



Department
for Environment
Food & Rural Affairs

Air quality monitoring regime assessment: compliance network status (2016- 2020)

September 2023

We are the Department for Environment, Food and Rural Affairs. We're responsible for improving and protecting the environment, growing the green economy, sustaining thriving rural communities and supporting our world-class food, farming and fishing industries.

We work closely with our 33 agencies and arm's length bodies on our ambition to make our air purer, our water cleaner, our land greener and our food more sustainable. Our mission is to restore and enhance the environment for the next generation, and to leave the environment in a better state than we found it.



© Crown copyright 2023

This information is licensed under the Open Government Licence v3.0. To view this licence, visit www.nationalarchives.gov.uk/doc/open-government-licence/

Any enquiries regarding this publication should be sent to us at aginfo@ricardo.com

www.gov.uk/defra

Contents

Glossary.....	5
Executive Summary.....	8
Introduction.....	12
Approach.....	19
Supplementary assessment.....	21
Point sources.....	24
Diffuse sources.....	32
Consideration of different pollutant metrics.....	34
Data capture.....	35
PM ₁₀ stations to retain.....	35
PM _{2.5} Average Exposure Indicator (AEI).....	36
Application of rounding.....	36
Monitoring for Ecosystems, VOCs, and PM _{2.5} speciation and deposition.....	37
Monitoring station changes.....	38
Population changes and zone geometries.....	39
Assessment threshold classification changes.....	40
Monitoring station targets.....	43
Calculated target number of monitoring stations and existing monitoring.....	43
NO _x and NO ₂	45
PM ₁₀ and PM _{2.5}	48
CO.....	52
SO ₂	54
Ozone.....	56
Benzene.....	58
Metals.....	60

Benzo(a)pyrene	62
Network wide criteria.....	64
Actions and recommendations.....	65
NO _x and NO ₂	66
Metals	67
Benzo(a)pyrene	67
Annex 1 – AEI stations (2020)	68

Glossary

Term	Definition/meaning
4DD	EU Fourth Daughter Directive 2004/107/EC
AEI	Average Exposure Indicator
Affiliate site	A monitoring station which has been brought into Defra's national network, typically owned by a local authority.
AOT40	Accumulated amount of ozone over the threshold value of 40 ppb, a metric defined in the Air Quality Directive for the protection of vegetation.
AQD, Directive, Air Quality Directive	EU Ambient Air Quality Directive 2008/50/EC
AQSR, Air Quality Standards Regulations (2010, updated 2016)	Prior to 31st January 2020, the UK was a Member State of the European Union and was required to incorporate - or 'transpose' - the provisions of EU Directives into their own national law by a specified date. The Air Quality Standards Regulations are the legislation by which the UK fulfilled this requirement. These provisions remain relevant as the framework for the Monitoring Regime Assessment now that the UK is not a Member State.
As	Arsenic
AURN	Automatic Urban and Rural Network
B[a]P	Benzo[a]pyrene
Cd	Cadmium
CEN	European Committee for Standardization
CO	Carbon monoxide
Information and Alert Thresholds	Thresholds for public information defined in the Air Quality Directive.

Term	Definition/meaning
LAT	Lower Assessment Threshold, defined in the Directives
LTO	Long term objective – defined in the Air Quality Directive.
LV	Limit Value, defined in the Directives
Micro and macroscale siting criteria	Criteria in the Air Quality Directive which are used to define the locations where monitoring is required and how monitoring stations should be sited.
NAEI	National Atmospheric Emissions Inventory
Ni	Nickel
NO₂	Nitrogen dioxide
NO_x	Oxides of nitrogen
O₃	Ozone
PAH	Polycyclic Aromatic Hydrocarbons
Pb	Lead
PCM	Pollution Climate Mapping
PM	Particulate matter including PM ₁₀ and PM _{2.5} (particles of less than 10 and 2.5 micrometres in diameter, respectively)
RB	Rural Background – monitoring station classification
SA	Supplementary Assessment
SB	Suburban Background – monitoring station classification
TGM	Total Gaseous Mercury

