to. This may lead to changes in the structure of the network, or the way data are reported.
- 2.2 To deliver collaboratively, and efficiently with existing Suppliers and Stakeholders. A list of AURN PM_{2.5} supporting roles are found in:

Annex 1 - AURN PM_{2.5} Supporting Roles

- 2.3 The overall objectives of the PM_{2.5} expansion CMCU Suppliers are:
- 2.4 Manage the Authority owned sites, and co-ordinate with Affiliated bodies in the PM_{2.5} Network to keep sites operational, functional and to minimise costs to the Authority for their operation, looking for future innovation and efficiency;
- 2.5 To maintain raw data capture to required standards (minimum 85% per year including goods servicing), for data capture elements within their control;
- 2.6 To provide near real time validated pollution data for dissemination via the Data Dissemination Unit (DDU) Contract to UK Air, and to promptly collect data to inform upon Pollution Alert Thresholds being exceeded;
- 2.7 To manage the asset lists of all of the authority owned goods and goods replacement and associated transfer agreements, and as per Agency guidance on its asset management requirements;
- 2.8 To operate the networks to maximise the effectiveness of the UK Air Pollution public health alert system and Daily Air Quality Index (DAQI) index, and operating as a point of contact for operational updates for Defra and the Authority regarding Pollution alerts;
- 2.9 To deliver health and safety to a high standard for the PM_{2.5} network operations, and manage actions to resolve (notifying relevant stakeholders and asset owners to resolve);

Note: from this point forward the currently planned 104 PM_{2.5} expansion sites associated with the contract will be known as the PM_{2.5} sites.

PM_{2.5} CMCU Supplier Core Role

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- 2.10 Overall network management for fully funded and affiliate PM_{2.5} sites (currently planned 104)
- 2.11 Update and maintenance of the PM_{2.5} AURN Asset Register of Authority owned goods
- 2.12 Maintain site equipment and environments to be compliant with the AQD for PM_{2.5} sites
- 2.13 Appoint and manage Local Site Operator's (LSOs) for PM_{2.5} sites.
- 2.14 Appoint Equipment Support units (ESUs) for PM_{2.5} sites.
- 2.15 Manage and co-ordinate with ESUs for all PM_{2.5} analysers
- 2.16 Data acquisition from PM_{2.5} sites
- 2.17 Data validation prior to issue of provisional data to DDU and QAQC unit for PM_{2.5} sites
- 2.18 Investigate and where applicable suspend dissemination of anomalous data for PM_{2.5} sites
- 2.19 Communication with QAQC Unit on key aspects of network operation as detailed in [Work Package 1.1 - Overall Management and Data Management to Achieve Data Quality Objective](#)
- 2.20 Respond to QAQC Supplier quality assurance actions to improve ratified data capture
- 2.21 Collate meta data for E-reporting for PM_{2.5} sites
- 2.22 Maintain a backup of data/information sent to the DDU and / or QAQC Unit;
- 2.23 Manage health & safety network risks
- 2.24 Manage communications devices / suppliers and contracts
- 2.25 Manage 3rd party Electricity (not those part of the DgC framework contract) and Communication costs for PM_{2.5} sites
- 2.26 Operate in High Pollution Mode to minimize any risks to data dissemination and/or data capture loss to the PM_{2.5} AURN sites
- 2.27 Highlight site and network risks to the Authority where their involvement is required to resolve
- 2.28 Identify local influencing sources of pollution leading to high levels of pollution, erroneous or doubtful information generated by instruments and notify the Authority and DEFRA
- 2.29 Manage co-location requests, for non-core work from interested researchers / consultants at PM_{2.5} AURN sites
- 2.30 Attend quarterly quality circle cross learning meetings with the current QAQC Supplier.
- 2.31 Provide advice to AQEG / Defra / Government Departments / Devolved Administrations / Authority / Local Authorities regarding the PM_{2.5} AURN and its technical operations as necessary
- 2.32 Liaise and co-operate with Suppliers managing any other UK air quality monitoring networks who are co-located at fully funded PM_{2.5} AURN stations, and act as lead Network Supplier regarding dissemination of site safety information;

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- 2.33 Develop innovation on the network to ensure new ideas and technologies can be integrated if there are wider benefits.
- 2.34 For fully affiliated sites only with no funded work, the management role is to:
- 2.35 provide advice and guidance to ensure new LSOs are trained are competent in the role to operate safely in accordance with the PM_{2.5} AURN Site Operators Manual.
- 2.36 advise affiliate ESUs and affiliate owners if data capture and quality is of concern
- 2.37 co-ordinate health and safety incident response with local authorities;
- 2.38 track and advise on goods replacement activities to ensure continuing alignment with the requirements of the AQD2008 or its successor following EU Exit (existing goods is compliant with the Directive requirements).

PM_{2.5} CMCU Supplier Project Role

- 2.39 Receive handover, communication procurement and set up, LSO and ESU appointment of new sites so the site is fully operational.
- 2.40 Provide network operation advice and assistance to the Authority on procurement activities associated with capital items being purchased for the PM_{2.5} sites. This will be on a 'as required' basis.
- 2.41 Project management of asset movements into and out of the PM_{2.5} network on behalf of the Authority.
- 2.42 Notify the Authority where new assets and site installations are required into the PM_{2.5} network. For the scenario where no construction activities are being undertaken, the Supplier will manage these. For the scenario where Construction activities are being undertaken the Authority will appoint the most suitable Qualified Principal Contractor they deem fit.

3 Work Package 1.1 - Overall Management and Data Management to Achieve Data Quality Objective

- 3.1 The affiliate and fully funded sites that need to be implemented and managed by The Supplier and their locations (remains a live document which is subject to change) are listed in:

Annex 2 – Target Location list of new PM_{2.5} CMCU sites

- 3.2 The structure of the PM_{2.5} network is broken down to ‘Fully Funded’ and ‘Affiliated’ sites as per the definitions in the Glossary. The Supplier shall manage these to the standards set out in this Specification document and minimise the cost to the Authority, working in a collaborative approach with affiliate owners. The Supplier must ensure a fit for purpose Affiliate Memorandum of Agreement is in place prior to commencement of the site as part of the yes for any applicable sites using the Authority template **Error! Reference source not found.** The Supplier is to review and disseminate updates to Affiliate Memorandum’s of Understanding (MoU) prior to any affiliate PM_{2.5} Affiliate Local Authority (LA) taking on the work, by updating:

Annex 3 - Affiliate Memorandum of Understanding in EA template

- 3.3 The Supplier must provide evidence of costing as per Schedule 3 on charges, for any increases or decreases to cost from the expansion or contraction of the network as per Annex 4 – Implementation and Testing Requirements of Specification. These Schedules are subject to change by Contract Award.
- 3.4 The Network at the start of the Contract does not exist and will expand to the ~104 site as they are handed over, site by site or in batches by the separately contracted Site Establishment Supplier. The Supplier also has to demonstrate to the Authority that they have a Data Management System, and a redundancy data collection system, that can reliably function to deliver data to the DDU. To implement the new sites one by one and the new network data systems, refer to the Implementation and testing Annex:

Annex 4 – Implementation and Testing Requirements of Specification

- 3.5 The sites must continue to follow the strict siting criteria requirement of the AQD2008 siting requirements and it is the role of the supplier to ensure that the sites remain compliant with these requirements and report any instances of non-compliance to the Authority to discuss the appropriate action to be taken.

Annex 5 - AURN: Assessment of siting criteria

- 3.6 For the Annual Mean Concentration Target (AMCT) and Population Exposure Reduction Target (PERT) PM_{2.5} sites an additional process has been undertaken to find sites that follow a process set out as Defra Guiding Principles. If circumstances arise which result in a site needing to be relocated, any alternative location will need to consider both the AQD 2008 siting criteria and Defra's Guiding Principles. This work would be a 'project' item under contingency spend in liaison with our Defra partners. The original version of Defra's Guiding Principles will be shared when required to ensure the location of the new site meets the requirements of the project. The relocation requirements will be a project cost to be scoped and funded during the contract.
- 3.7 The Supplier must manage the PM_{2.5} network sites to be consistent with the siting criteria and take reasonable measures (for example a Supplier to remove an overhanging tree branch) to address actions to sites when changes impact their classification and / or historical data sets, on the micro and macro scale, if brought to attention by any PM_{2.5} stakeholder. An ad-hoc budget will be available to the supplier for such remedial works / modifications and thresholds will be agreed with the Authority for what level of spend could be self-served by the Supplier to remediate the issues if costs are below the threshold or what would need to be reviewed with the Authority on a case-by-case basis if costs are above the threshold.
- 3.8 The analysers bought may measure PM₁₀ at the same time as PM_{2.5} concurrently the additional measurement and dissemination of the PM₁₀ fraction will be provided by the CMCU. Throughout the document reference to PM_{2.5} also includes PM₁₀ where the analyser measures and disseminates both fractions.
- 3.9 Where the upper cost threshold is exceeded and/or the type of non-compliance of the siting criteria is not a routine requirement such as maintaining site infrastructure and vegetation around sites, the Supplier must highlight to the Authority options to address any impacts. This requirement is based on any ongoing PM_{2.5} site audit action recommendations highlighted by the existing QAQC Suppliers ([AURN SITE META DATA REPORT](#) – Sunderland Wessington Way page 2 - provides an example).