Term	Definition/meaning
TV	Target Value, defined in the Directives
UAT	Upper Assessment Threshold, defined in the Directives.
UB	Urban Background – monitoring station classification
UI	Urban Industrial – monitoring station classification
UK-AIR	Defra’s air quality website, http://uk-air.defra.gov.uk/
UT	Urban Traffic – monitoring station classification
UUNN	The UK Urban NO ₂ Network, developed to provide additional monitoring data for the national compliance assessment for NO ₂ .
Zones and agglomerations	Geographical areas which are defined for the purpose of air quality management and assessment, as required by the Air Quality Directive. Non-agglomeration zones are referred to as ‘zones’, agglomeration zones are referred to as ‘agglomerations’. Agglomerations use the term ‘UA’ (Urban Area)

Executive Summary

An assessment regime review of the UK's air quality monitoring under the Air Quality Standards Regulations (2010) has been undertaken as the basis for UK monitoring network design. The ruleset that governs the calculated monitoring requirement and configuration presented in this review is based on criteria transposed from the Ambient Air Quality Directive (2008/50/EC, 'AQD') and the 4th Daughter Directive (2004/107/EC, '4DD'). This document presents the UK approach to the composition of the national monitoring networks and applies criteria prescribed by European legislation to determine a target for monitoring by zone. The results are summarised in Table E1 below which is restricted to highlighting actions to meet the target.

Some of the actions recommended by this assessment may have already been implemented and we may take additional actions based on additional sources of evidence not contained within this report. The monitoring network design would have changed since the years being assessed in this report (2016-2020).

The effects of lockdown and behavioural changes since the start of the Covid-19 pandemic in 2020 are uncertain. Due to the exceptional year of 2020, it is recommended that additional analysis be undertaken before the next five-year reporting period (2021-2025). It is recommended that the adopted network design strategy benefits from an interim assessment when fully ratified data for 2021 and 2022 is available from the national monitoring networks (including the recently established UK Urban NO₂ Network). This will provide better information on the pollution climate after Covid-19 and capture any changes in the UK's evolving approach. Further information on the different year range approaches considered is presented in the Year range section.

In line with our commitments in the Environmental Improvement Plan, this interim assessment will also explore the implications of re-aligning regional air quality zones with local government boundaries to drive effective coordinated action.

In spite of this recommendation for further analysis, there remains a number of actions that can be taken forward as a direct result of this analysis.

NO_x and NO₂

- Add one new monitoring station (classification flexible) to the Greater Manchester Urban Area.
- Complete planned additional monitoring in the East Midlands zone to replace Market Harborough station.
- Meet the need for urban background monitoring in Teesside Urban Area through reclassification of Billingham.

- Meet the need for urban background monitoring in Central Scotland zone through reclassification or relocation of Bush Estate.

BaP

- Complete planned station in Portsmouth Urban Area
- Add one new monitoring station in Port Talbot (Swansea Urban Area) to better characterise the complex steel works source to improve the compliance modelling assessment.

Reclassify Middlesbrough and Royston stations as urban background and retain for assessment of diffuse sources and to support the compliance modelling assessment.

- Add one new monitoring station in Armagh (Northern Ireland) following request from Department of Agriculture, Environment and Rural Affairs NI

A further six additional NO_x monitoring stations (Liverpool Urban Area, North Wales zone, Southend Urban Area, West Midlands zone, Tyneside Urban Area, North East zone) and one additional metals station (North West & Merseyside Urban Area) are identified in the current analysis but a decision on proceeding with these additions should be made pending results from a 2023 interim revision to this assessment.

For pollutants where no new monitoring requirement has been identified (all except NO₂, metals, and BaP), we recommend that these networks remain stable in their current configuration in order to support compliance modelling activities. This recommendation considers the current reporting requirements only and does not consider network expansions that may be needed as a result of new targets.