Deliverable 1 - PM_{2.5} AURN CMCU to highlight Siting Criteria concerns to the Authority within then (10) working days once identified and remedy within thirty (30) working days unless otherwise agreed in writing by the Authority

- 3.10 The Supplier must review the PM_{2.5} relevant UK Air webpages annually or if subject to significant change and update any errors or changes directly with the web-site host if content relating to the sites, instrumentation, PM_{2.5} verification and dissemination methods become out of date. Any changes required should see the relevant UK-air website Supplier notified at <https://uk-air.defra.gov.uk/about-these-pages> .

[Subject to Contract]

Schedule 2 (Specification)

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- 3.11 The Supplier must meet the minimum annual data capture requirement for a monitoring station where fixed measurements of PM_{2.5} levels are taken, unless issues occur that are outside of their control and the data from such measurements are ratified. The required data capture is for at least 85% of the hours in a year. An example of where circumstances are outside of a supplier's control would be for a monitoring station that has to close due to the landowner withdrawing the lease. Another example would be a failure of a cabin structure or Agency owned asset, that requires the equipment to be switched off, but was not due to any actions or lack of action by the CMCU. Such exclusions from the data capture calculations can only be with agreement from Authority.
- 3.12 The Supplier must meet the AQD 2008 Data Quality Objectives regarding uncertainty, when achieving those data targets as per the following Table and the Service 10 Schedule for Service Levels:

Table 1- AQD 2008 Data Quality Objectives as detailed in the Air Quality Regulations

	PM _{2.5}	PM ₁₀
Fixed measurements Uncertainty (1)(2)	25%	25%

- 3.13 The Supplier must manage and take measures to prevent the introduction of systematic errors in data collection and validation on the PM_{2.5} Network to ensure that they do not introduce systematic errors in data sets which would interfere with the subsequent ratification by the QAQC Supplier) and referenced in

Annex 6 - Data Validation and Ratification Process Apr 2017

- 3.14 Systematic Errors are issues with the analyser's data that should have been rectified, for example an instrument that has a diagnostic fault that is not attended to (such as Flow) or an issue with excessive drift that is apparent from the daily Internal Span or Zero calibrations. The Supplier shall ensure that uncertainty associated with the validation of the data for their validation processes are provided transparently and managed in submission of raw and validated data to the QAQC Supplier.
- 3.15 The Supplier must attend a QAQC data ratification quality circle meeting four times per year to: review their role in providing validated data to the QAQC Supplier; review the work of the PM_{2.5} AURN CMCU LSO and ESU Suppliers; and seek actions that may improve ratification of more data in the future.
- 3.16 Data to be transferred must include:
- 3.16.1 file list of what data is being sent;
 - 3.16.2 15 minute raw mV values or digital outputs;
 - 3.16.3 hourly raw mV values or digital outputs if 15 minute unavailable (for example BAM instruments);
 - 3.16.4 the 15-minute scaled data;
 - 3.16.5 the manual calibration files (used for data scaling);
 - 3.16.6 the auto-calibration files;
 - 3.16.7 metadata for sites (make/model of instrument) in accordance with e-reporting requirements under AQD2008 as attached to the hourly files (Changes to metadata are required to be amended for site's where the instrument type has permanently changed. Instrument type may not need to be updated for 'hot spare switches' if only temporary but the QAQC Supplier would need to be informed in the monthly edit file summary);
 - 3.16.8 data must have particulate matter zero test data removed.
- 3.17 Data ratification is not a requirement for this PM_{2.5} AURN CMCU specification. The PM_{2.5} AURN CMCU must provide the QAQC supplier(s) with the relevant data measurement, calibration and meta data detailed in Annex 7 – Monthly Data upload specification for PM_{2.5} QAQC data. These data shall be compiled automatically at the end of each month and dispatched to the QA/AC Unit by email unless otherwise agreed. The current format is detailed in:

Annex 7 – Monthly Data upload specification for PM_{2.5} QAQC data

- 3.18 Each month the Supplier must provide the QAQC unit with information on network performance, LSO and ESU reports for visits, repairs, as part of Error! Reference source not found. files. The format of this will be agreed at the contract initiation stage with the QAQC Suppliers. This will be provided no later than the 5th working day of each month by email report (or other agreed means), and be accessible to the Authority, and must be to the [redacted] detail specified by the QAQC supplier which allows Data Ratification for the entire quarter to take place. Monthly edit file data must be sent complete with null values attached where data is missing.

Deliverable 2 – Provide current QAQC Supplier with monthly data capture and network performance information as per the specification within five (5) working days of the end of each calendar month.

- 3.19 The Supplier must store raw and validated data files as a back-up for the duration of the contract and for a minimum three (3) years after the Contract has elapsed.
- 3.20 A Supplier must notify the Authority within 3 working days where validated data must be re-sent for ratification after the annual deadline date.

4 Work Package 1.2 - Real-time Data Management Requirements

IMPLEMENTATION PHASE

- 4.1 The sites will be established without a communications package when reaching Stage 3 of Figure 1. The Supplier must procure all the remote telemetry links and communication packages which will become Agency owned low value assets, as required for PM_{2.5} sites to communicate with the Suppliers chosen data collection system as per the Schedule 3 for charges.
- 4.2 Each package must be future proofed to include operation during a suitable termination period at the end of the Contract for handover, and be set up and operational within thirty (30) working days of the site infrastructure being in place. For new affiliate sites, existing communications packages should be explored in the first instance. The Supplier will ensure that any existing affiliated network communications remain in place where required for the duration of the contract for affiliated and funded instruments. The remote telemetry systems chosen must be able to be used by other data management systems without reliance on 3rd party licenses or subscriptions at point of handover.

Deliverable 3 - Deliver new PM_{2.5} communications package for each analyser within thirty (30) working days of site being installed.

- 4.3 The Supplier will provide a fit for purpose communication and data collection system which collects data automatically and remotely by communicating with the analysers at the PM_{2.5} stations.
- 4.4 The Supplier must have stable data management systems that collect data and transfer to the DDU in the agreed format so as to be disseminated to UK Air. In a 1 month testing period, data collection and transfer from instrument to DDU, must be approved by the DDU Supplier, as part of Annex 4 – Implementation and Testing Requirements of Specification checks, approval not to be unreasonably withheld.
- 4.5 The supplier will utilise command line scripts to interface with these instruments directly. The Supplier is required to develop command line scripts for any new instruments that will be operating on the network within sixty (60) working days or within an authorised timescale agreed with the Authority in accordance with the needs and nature of the instruments to be deployed. The Supplier will need to liaise with the Analyser suppliers to understand what command scripts are needed to retrieve the data.

Deliverable 4 - For any PM analyser purchased for use on the network - the supplier must be able to produce an operational command line script protocol within sixty (60) working days.

OPERATIONAL PHASE

- 4.6 The Supplier will monitor when communication service providers are due to terminate the provision of connection services to ensure the telemetry solution provided will not expire during the Contract.
- 4.7 The Supplier's data management software must have capacity to retrieve data codes from current AURN PM_{2.5} instrumentation (Fidas 200 and BAM 1020), and have development capacity to retrieve new analyser codes from new PM_{2.5} instruments deployed on the network. Suppliers must prioritise early development and testing of new scripts for their data management software to communicate with the new protocol and continue to meet Deliverable 5 during the operational phase of the Contract.
- 4.8 For the data collected from the monitoring sites – the Supplier shall manage their initial automated 'Quality Assurance' process known as Data Validation prior to uploading data on UK Air as provisional. This is to ensure the data uploaded is as accurate as possible. Issues raised and rectified during the data validation process which impact the Data Quality Objectives must be highlighted to the Authority in quarterly reports. The Supplier must use data algorithms or a similar validation process to identify errors and achieve validation of the automatic upload as smoothly as possible. The automated process must as a minimum:
 - 4.8.1 Apply data corrections (as required) prior to uploading to UK AIR;
 - 4.8.2 The supplier will suspend their data dissemination where data is suspected to be erroneous.

Annex 8 - AURN Data Ratification Process Map

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- 4.9 In addition to the automated process, the Supplier must ensure other checks are made on the data to ensure the data capture targets are met for ratified data.
- 4.10 The Supplier's data management system must also be able to collect and co-ordinate:
 - 4.10.1 PM_{2.5} hourly meta data / edit file production scripts direct from analysers
 - 4.10.2 PM_{2.5} specific time check/synchronisation protocols, where instrument functionality permits
 - 4.10.3 Rapid (within 1hour) server switching system to standby system and mirrored data management platform
 - 4.10.4 Upload of LSO calibrations
 - 4.10.5 Collection of instrument diagnostics subject to analyser capability for error codes and analyser temperatures.
- 4.11 The Supplier must send validated data from all operational sites and pollutants on the PM_{2.5} to the DDU by electronic data transfer at thirty (30) minutes past the hour, every hour, and every day of the contract period, to be completed within a 30-minute window. During the hours of 11:00pm until 6:00am alternate hours of data polling is permitted. The data sent must be hourly means and a 24-hour average required for AQSR reporting and the DAQI. The format of the submissions is as detailed in:

Annex 9 - DATA upload specification for PM_{2.5} QAQC data to DDU

- 4.12 Data sent to the DDU must be as per Annex 9 - DATA upload specification for PM_{2.5} QAQC data to DDU and include recently developed Data codes:
 - 4.12.1 Status code C (Communications Issue): When there is a communication failure with a site.
 - 4.12.2 Status code M (Instrument Fault/Missing Data): Where data is missing / flagged i.e. we are able to connect to the modem/instrument but no data was collected for that hourly period.
 - 4.12.3 Status code S (Routine Audit or Service): Where a routine service or audit is taking place.
 - 4.12.4 Status Code H (Site specific Issue such as water ingress, power supply issue).
 - 4.12.5 If the supplier discovers or is informed that data for any site or pollutant requires updates and correction to validated data, this must be done within 2 working days of becoming aware of the issue, and the data re-issued to the DDU using the agreed formats.
 - 4.12.6 The Supplier if using a physical server, will be required to have an entire 'standby' system of data collection to ensure the integrity of the network is protected from unusual events including but not limited to:
 - 4.12.7 Power supply cuts to servers
 - 4.12.8 Server Failure
 - 4.12.9 Software Corruptions
 - 4.12.10 Communication and telemetry failures
- 4.13 Requirements for maintenance
- 4.14 If using a cloud-based server, the Supplier will still need to manage the above risks, and have mitigations in place for unusual events, and justification of how their 3rd party cloud-based server can cope with these risks.

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4.15 A system must be able to 'switch' quickly (within 1 hour) to a standby system with zero data loss.

Deliverable 5 - Preliminary hourly data to be sent to the DDU every sixty (60) minutes, within 30 minute window since data was collected on site. The Authority responsible officer to be informed within 12 hours if the data transfer system fails and more than 10% of operational network are failing to disseminate after this time. Remedial action to amend any failures to be undertaken within 24 hours, unless agreed with the Authority.

4.16 The Supplier must flag known activities from LSO / roadworks / construction / unusual activity that may be causing 'local pollution incidents' to the Authority / Defra / QAQC and the DDU – via Local Pollution Reports to a designated set of emails detailed in the High Pollution Mode section. The supplier must provide a suitable explanation of any potential causes to a standard which would allow for the information to be used to inform responses to any public information requests by the Authority, which may be received regarding high levels of pollution episodes.

4.17 The Supplier must address and minimise business continuity risks for strategic network failure regarding known issues and must be reviewed in line with Schedule 14 to manage any other issue and risks

4.18 The Supplier will issue Data Exception Reports (via email or other rapid communication system) within 24 hours to the Authority, Defra and the DAs for the following reasons:

4.18.1 where the number of PM_{2.5} analysers in this PM_{2.5} contract are not successfully communicating to UK Air and the number exceeds 10% of the network for more than 4 hours, excluding planned maintenance, audit, servicing and LSO site work;

4.18.2 where a UK Air site has stopped communicating for more than ten (10) working days.

4.18.3 The format of a Data Exception Report is to be agreed at contract commencement and must include a clear title, the reason for issue, and the action to be taken to rectify.

4.19 Where Faulty or Erroneous data has got through the data validation process (and published as 'provisional' on UK AIR) resulting in the wrong DAQI being reported for the relevant UK air Zone including those from LSO / ESU interactions with live data instruments;

Deliverable 6 - Issue Data Exception report within 24 hours upon identification of the type of issues detailed in the contract specification.

5 Work Package 1.3 - Management of Site Services, Equipment Assets

IMPLEMENTATION PHASE

- 5.1 The supplier will review all leases and put in mechanisms to ensure compliance with any conditions or restrictive covenants contained within them.
- 5.2 The Supplier shall add to and maintain the PM_{2.5} Authority Asset Register, in the format detailed in:

Annex 10 - Asset Register for PM_{2.5} Network

- 5.3 New asset labels must be placed on all new Agency equipment when purchased replicating all the information on this label, but including a specific instrument asset identifier:



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OPERATIONAL PHASE

- 5.4 The Supplier is responsible for the Management of the Authority assets on the PM_{2.5} Network to achieve best value, compliance with Regulations, and to ensure the network maintains compliance with the Data Quality Objectives.
- 5.5 All new assets that are purchased during the Contract must be added to the Asset Register. All new assets should be categorised into either Low Value (£100-£5000 including VAT) or as Fixed Assets (£5000 plus including VAT).
- 5.6 These dates must be reviewed six (6) monthly and where the current condition of the asset warrants it, the Supplier should consider 'extending asset life' to a realistic future date. The aims of this process will be:
- 5.6.1 to ensure that the lifetime of the assets are maximised (but this needs to be balanced with the need to minimise risks to data loss where risks of failure, and service capability are presented); and
 - 5.6.2 to allow budget requirements for new assets to be forecast in a timely manner.

Deliverable 7 - Keep the Asset Register up to date and submit every six (6) months to the responsible officer and The Supplier will provide an up-to-date copy within ten (10) working days when requested.

- 5.7 The Supplier must meet the requirements of **Error! Reference source not found.** regarding Air Quality Asset Management:

Annex 11 - Asset Management Manual

- 5.8 The Supplier is required to ensure the Planned Preventative Maintenance log is completed annually for each type of housing as per:

Annex 12 - Planned Preventative Maintenance Log - Non-Electrical - Roadside

Annex 13 - Planned Preventative Maintenance Log - Non-electrical - Walk in

Deliverable 8 - The Supplier undertake Planned Preventative Maintenance annually.

- 5.9 Where no automatic meter reader is installed, the supplier will provide meter readings no less than every 6 months to the central team utilityinvoices@defra.gov.uk. The payment and metering of electrical supply will be an Authority obligation based on a Defra Group wide electrical supply contract. The contact is utilityinvoices@defra.gov.uk
- 5.10 Action must be taken to always minimise electricity costs for example adjusting the Air Conditioning thermostat to the most energy efficient temperature whilst keeping instruments within their optimum operating temperature ranges. The records of sites requiring electricity and communication payments for all the Fully Funded sites are listed in Annex 2 – Target Location list of new PM_{2.5} CMCU sites

- 5.11 Suppliers must organise payment for any electrical charges that were agreed with Landowners/Local Authorities. Transparent payment records to be maintained and available for the Authority on request for each site where the Authority is unable to place its own meter, so alternative payment mechanisms for electricity site costs are required.
- 5.12 The Supplier shall assist the Authority in relation to the capital purchase of new and/or replacement goods. The Supplier shall, at the Authority's request, input to and review the technical specification for any tender process and/or input to the technical evaluation panel. Staff costs would be paid on an ad-hoc basis, using the rates in the commercial tender [insert document reference].
- 5.13 Staff time, purchasing of low value goods and installation for Capital works must be invoiced on separate Purchase Orders to utilise Authority capital budget.
- 5.14 Throughout the lifetime of the contract the Supplier shall prepare a list of the Authority owned goods which are recommended for replacement at the end of August each year, as per Schedule 7 – Asset Replacement Report. This list shall include hot spare requirements for ESUs to adequately meet the data capture targets. This list shall be prepared in liaison with the QAQC Unit in light of the intercalibration audits and data ratification process and shall categorize replacement priorities.
- 5.15 The classification of replacement will be “essential”, for where the Supplier recommends replacement within twelve (12) months (to maintain data integrity/capture). The classification of “desirable” will be for where the Supplier recommends replacement within 2 years. This is to enable the Authority to review and plan spending profiles and maintain data quality.

Deliverable 9 - Produce and report the need for the Authority assets replacement in the form of a report every twelve (12) months, or sooner if the Data Quality Objectives are compromised.

- 5.16 The Supplier must manage an annual budget (to be confirmed by the Authority each year) to carry out replacement and maintenance of any essential equipment for smaller capital items (less than £5,000 each but where risks and rewards of ownership sit with the Authority for over one (1) years). These capital purchases shall require prior agreement from the Authority's Responsible Officer and will require separate purchase orders and invoices and must follow Agency Procurement rules. If spend on capital projects over £50,000 is required, this must be passed to the Authority responsible officer to undertake. The Supplier must always seek three quotes (unless items can be purchased off existing EA catalogues), consider the best value for longevity, evaluate running costs, data capture and network resilience, carbon reduction and resource availability in capital spends, and aim to achieve warranty of a least one (1) years.
- 5.17 The Supplier must align with and support the existing AURN CMCU Supplier to undertake an annual equipment review at the PM_{2.5}/ AURN store (currently located in Stroud) for evaluation of assets to be disposed of (from year 3 only), or for re-use with research institutes, to minimise the cost of storing unwanted goods long term for both the PM_{2.5} and AURN networks. Depending on the scale of the review a site visit will be required. A recommendation report regarding the action to minimise goods storage costs must be produced between the two parties.

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- 5.18 On occasion, the Supplier may identify that a re-location of goods from an existing PM_{2.5} or affiliate site to new or affiliate sites is necessary. In these circumstances the Supplier must firstly draw attention to any risks associated with changes in the way the site is funded and/or any cost implications for relocating the site by sending an Exception Risk report notification, detailing the risks of the re-location occurring within ten (10) working days.

- 5.19 The Supplier will work carefully to manage relationships with the Community, local businesses and stakeholders around the location of any fully funded PM_{2.5} AURN cabins and notifying the Authority responsible officer of any concerns regarding for example nuisance, noise, and visual appearance of the cabins.

- 5.20 The Supplier will notify the Agency if a move of a PM_{2.5} site is required. Works associated with the relocation of a site is led by The Supplier for the Site Establishment Contract if Construction work is required.

6 Work Package 1.4 - Electrical Management and Operational Manual Assurance

- 6.1 The Supplier must provide assurance that;
- 6.1.1 the contract and Authority assets are being maintained and; the assets are safe to operate.
- 6.2 This must be undertaken in accordance with statutory legislation, British and European Harmonised Standards and the Environment Agency's standards. Before undertaking any electrical works on Authority assets an Electrical Safety Agreement (ESA) must be issued to the Supplier's nominated competent person by the Authority.
- 6.3 The process required to achieve an ESA is described in Annex 16 - LIT 13133 Code of Practice for Electrical Safety (CoPES) Part 2. If not already in place, the Supplier will be expected to work with the Authority to achieve a National ESA within the first three (3) months of contract unless otherwise notified by the Authority. Acting in this role the Supplier's competent person shall assure and manage electrical safety on the PM_{2.5} Network. To be able to be issued with an ESA the Supplier must complete and confirm compliance with all of the requirements detailed in the:

Annex 14 - ESA Questionnaire

Deliverable 10 – Provide evidence for a submission to gain an Electrical Safety Agreement within three (3) months of contract commencement.