Finding new stations, securing planning permission and managing the logistics of network expansion is a resource intensive and complex process that requires expert input and can take a number of years. Station locations need to be researched to try and avoid future relocations due to planning and development needs.

As the network is developed, options for site affiliations, sharing of infrastructure, further consideration of the scientific value of individual measurements or the availability of supplementary assessment using models may alter the final network structure and this document may need to be updated.

Table E1 Summary of differences between current and target monitoring

Pollutant	Zone	Action	Reason
NO_x and NO₂	Greater Manchester UA (UK0003)	One site to target (any classification)	Historic population increase resulting in band change
	Tyneside UA (UK0005)	One site to target (any classification)	Historic population increase resulting in band change
	Liverpool UA (UK0006)	One UB to target	Population increase resulting in band change
	Teesside UA (UK0013)	One UB to target (achieved through reclassification of existing monitoring)	Two Urban Industrial sites present
	Southend UA (UK0021)	One UT to target	Population increase resulting in band change
	East Midlands (UK0032)	One site to target (any classification) (planned locations currently being reviewed)	Market Harborough closed in 2019
	West Midlands (UK0035)	One site to target (any classification)	Population increase resulting in band change
	North East (UK0036)	One site to target (any classification)	Historic population increase resulting in band change

Pollutant	Zone	Action	Reason
	Central Scotland (UK0037)	One UB to target (achieved through reclassification of existing monitoring)	Rural Background site classification review
	North Wales (UK0042)	One UB to target	Population increase resulting in band change
PM	All zones at or above target monitoring		
Benzene	All zones at or above target monitoring		
Benzo[a]pyrene	All zones at or above target monitoring (when planned sites included)		
Ozone	All zones at or above target monitoring		
CO	All zones at or above target monitoring (objective estimation determines all zones are <LAT)		
SO₂	All zones at or above target monitoring		
Metals (arsenic, cadmium, nickel, lead)	North West & Merseyside (UK0033)	One site to target	Runcorn Weston Point closed in 2019

Introduction

An assessment regime review of the UK's statutory air quality monitoring networks has been undertaken in accordance with the requirements of the UK's Air Quality Standards Regulations (2010). The ruleset that governs the calculated monitoring requirement and configuration presented in the AQSR is based on requirements transposed from the Ambient Air Quality Directive (2008/50/EC, 'AQD')¹ and the 4th Daughter Directive (2004/107/EC, '4DD')² and criteria explicitly references from those two documents. For clarity and consistency, this document refers to those specific articles and annexes in the AQD and 4DD where the criteria being used is stated in their entirety. This assessment presents the UK approach to the composition of the national monitoring networks using criteria detailed by European legislation as a guide to determine a target for monitoring by zone.

Assessments prior to the 2011-2015 review included an assessment regime review covering AQD pollutants³ and a review covering the 4DD pollutants⁴, both of which were based on measurements and modelled data for the period 2006-2010. The 2011-2015 period review combined the two preceding reviews into a single activity for the first time and was an update based on measurements and modelled data for 2011-2015. This review is based on measured and modelled data for 2016-2020. The review helps identify actions that ensure that the monitoring remains compliant with the requirements of the legislation.

The UK is currently divided into forty-three zones and agglomerations for the purpose of air quality assessment, which is undertaken using a combination of fixed measurements and modelling.