- 6.4 The Supplier's ESA is intended to be reviewed every three (3) years by the Authority. The primary purpose of the ESA is to confirm that the Supplier has:
- 6.4.1 A competent person specifically appointed to manage electrical safety for the Supplier and any subcontractors working on Authority assets. This person must be deemed to be competent to accept an ESA by the Supplier's senior management.
- 6.4.2 A set of Contractor electrical safety rules or Code of Practice which the Authority agree are equal to or better than the Environment Agency's Code of Practice for Electrical Safety (CoPES).

Annex 15 - LIT 13118 Code of Practice for Electrical Safety (CoPES) Part 1

Annex 16 - LIT 13133 Code of Practice for Electrical Safety (CoPES) Part 2

- 6.5 The Supplier must make particular reference to the conditions section of the CoPES part 2 and the requirements regarding competencies of their organisation and the organisation's employees. The completed questionnaire will be reviewed by the national Mechanical Electrical Instrumentation Control and Automation (MEICA) Senior Manager as part of their assessment in completing the ESA process. If the ESA is not obtained the Authority will reserve the right to re-contract the Electrical Safety Management to other parties who can be approved.

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- 6.6 The Supplier must update and maintain the existing asset electrical documentation in accordance with supporting document LIT13127 Drawings and documentation.

Annex 17 - LIT 13127 Drawings and Documentations

- 6.7 The Supplier must bring to the attention of the client any deficiencies in the quality of the existing documentation or the absence of relevant documents necessary to meet the Authority's minimum technical requirements.
- 6.8 The Supplier's electrical safety rules and policies must be considered by the Authority equal to or better than the Authority's code of practice including but not limited to:
- 6.8.1 Electrical authorisations
 - 6.8.2 Drawings and documentation for Electrical Works
 - 6.8.3 Appointment of Suppliers to carry out Electrical works
 - 6.8.4 Detailed working procedures, in the form of risk assessments and method statements that will ensure safe working on any system or piece of electrical goods.
 - 6.8.5 Working with low voltage installations
 - 6.8.6 Isolation of electrical goods
 - 6.8.7 Working in confined spaces
 - 6.8.8 Testing of fire alarm and emergency lighting systems
 - 6.8.9 Working with overhead lines and underground cables
 - 6.8.10 Lightning Protection
- 6.9 The Supplier must undertake testing of fixed electrical installations in accordance with Annex 18 - LIT 13128 – and in accordance with the IET guidance note 3. The LIT 13128 document is included in:

Annex 18 - LIT 13128 – Periodic Inspection and Testing

- 6.10 The Supplier must undertake testing of Agency owned Electrical Equipment on the Network in accordance with LIT13129. The Lit 13129 document is included in:

Annex 19 – LIT13129 Management of low voltage electrical equipment

- 6.11 The PM_{2.5} Networks fixed installations are classified as 'Operational sites' within this guidance and the periodicity is defined as follows.
- 6.11.1 Authority owned and operated asset – 3 yearly
 - 6.11.2 Authority Affiliated sites' – These are assets that are owned and managed by a 3rd party but in which the Authority has goods connected to the owner's electrical network. The Supplier shall assist the Authority in determining whether the 3rd party has a valid in-date Electrical Installation Condition Report (EICR)– The periodicity of the report is the responsibility of the owner and the Authority periodicity does not apply in these instances.

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- 6.11.3 Authority Affiliated sites with no EICR – These are assets that the 3rd party asset owner does not have an EICR for and declines to undertake an EICR. The Authority has a responsibility to assure the safety of their own employees and any persons working on their behalf. The Authority have two methods of addressing this situation with option a) below being the preferred route. The Authority will lead on the implementation of this solution. The Supplier shall assist the Authority in determining the status of the installation in relation to EICR delivery.
- 6.11.4 Option a) where the 3rd party owner has no EICR and advises that the installation will not be tested - the Authority should provide a written offer to finance the undertaking of an EICR to the limits of the electrical network for which the Authority has a benefit. The asset owner will be asked to undertake this work using their preferred supplier. Periodicity remain the responsibility of the 3rd party owner.
- 6.11.5 Option b) where the 3rd party owner has no EICR and advises that the installation will not be tested - the Authority will provide a written offer to undertake the work using the PM_{2.5} AURN Supplier and undertaking the EICR to the limits of the electrical network for which the Authority equipment utilises. No work shall commence without the full agreement of the owner. Periodicity will be the Authority 3 yearly 'initial' frequency defined in IET guidance note 3. The owner must then be consulted and their guidance made in writing as to the suitability of the 3 yearly frequency based on the owner's assessment of the building use and status.
- 6.12 In addition to undertaking EICR inspections, the Authority operates an annual electrical Planned Preventative Maintenance (PPM) regime in accordance with BS7671 'Requirements for electrical installations'. The PPM detailed in Annex 20 - Electrical Planned Preventative Maintenance checklist defines the Minimum Technical Requirements (MTR) of the inspection. The Supplier must review these MTRs against each asset and determine whether the generic MTR captures all elements of the installation. The Supplier may make additions to the PPM where deemed necessary and agreed with the Authority.

Annex 20 - Electrical Planned Preventative Maintenance checklist

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- 6.13 The Supplier has the responsibility for tracking Electrical Equipment testing and Mains testing records from affiliate site owners (if applicable) and immediately informing the Authority when these cannot be obtained. The Supplier shall keep their own records to ensure these tests records are up-to date.
- 6.14 The Supplier will conform to the MEICA Operational Instruction that sets out the minimum technical requirements to be followed by all contractors dealing with MEICA equipment, plant, systems and other assets. Supporting documents cover requirements for specific Authority goods, plant, systems and other assets, and should be requested from the Responsible Agency officer. The Standard Specification is included in:

Annex 21 - LIT 13219 - MEICA Standard Specification and Supporting Operational Instructions

- 6.15 The Operational Instructions and supporting documents are listed in Annex 22 - Additional Electrical Operational Instructions below. The Supplier is required to identify the relevant sections for operations on Agency assets required as part of the PM_{2.5} specification.

Annex 22 - Additional Electrical Operational Instructions

- 6.16 Operation and Maintenance manuals for each site will need to be maintained for each site when our new Asset Management System called AIMS has been implemented. The Supplier is anticipated to be required to review the following items and ensure they are all up to date annually when they are produced and saved on the system:
- 6.16.1 Site emergency information
 - 6.16.2 A location plan and details of access
 - 6.16.3 Details of all the analysers and goods on site, including goods that has not been supplied as part of the works.
 - 6.16.4 Cross-references to existing drawings and existing operation, maintenance and service information relating to goods on site that has not been supplied as part of the works.
 - 6.16.5 Safe systems of work relevant to the operation and maintenance activities.
 - 6.16.6 Working drawings that remain with the work and are amended and updated as modifications are made. For the PM_{2.5} AURN housings these include electrical Single Line Diagrams and General Arrangement Layout Drawings.
 - 6.16.7 As AIMS is yet to be finalised the Supplier is not required to cost for this item and costs will be agreed with the Authority using agreed rates once the project is initiated.

Deliverable 11 – Maintain all Authority owned assets to electrical standard to be agreed in the ESA and undertake annual Electrical Equipment and Mains tests.

7 Work Package 1.5 - Procurement and Management of LSOs

IMPLEMENTATION PHASE

- 7.1 The supplier to update the LSO manual so it is clear for any changes required for the operation of the new PM_{2.5} Network and be reviewed and approved by the Authority.
- 7.2 The cost schedule has provided a set price for LSO role and during the implementation phase the Supplier will find the best value Local Site Operator by conducting a tendering exercise to deliver the operational LSO tasks as per the operational points below in paragraph 7.7 – 7.20. A breakdown of the outcomes of the tendering exercise along with justifications for award will be shared with the Authority for final approval.
- 7.3 The appointed LSOs will have flexible start dates to accommodate the phased establishment of sites. Any increases in the tracked costs will need to be justified on a case-by-case basis if there are project changes.
- 7.4 Site specific information around parking, keys, health and safety and any other lease negotiated arrangements must be provided to the LSO as part of the site implementation process.
- 7.5 The Supplier will need to arrange LSO training (no commercial agreement required) which will be delivered by the QAQC Supplier who will audit the new site. The Supplier will ensure before the site is operational that they are satisfied the LSO can follow the guidance in the UK AIR Health and Safety Manual and the relevant parts of the LSO manuals:

Annex 23 - Health and Safety Guidance

OPERATIONAL PHASE

- 7.6 The Supplier is responsible for the management of Local Site Operator's (LSOs) to ensure the operation of the PM_{2.5} AURN Monitoring stations.
- 7.7 LSO attendance at the Monitoring Station is required at urban traffic LSO visit every 2 weeks and urban background monthly. The Supplier will ensure these LSO visits and calibrations occur at these frequencies when procuring these services unless otherwise agreed.
- 7.8 Both 'Fully funded' and 'Affiliate Site' LSOs will be managed by the Supplier. Affiliate LSOs will need to be managed using a flexible and co-operative approach, to minimise cost to the Authority whilst achieving the Data Quality Objectives (DQO) as detailed in Table 1- AQD 2008 Data Quality Objectives as detailed in the Air Quality Regulations. It is expected that the majority of sites will be of the type which are 'Fully funded' by the Authority rather than 'affiliated' and a final list of sites will be shared at Contract award. This is because the list is dynamic while sites are still in the process of being established. The current expectation is ~5 affiliate Local authority sites LSOs will need to be managed, but this may change.
- 7.9 If during the Contract period the Authority chooses to take funded LSO work in-house, the Supplier will advise and support on the transition of services and provide flexibility in the contracts of funded LSOs (as a minimum annual break clauses will be required) during the retendering in year 1.