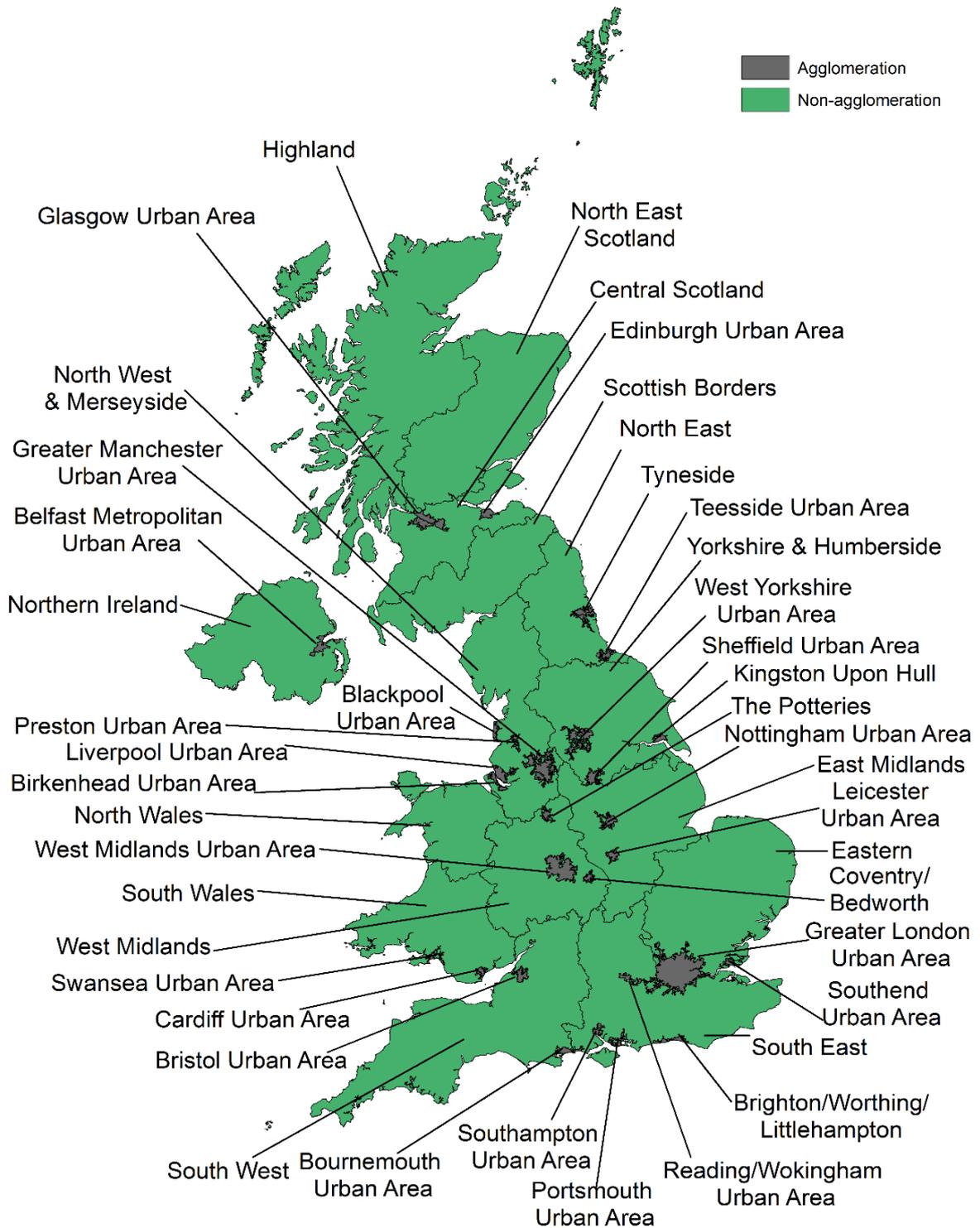
¹ 2008/50/EC <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2008:152:0001:0044:EN:PDF>

² 2008/50/EC <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2008:152:0001:0044:EN:PDF>

³ AQD Regime Review https://uk-air.defra.gov.uk/assets/documents/reports/cat09/1312171445_UK_Air_Quality_Assessment_Regime_Review_for_AQD.pdf

⁴ 4DD Regime Review https://uk-air.defra.gov.uk/assets/documents/reports/cat09/1510080931_140220-UK_Air_Quality_Compliance_Networks_Monitoring_Strategy_DD4_v5.pdf