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7.10 The Supplier is responsible for ensuring the LSO role delivers:

- 7.10.1 Call out function (within a maximum 72 working hours) and reporting of unusual events, such as construction work or other source identification which would have an impact on the absolute and relative changes in pollutants measured at a local AURN site to the CMCU for onward dissemination to the DDU / Authority / QAQC / Defra and the DAs;
- 7.10.2 Undertakes annual completions of Site Observation Forms (single page form) regarding Public Safety Risk Assessments control measure checks
- 7.10.3 undertaking regular overall LSO tasks as will be stated in the LSO Manual Part A for general tasks and then Part B for the specific instrument type:

Annex 24 - Local Site Operator Manual Part A

Annex 25 - Local Site Operator Manual Part B

7.11 The Supplier is responsible for peer reviewing any updates to the LSO manuals following an instrument change that impacts this network.

7.12 The Supplier is responsible for informing the QAQC Supplier that a new LSO has been appointed and that training is required and for record keeping of which LSOs have had on site training required for the role. Once a year the Supplier shall report to the Authority and QAQC on the LSO skills and training of all appointed LSOs (from point of tender award), to highlight to the Authority the level of proficiency out on the network and understand the current level of training needs. This is intended to minimise risk to the Authority due to a lack of skills on the Network.

Deliverable 12 - LSO skills and training need to be managed and up to date. Annual summary report is due from contract commencement.

7.13 The Supplier will manage a master LSO contact details sheet and do so following GDPR requirements. The Supplier will keep the contact list current and available for the PM_{2.5} AURN stakeholders to use to access sites and fulfil their functions as QAQC / Standard Gases / ESU or Authority needs.

7.14 The Supplier will respond to requests for input into the LSO newsletter within ten (10) working days unless otherwise agreed by the Authority and provide relevant content.

7.15 The Supplier is responsible for ensuring LSOs have records of undertaking key health and safety guidance and training (in person or remotely) to ensure safe operation of the network and compliance with health and safety regulations.

7.16 The Supplier is responsible for disseminating site specific H&S notifications, guidance and recommendations to LSOs to ensure both site safety procedures and site infrastructure comply with the latest HSE safety guidance. The Supplier will follow the Annex 23 - Health and Safety Guidance where applicable.

7.17 The Supplier is required to review and manage LSO performance to achieve the overarching requirement for data capture as per the objectives. The Supplier will provide the Authority with details of the KPIs to be included in the LSO contracts for approval prior to tendering these services. When reporting data capture to the Authority, examples of LSO interactions which would or would not be considered circumstances within the Suppliers control are;

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- 7.17.1 A contracted LSO making repeated errors leading to data loss, and the Supplier taking inadequate action to improve performance would be an example where circumstances are within the Supplier 's control.
- 7.17.2 A poor performing affiliate LSO where non-contractual actions have failed to rectify poor performance would be an example where data capture failings can be excluded.

Deliverable 13 - Send Exception Risk reports for poor performing funded LSOs impacting 90% data capture within ten (10) working days.

- 7.18 The Supplier will coordinate annual reviews of consumable stocks with support from LSO's who will complete onsite LSO consumable stock levels checks. This is allow sufficient consumables to be ordered for Authority owned goods at the start of each contractual year to ensure best value for the Authority.
- 7.19 The Supplier will interface with affiliated LSOs on the network via a partnership working approach to achieve data capture on the PM_{2.5} AURN, typically affiliate LSOs do not have any contractual arrangements or contractual performance measures associated with their role beyond that which is specified in the Affiliate Memorandum of Understanding. The Supplier will need to include the costs of the affiliate LSO interfacing work to deliver the objectives of the PM_{2.5} AURN.
- 7.20 The Supplier will monitor affiliate LSO performance and, where operational concerns are identified, work with affiliate site owners to implement performance improvement plans proportionate to the risks associated with the concerns. Affiliate LSO management will be escalated via the CMCU's own measures to seek improvement, and any sites where validated data capture is at risk of being below 90% due to affiliate LSO performance will need to be flagged to the Authority via exception risk reporting and using the escalation scales in specification point 10.32. The Supplier must maintain awareness of site operational longevity issues and disseminate to the Authority information on Affiliate LSOs who are considering curtailing activities and where there are funding support requests.

Deliverable 14 - Notify the Authority (via an exception report) of any risks relating to affiliate LSO performance and activities which may result in data capture falling below 90% and review MoU annually.

8 Work Package 1.6 - PM_{2.5} Expansion Procurement and Management of ESUs

IMPLEMENTATION PHASE

- 8.1 The Supplier will confirm if the Ambient Air Monitoring (AAM) team (internal EA resource) can deliver the ESU function, and if so will not conduct tendering as per specification 8.3.
- 8.2 During the implementation phase the Supplier will find the best value ESU who can deliver the Operational Phase requirements. The supplier will conduct a tendering exercise to deliver the operational LSO tasks as per the operational points below. The appointed ESUs will have flexible start dates to accommodate the phased establishment of sites. Any increases in the tracked costs will need to be justified on a case-by-case basis if there are project changes.
- 8.3 Site specific information around parking, keys, health and safety and any other lease negotiated arrangements must be provided to the ESU as part of the site implementation process.
- 8.4 The Supplier will need to ensure the ESU's have followed the guidance in the Health and Safety UK Air guidance.

OPERATIONAL PHASE

- 8.5 Both 'Fully funded' and 'Affiliate Sites' ESU will be managed by The Supplier. For Affiliate sites, where no funded assets will exist, ESUs will be working for Local Authorities and will need to be managed using a flexible and co-operative approach, to maintain working partnership with the Local Authorities. The current expectation is ~5 affiliate Local Authority sites ESUs will need to be managed, but this may change. It is expected that the majority of sites will be of the type which are 'Fully funded' by the Authority. ESUs will be appointed and managed through sub-contract directly to the CMCU for the sites owned by The Authority.
- 8.6 The ESU role that is being managed is detailed in

Annex 26 - ESU Requirements

- 8.7 ESUs will undertake the ongoing quality control requirements of the CEN standards in Table 2- CEN Standard applicable to PM_{2.5} AURN Suppliers and ESU Servicing and reference methods in liaison with QAQC recommendations, Manufacturers recommendations and MCERTs certification reports.

Table 2- CEN Standard applicable to PM_{2.5} AURN Suppliers and ESU Servicing

Pollutant		CEN standard/ref method	Details
PM _{2.5}		EN 16450 “Ambient air — Automated measuring systems for the measurement of the concentration of particulate matter (PM ₁₀ ; PM _{2.5})”	<p>The PM_{2.5} AURN currently uses two main methods which are equivalent for one or both parameters:</p> <ul style="list-style-type: none"> - The Beta-Attenuation Monitor (BAM) which measures the attenuation of beta rays passing through a paper filter on which particulate matter from sampled air has been collected. - The Fine Dust Analysis System (FIDAS) conditions air using an intelligent aerosol drying system, and then measuring of number and size optical light scattering intensity from a white light LED source. <p>Future AURN procurements for the PM_{2.5} network may see different PM_{2.5} analysers. (still to be procured).</p>

- 8.8 The Supplier is required to manage fully funded ESU performance to minimise data loss and to ensure validated data capture submitted to the DDU is above 85% (including maintenance). The Supplier is expected to manage data loss by ensuring an 'emergency call out, repair and / or hot swap' contract with the ESU to minimise data loss and ensure that poor analyser performance is rectified.
- 8.9 The timing of the ESU servicing is important to the quality assurance of the network and is to be agreed with the QAQC Supplier prior to it being undertaken. The Supplier is required to ensure the ESUs provide service schedules within a defined period (proposed as five (5) working days) of the schedules being requested by QAQC Supplier. Any changes must be notified as soon as possible to the QAQC Supplier and re-arranged service visits must be done promptly, nominally and in any event within two (2) weeks of the preceding QAQC audit, so as not to comprise data quality on the overall network from delays to service schedules.
- 8.10 The Supplier is expected to manage ESU performance around a requirement of attendance within three (3) working days and a resolution within ten (10) working days. An ESU Exception Risk Report must be issued if the data flow from the site hasn't been re-instated following a call out after ten (10) working days to the Authority and Defra. Increased hot spare capacity requirements to assist ESUs in meeting this requirement should be specified as part of the Asset Management requirements in paragraph 5.15 of this specification.

Deliverable 15 - Manage the fully funded site network ESU performance regarding service, call out, hot spare deployment so as to minimise data loss. Send Exception Risk reports for poor ESU performance impacting 85% data capture at Authority funded sites and when data flows can't recommence within ten (10) working days, following a fault.

- 8.11 The Agency AAM team could deliver ESU work. The Supplier will manage communications and issues to them in the same way that it manages and communicates to any ESU subcontractors. A list of sites will be provided at kick off regarding those sites the AAM team will deliver.
- 8.12 The Supplier will manage any PM_{2.5} AURN expansion ESU specific training needs to ensure compliance with the health and safety requirements of the network.
- 8.13 The Supplier will regularly communicate key site-specific H&S notifications, guidance and recommendations to ESUs to ensure both site safety procedures and site infrastructure comply with the latest UK AIR Health and Safety and HSE Safety Guidance.
- 8.14 The Supplier will ensure the ESUs co-operate with the 'as required' consumable provision requirements of the PM_{2.5} AURN sites, which will be informed by the LSO consumables stock check, and reduce consumable orders as instructed to avoid 'stockpiling' on PM_{2.5} AURN sites and ensure best value for the Authority. The Authority intends to provide bulk consumable, and key spare parts for the first five years of The Supplier as per our PM_{2.5} Analyser purchasing contracts.

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- 8.15 The Supplier will interface with affiliated ESUs on the network via a partnership working approach to achieve data capture on the PM_{2.5} AURN, typically affiliate ESUs do not have any contractual arrangements or contractual performance measures associated with their role beyond that which is specified in the Affiliate Memorandum of Understanding. The Supplier is expected to manage Affiliate ESU performance initially via advice and guidance on how the ESUs might seek improvement. Any sites where validated data capture is at risk of falling below 85% due to affiliate ESU performance will be flagged to the Authority via an Exception Risk Report within ten (10) working days of The Supplier becoming aware. Where operational concerns are identified, The Supplier will work with site owners to implement performance improvement plans proportionate to the risks associated with the concerns.
- 8.16 The Supplier must maintain awareness of any potential interruptions to affiliate ESU site services and notify the Authority should any Affiliate ESU funding support requests be issued.

9 Work Package 1.7 - Management of the Network During out of Hours and Air Pollution Episodes

- 9.1 The Supplier is expected to ensure the network is operational 24 hours a day, 365 days a year (366 on a leap year), so the collection and dissemination of data from PM_{2.5} AURN sites to UK air is maximised and is as accurate as possible. The Supplier's response is outlined for 'out of hours' periods and 'In hours' responses. Out of hours is before 09:00 and after 17:00 during all days including bank holidays and weekends. The enhanced requirements are expected during Air Pollution Episodes where 'high pollution' is forecast or occurs.
- 9.2 The Supplier will provide key contact email addresses to ensure they are contactable at all times for receiving Met Office / Defra / Authority Notifications regarding forthcoming periods of High Pollution, known as Air Pollution Episodes (APEs). During air pollution episodes The Supplier must operate in a 'High Pollution Mode'. At other times The Supplier should operate in 'Normal Pollution mode'.
- 9.3 The Supplier must produce and maintain a 'high pollution response' procedure for the Network within a month of contract award. High pollution mode is activated by the Authority / Defra/ The Supplier if one of the following triggers occurs:
- 9.4 High Pollution Forecast 'notification' received from the Met Office that DAQI of 7 or higher expected;
 - 9.4.1 Measurements on the PM_{2.5} AURN network start reading 'high' levels for more than 12 hours & more than 1 analyser in a geographical region has turned high – suggesting it is not a local event;
 - 9.4.2 Specific request to operate in 'high pollution mode' based on increased public interest are received from Defra / Devolved Administrations – these are only requested in exceptional circumstances.
- 9.5 During normal pollution mode the Supplier is expected to produce and follow a 'normal response' procedure for the PM_{2.5} AURN Network that:
 - 9.5.1 Minimises the impact of planned IT works / Electrical works to data flows by scheduling them at times of low pollution and when data is less visible to the public (e.g. overnight);
 - 9.5.2 Identifies erroneous or doubtful information generated by instruments and notify the Authority / Defra / DA's /DDU during Working Hours, as soon as reasonably possible;
 - 9.5.3 Minimises risks of 'out of service' calibration LSO and ESU work causing data errors to the validated data;
 - 9.5.4 Provides weekend / bank holiday staff rota shift information – in advance;
 - 9.5.5 Provides as much timely information from LSOs and Local information sources on 'Local Pollution' events to the Authority / Defra as possible;
 - 9.5.6 Facilitates timely LSO and ESU 'call out' and resolution for equipment and communication failures on the network;
 - 9.5.7 Provides data management resilience including:
 - 9.5.8 Switching servers to 'back up' if required

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- 9.5.9 Out of hours software support and resolution around cyber-attacks / firewalls / unexpected software failures
 - 9.5.10 Automatic switching of telemetry as applicable
 - 9.5.11 Wireless operator notifications and resolution around loss of network connections and coverage
 - 9.5.12 Provides a minimum weekend and bank holiday twice daily (morning and afternoon) 'Touch point' check of the network to;
 - 9.5.13 respond to Defra / DA / Authority / DDU queries
 - 9.5.14 identify any significant network / data resilience failures that require resolution,
 - 9.5.15 identify any clear local pollution events and provide any remote interpretation from available information
 - 9.5.16 Provide standard automatic data validation during normal operation as per Annex 6 - Data Validation and Ratification Process Apr 2017
- 9.6 During 'High Pollution Mode' the Supplier must:
- 9.6.1 Delay or minimise planned Electrical / IT works required to minimise risks of data disruption;
 - 9.6.2 Minimise site activities to ensure data trends and events are captured as much as possible. This must include scheduled site maintenance if 24 hours warning of high pollution mode was given. The Supplier is expected to use the decision tree in Figure 2 – Site Activity Decision Tree – High Pollution Mode **Error! Reference source not found.** (or subsequent version).
 - 9.6.3 Send a summary of PM_{2.5} AURN sites not disseminating data, and a reason why on a daily basis (in the morning);
 - 9.6.4 Continue standard data communication and validated processes required in the specification;
 - 9.6.5 Update Defra on PM_{2.5} AURN erroneous data that is significant, and if it has triggered an exceedance of the DAQI as soon as reasonably practical. This must be within 2 hours in working hours and 14 hours during out of hours (outside of 9:00 – 17:00 weekdays, weekends and bank holidays);
 - 9.6.6 Update any information received on Local Pollution events which occur during high pollution episodes within 4 hours on a working day;
 - 9.6.7 Actively manage ESUs and LSOs to get data back on line as a high priority if site's develop errors;
 - 9.6.8 Inform Agency / Defra on weekend rota staffing – in advance;
 - 9.6.9 Inform all key support systems (IT / Facilities) to minimise risks of disruption to data flows;
 - 9.6.10 Take necessary precautionary pre-episode changes to any filters / tapes that may be about to run out.
 - 9.6.11 Increase resilience to data and IT systems by:
 - 9.6.12 Automatic switching to a separately located 'back-up server' if the primary server falls down, ISDN (Integrated Services Digital Network) lines stop working or power outages occur in a local area which cause the primary server to lose functionality;

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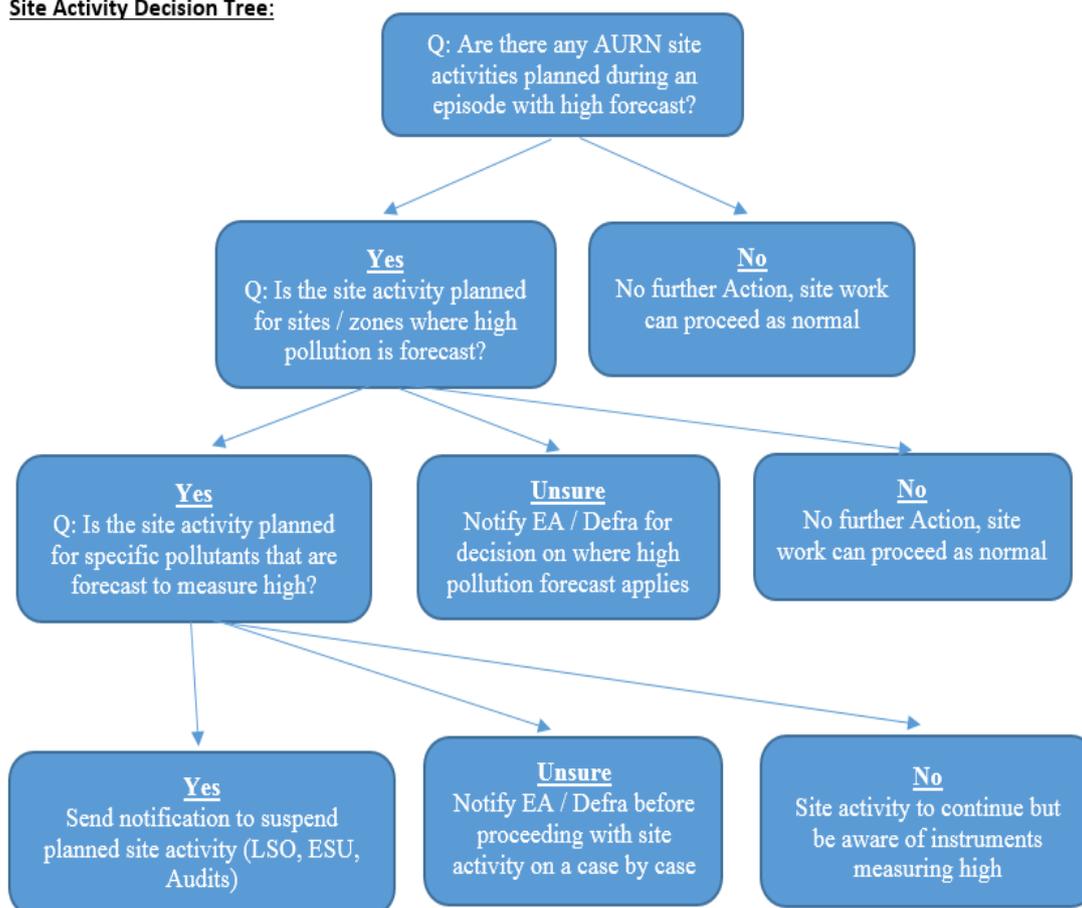
9.6.13 Out of hours software support –available for cyber-attacks / firewall problems

9.6.14 automatic switching of telemetry–

9.6.15 notifying the wireless operator to resume data connections as part of service agreements.

Figure 2 – Site Activity Decision Tree – High Pollution Mode

Site Activity Decision Tree:



9.7 The Supplier shall provide an initial ‘data exception report – High Pollution Mode’ report within 12 hours during a High Pollution Episode for the following reasons:

9.7.1 where ‘Faulty or Erroneous data’ has got through the data validation process (and published as ‘provisional’ on UK AIR) resulting in the wrong DAQI being reported for the relevant UK air Zone including those from LSO / ESU interactions with live data instruments;

9.7.2 where the number of analysers in this contract are not successfully communicating to UK Air and the number exceeds 10 Network Sites at any time during the event.

9.8 The format of a Data Exception report – High Pollution mode, is to be agreed at contract commencement / handover, but must include a clear title, the reason for issue, and the action to be taken to rectify.

10 Work Package 1.8 - Project Management / Health and Safety / Reporting

IMPLEMENTATION PHASE

- 10.1 Kick off meeting to set contractual outputs and ways of working.
- 10.2 Weekly meetings during the site establishment phase of the project, with the Site Establishment Supplier and the Authority, until notified by the Authority they are no longer required.

Deliverable 16 - Attend required meetings and respond to Queries with five (5) working days.

- 10.3 The Supplier will develop and manage a work programme during implementation that identifies their requirements and timetables needs on a per site basis. Suppliers must include the time schedule for the work that identifies the main stages, tasks and key milestones to get data communicating from each site.
- 10.4 The Supplier will review the CDM health and safety file within ten (10) working days upon receipt from the Site Establishment supplier

Deliverable 17 - Review handover documents for each site within 10 working days
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OPERATIONAL PHASE

- 10.5 The Supplier will provide the secretarial support for Contract meetings. It is expected that the Project Manager and deputy would answer Agency / Defra / DA queries within five (5) working days unless otherwise agreed.
- 10.6 The Supplier will produce and maintain an Issues Log, Obligations log and project risk assessment to identify and minimise issues, obligations risks to the delivery of the project as a whole and Health and safety risks on the network. This must as a minimum follow the template headers in Annex 27 - Project Risk Assessment and Annex 28 - Issues and Obligation Log.

Annex 27 - Project Risk Assessment

Annex 28 - Issues and Obligation Log

Deliverable 18 - Review Project Assessment, if a new project risk arises and update the Project Risk Assessment at least annually. Update as required within five (5) working days (or at risk identification) to minimise risk and issues of project delivery failures.

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10.7 The Supplier must be flexible in their working practice and will be required to respond to any changes if and when they occur. They should also draw any changes which would impact on the way they undertake their CMCU functions to the Authority's attention. For any additional project related work, a Work Instruction Process will be followed for use of uncommitted spend using the template in Annex 29 - Work Instruction Form

Annex 29 - Work Instruction Form

10.8 The Authority also manages a number of other air quality monitoring networks in addition to the PM_{2.5} AURN, which are co-located at PM_{2.5} AURN stations. The Supplier shall liaise closely with the Suppliers for these additional Networks to ensure that any actions or procedures for PM_{2.5} sites do not adversely affect data quality of other networks, and to agree access requirements and disseminate network closure / operational / local pollution event risks if appropriate. The Authority will confirm with the Supplier any sites which are planned to be configured in this way following contract award and/or when network configurations take place later into the contract.

10.9 There is a recognized need for allowing co-locations at fully funded sites which the Authority will need to be managed by the Supplier. 15 requests a year should be costed in the bidder's commercial submission. The co-location checks required by the Supplier are identified in Annex 30 - Co-location agreement

Annex 30 - Co-location agreement

10.10 The Supplier would approve and manage co-locations as long as the following risks are managed as per the review sheet in the co-location agreement form but asking for Contract Authority agreement if they consider there to be network risks.

10.11 The Supplier will keep records and provide them on request for the duration of the Contract and for three (3) years after the Contract has expired to the Authority. This will include:

10.11.1 LSO calibrations

10.11.2 ESU service and maintenance records

10.11.3 QAQC Audit Summaries

10.11.4 H&S documentation

10.11.5 Air conditioning service reports

10.11.6 BAM Sealed source leak test records if applicable

10.11.7 Monthly / Quarterly / Equivalence Reports

10.12 The Supplier will manage and report transparent costings for the contract using a financial tracking sheet similar to the costings sheet in the commercial evaluation. The Buyer will pay Pass Through Cost invoices from third parties, where agreed in Schedule 3 and no profit can be added by the Supplier. Please provide acceptable evidence such as (i) invoices (ii) sub contractor checks (iii) ad hoc validation checking how the cost is made up if requested. Transparent costing includes Network Core fixed costs, ad hoc costings and the variable tracking cost rates for Project based work, and those that require amendment for site fee savings and reductions. Where revisions to the tracking spreadsheets used by the Agency occur the Supplier will be expected to adapt their financial tracking into newer versions of financial tracking templates without charge.

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- 10.13 The Supplier is expected to forecast twelve (12) months in advance for all their costings to assist the Authority with budget management and present these twelve (12) monthly forecasts alongside monthly invoicing. The forward forecasts should be updated on a month-by-month basis to reflect any known changes which have occurred since the last reporting period.
- 10.14 The Supplier must review any savings attributable from network changes and developments before increasing the monthly invoicing total (from the amounts forecast). Significant monthly increases / decreases greater than 5% of the previous month forecast, and/or 2% above annual budget, should be highlighted to the Authority in advance of the invoice being issued with justification and explanation.
- 10.15 The Supplier will supply monthly invoices. Draft Invoices will be provided within 15 working days of month end to the Responsible Officer. All invoices need to be sent in draft form before final issue.
- 10.16 Final Agreed invoices, must be sent to the Authority accounts payable at: APinvoices-ENV-U@gov.sscl.com
- 10.17 It may be necessary for the Supplier to provide the Authority with separate invoices for any capital related work, under separate Purchase Orders.
- 10.18 Invoicing must take account of savings from any site which has not been operational and where savings can be attributed to a reduction in cost.
- 10.19 Ad hoc elements of the invoice must be agreed in advance of the invoice being finalised and sent.

Deliverable 19 - Deliver invoicing on time and accurately within fifteen (15) working days of the end of each month.

- 10.20 The Supplier must be ISO 45001 accredited (or working to an equivalent standard) and must comply with all relevant health and safety legislation and best practice. The Supplier must provide evidence of compliance if requested by the Authority. Health and Safety risks and associated liabilities are to be continuously monitored and new information relating to an existing risk and/or new risks shall be entered onto the Health and Safety database, (coordinated by the Quality Assurance and Quality Control Supplier for the Automatic Urban and Rural Network) at <https://aurnhub.defra.gov.uk/hnsdb/auth/login> or any future replacement database which replaces the Health and Safety Database.
- 10.21 The Supplier must ensure all health and safety legislation, training and certification is maintained and up to date, summaries should be provided in a regular report. Health and Safety risk assessments for key operational Sub Supplier duties must be maintained through the health and safety PM_{2.5} AURN database log in. The Supplier will be responsible for managing records of employees and subcontractors for sites where records need to be uploaded, unless an equivalent health and safety system is proposed. Legal compliance of the following acts and regulations is required as a minimum:
- 10.21.1 Health and Safety at Work Act 1974
- 10.21.2 Electricity at Work Regulations 1989
- 10.21.3 Management of Health & Safety at Work Regulations 1999

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10.21.4 Construction Design and Management Regulations 2015 (CDM)

10.21.5 Manual Handling at Work Regulations 1992

10.21.6 Provision and Use of Work Equipment Regulations 1998

10.21.7 Control of Substances Hazardous to Health Regulations 2002

10.21.8 Working at Height Regulations 2005

10.21.9 The Health and Safety (First-Aid) Regulations 1981

10.21.10 Regulatory Reform (Fire Safety) Order 2005

10.21.11 Ionising Radiation Regulation 2017 Regulations (if applicable)

10.21.12 The Lifting Operations and Lifting Equipment Regulations 1998 (LOLER)

10.22 The Supplier will maintain annually, a health and safety risk register. The Supplier will ensure risk assessments and method statements for site work are suitable and sufficient for the tasks being completed. All accidents and near misses shall be reported, and a report in the style of the Health and Safety Executives HSG 245 will be produced and provided to the Authority contract manager. All staff in the supply chain, will have up to date training records as appropriate for the work being undertaken on site.

Deliverable 20 - A health and safety risk register will be maintained to ensure safe method statements for site work, risk assessments for staff working on site, near miss and accident reports, training records for staff (including subcontractors) as appropriate for site work. The risk register must be updated and submitted to the Authority within one (1) month of Service Commencement, updated if any significant new risks occur and reviewed annually.

10.23 Raise details of any 'High alerts' to the Authority contract manager for the Authority to report on our internal reporting system 'AIRSWEB' (or other Authority database).

10.24 Health and Safety must be managed in accordance with the SHEW CoP (latest version in Annex 31 - SHEW Code of Practice below) and the UK Air Quality Health and Safety Guidance.

Annex 31 - SHEW Code of Practice

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10.25 The PM_{2.5} AURN Supplier should note that for PM_{2.5} sites which are established – they will be the lead Network Manager responsible as per Annex 23 - Health and Safety Guidance. The Supplier shall facilitate assurance visits by an Authority representative. No radiation sources are due to be purchased yet. If they are, The Supplier must demonstrate competence of managing them to the required legislation such as the Ionising Radiations Regulations 2017.

10.26 The Supplier shall ensure LSO / ESU or other Suppliers that are to attend an PM_{2.5} AURN site follow the Annex 23 - Health and Safety Guidance or relevant parts of the Annex 31 - SHEW Code of Practice, or subsequent versions thereof of either document.

10.27 The Supplier shall be responsible for ensuring there is an up-to-date individual site risk assessment for each site and uploaded to UK-Air PM_{2.5} AURN Health and Safety database. Any sites without the necessary risk assessments in place must be reported to the Authority and any actions and timescales for closing out the action included. The Supplier will use the Issues Log to track any Health and Safety risk assessments that are missing and actions to rectify.

10.28 The Supplier must have mechanisms in place for receiving and reporting H&S issues at funded and affiliate sites. The CMCU are responsible for coordinating remedial actions for any H&S issues identified at Authority owned sites and liaising with affiliate site owners to ensure that any issues identified at those sites are resolved. H&S issues at affiliate sites must be escalated if required to the Authority using an Exception Risk Report.

Deliverable 21 - Health and safety reporting must be managed and reported in quarterly reports and escalated using Exception Risk Reports within five (5) working days if Authority action is required. The content is listed in Schedule 6 Transparency Report.

10.29 The Supplier is required to report to the Authority 1 months, after the end of each quarter, the following information detailed in:

Annex 32 - Quarterly Reporting Structure for Lot 1 CMCU

Deliverable 22– Provide Quarterly report on a 3 monthly basis to the agreed timescale (expected within thirty (30) working days)

Deliverable 23 – Provide biweekly report during the Implementation Phase within a three (3) working day window.

Deliverable 24 - Sustainability Reporting according to Sustainability Reporting Template by 30th June each calendar year, for the preceding year's Sustainability data. Implement and progress planned measures towards net zero, and report progress.

Annex 33 - Sustainability Report Template

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10.30 The Supplier is required to report escalation of any affiliate issues for LSO / ESU / Affiliate asset use and Health and Safety affiliate concerns to the Authority via the following escalation model:

10.30.1 Level 1. CMCU Day to Day Performance Management;

10.30.2 Level 2. CMCU Site Owner Engagement and Performance Monitoring;

10.30.3 Level 3. CMCU Site Owner Engagement and Improvement Planning;

10.30.4 Level 4. CMCU Engagement and Authority and/or Devolved Administration Support:

10.30.5 Level 5. Funding and Relocation Recommendation.

10.31 The Supplier shall attend twice per year AURN meeting at a central location (nominally London). The aim of the meetings is to review all tasks undertaken in the air pollutant data collection, management, validation and ratification process with the aim of sharing ideas, discussing problems and finding efficiencies in the management of the PM_{2.5} AURN site processes. The Supplier shall provide at least 1 staff member

10.32 The Supplier will manage projects on an ad-hoc basis for the PM_{2.5} AURN if required and it falls part of the objectives delivery, expansion and contraction of the network. An uncommitted funds will be provided. This will be managed through work order process Annex 23 - Health and Safety Guidance

10.33 The CMCU Supplier shall be expected to attend any ad-hoc meetings called by the Authority, or the QAQC Unit, or other PM_{2.5} AURN stakeholder, subject to cost agreement.

10.34 The Supplier will send a senior representative to attend Air Quality Expert Group (AQEG) meetings as an ex officio member to provide input on air quality monitoring and related issues. AQEG meets around 6 times per year usually in the Defra office in London and therefore this should be budgeted. Further information on AQEG is available from their website <https://uk-air.defra.gov.uk/library/aqeg/>

Deliverable 25 - Attend AQEG meetings 6 times a year unless dispensation agreed.

10.35 The Supplier is expected to hold an Inception meeting at an agreed central location, to discuss the details of the Contract objectives, required deliverables and confirm the Key Performance Indicators (KPIs). This Inception meeting shall take place at a time and date to be arranged by the Authority with the winning tenderer following the award of the Contract.

10.36 The Supplier will be required to meet the following deliverables summarised in Table 3 - List of Key Deliverables

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Table 3 - List of Key Deliverables

Deliverable	Timescale	Delivered to
Deliverable 1 - PM _{2.5} AURN CMCU to highlight Siting Criteria concerns to the Authority	Deliverable 1 - PM _{2.5} AURN CMCU to highlight Siting Criteria concerns to the Authority within then (10) working days once identified and remedy within thirty (30) working days unless otherwise agreed in writing by the Authority	The Authority
Deliverable 2 – Provide current QAQC Supplier with monthly data capture and network performance information as per the specification within five (5) working days of the end of each calendar month.	within five (5) working days of the end of each calendar month.	The Authority
Deliverable 3 - Deliver new PM _{2.5} communications package for each analyser within thirty (30) working days of site being installed.	within thirty (30) working days of site being installed	The Authority
Deliverable 4 - For any PM analyser purchased for use on the network - the supplier must be able to produce an operational command line script protocol within sixty (60) working	Within sixty (60) working days	The Authority
Deliverable 5 - Preliminary hourly data to be sent to the DDU every sixty (60) minutes, within 30 minute window since data was collected on site. The Authority responsible officer to be informed within 12 hours if the data transfer system fails and more than 10% of operational network are failing to disseminate after this time. Remedial action to amend any failures to	Every sixty (60) minutes, within thirty (30) minute window since data was collected on site. Any significant data dissemination failure above 10% of network to be resolved within 24 hours.	The Authority

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Deliverable	Timescale	Delivered to
be undertaken within 24 hours, unless agreed with		
Deliverable 6 - Issue Data Exception report within 24 hours upon identification of the type of issues detailed in the contract specification.	within twenty-four (24) hours upon identification of the type of issues detailed in the contract specification	The Authority
Error! Reference source not found.	submit every six (6) months to the responsible officer and The Supplier will provide an up-to-date copy within ten (10) working days when requested	The Authority
Error! Reference source not found.	annually	The Authority
Deliverable 9 - Produce and report the need for the Authority assets replacement in the form of a report every twelve (12) months, or sooner if the Data Quality Objectives are compromised.	every twelve (12) months, or sooner if the Data Quality Objectives are compromised	The Authority
Deliverable 10 – Provide evidence for a submission to gain an Electrical Safety Agreement within three (3) months of contract commencement.	within three (3) months of contract commencement	The Authority
Deliverable 11 – Maintain all Authority owned assets to electrical standard to be agreed in the ESA and undertake annual Electrical Equipment and Mains tests.	annually	The Authority
Deliverable 12 - LSO skills and training need to be managed and up to date. Annual summary report is due from contract commencement.	annually from contract commencement	The Authority
Deliverable 13 - Send Exception Risk reports for poor performing funded LSOs impacting 90% data	within ten (10) working days	The Authority

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Deliverable	Timescale	Delivered to
capture within ten (10) working days.		
Deliverable 14 - Notify the Authority (via an exception report) of any risks relating to affiliate LSO performance and activities which may result in data capture falling below 90% and review MoU annually.	annually	The Authority
Deliverable 15 - Manage the fully funded site network ESU performance regarding service, call out, hot spare deployment so as to minimise data loss. Send Exception Risk reports for poor ESU performance impacting 85% data capture at Authority funded sites and when data flows can't recommence within ten (10) working days, following a fault.	within ten (10) working days, following a fault	The Authority
Deliverable 16 - Attend required meetings and respond to Queries with five (5) working days.	within five (5) working days	The Authority
Deliverable 17 - Review handover documents for each site within 10 working days	within ten (10) working days	The Authority
Deliverable 18 - Review Project Assessment, if a new project risk arises and update the Project Risk Assessment at least annually. Update as required within five (5) working days (or at risk identification) to minimise risk and issues of project delivery failures.	Update as required within five (5) working days (or risk identification) to minimise risk and issues of project delivery failures	The Authority
Deliverable 19 - Deliver invoicing on time and accurately within fifteen (15) working days of the end of each month.	within fifteen (15) working days of the end of each month.	The Authority

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Deliverable	Timescale	Delivered to
Deliverable 20 - A health and safety risk register will be maintained to ensure safe method statements for site work, risk assessments for staff working on site, near miss and accident reports, training records for staff (including subcontractors) as appropriate for site work. The risk register must be updated and submitted to the Authority within one (1) month of Service Commencement, updated if any significant new risks occur and reviewed annually.	within one (1) month of Service Commencement, updated if any significant new risks occur and reviewed annually	The Authority
Deliverable 21 - Health and safety reporting must be managed and reported in quarterly reports and escalated using Exception Risk Reports within five (5) working days if Authority action is required. The content is listed in Schedule 6 Transparency Report.	within five (5) working days if Authority action is required.	The Authority
Deliverable 22– Provide Quarterly report on a 3 monthly basis to the agreed timescale (expected within thirty (30) working days)	on a 3 monthly basis to the agreed timescale (expected within thirty (30) working days)	The Authority
Deliverable 23 – Provide biweekly report during the Implementation Phase within a three (3) working day window.	within a 3 working day window.	The Authority
Deliverable 24 - Sustainability Reporting according to Sustainability Reporting Template by 30th June each calendar year, for the preceding year's Sustainability data. Implement and progress	By 30 th June each calendar year	The Authority

[Subject to Contract]

Schedule 2 (Specification)

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Deliverable	Timescale	Delivered to
planned measures towards net zero, and report progress.		
Deliverable 25 - Attend AQEG meetings 6 times a year unless dispensation agreed.	6 times a year unless dispensation agreed	The Authority