Figure 1 Map of zones for UK AQSR reporting



© Crown copyright. All rights reserved Defra, Licence number 100022861 [2021]

Table 1: Zones for AQD reporting (2020)

Zone	Zone code	Ag or non-ag*	Population	Area (km²)	Number of urban road links	Length of urban road links (km)
Greater London UA	UK0001	ag	9756479	1618	1888	1985
West Midlands UA	UK0002	ag	2429869	605	388	577
Greater Manchester UA	UK0003	ag	2214358	554	569	694
West Yorkshire UA	UK0004	ag	1381404	352	290	428
Tyneside	UK0005	ag	795383	222	166	215
Liverpool UA	UK0006	ag	784009	199	248	218
Sheffield UA	UK0007	ag	612086	163	108	162
Nottingham UA	UK0008	ag	638653	155	131	134
Bristol UA	UK0009	ag	579910	139	119	131
Brighton/Worthing/ Littlehampton	UK0010	ag	442595	94	60	84
Leicester UA	UK0011	ag	457557	101	64	86
Portsmouth UA	UK0012	ag	416184	98	58	78
Teesside UA	UK0013	ag	318275	120	53	63

Zone	Zone code	Ag or non-ag*	Population	Area (km ²)	Number of urban road links	Length of urban road links (km)
The Potteries	UK0014	ag	294685	91	122	140
Bournemouth UA	UK0015	ag	394510	122	53	77
Reading/Wokingham UA	UK0016	ag	319562	82	68	78
Coventry/Bedworth	UK0017	ag	359328	76	31	39
Kingston upon Hull	UK0018	ag	279388	85	40	56
Southampton UA	UK0019	ag	317338	79	60	79
Birkenhead UA	UK0020	ag	290910	97	73	89
Southend UA	UK0021	ag	256199	67	31	55
Blackpool UA	UK0022	ag	230498	75	48	62
Preston UA	UK0023	ag	218750	60	36	44
Glasgow UA	UK0024	ag	1147602	367	305	430
Edinburgh UA	UK0025	ag	512331	134	71	118
Cardiff UA	UK0026	ag	345719	86	43	69
Swansea UA	UK0027	ag	214794	84	34	66
Belfast Metropolitan UA	UK0028	ag	561480	217	51	232

Zone	Zone code	Ag or non-ag*	Population	Area (km ²)	Number of urban road links	Length of urban road links (km)
Eastern	UK0029	non-ag	5720058	19523	533	688
South West	UK0030	non-ag	4673818	24553	416	533
South East	UK0031	non-ag	7126547	19165	805	1028
East Midlands	UK0032	non-ag	3740367	15479	396	513
North West & Merseyside	UK0033	non-ag	3604852	13584	609	748
Yorkshire & Humberside	UK0034	non-ag	3231914	15054	347	453
West Midlands	UK0035	non-ag	2845914	12225	349	408
North East	UK0036	non-ag	1556945	8461	169	195
Central Scotland	UK0037	non-ag	1995307	10064	329	505
North East Scotland	UK0038	non-ag	1149258	19057	180	262
Highland	UK0039	non-ag	394632	44116	45	67
Scottish Borders	UK0040	non-ag	263760	11404	51	56
South Wales	UK0041	non-ag	1829420	12741	189	284
North Wales	UK0042	non-ag	761992	8779	70	127
Northern Ireland	UK0043	non-ag	1332211	14558	102	248

Zone	Zone code	Ag or non-ag*	Population	Area (km ²)	Number of urban road links	Length of urban road links (km)
Total			66796847	254905	9798	12605

* ag = agglomeration zone, non-ag = non-agglomeration zone

These zones and agglomerations have been classified against the assessment thresholds referenced in the AQSR and outlined in Section A of Annex II of the AQD and Section I of Annex II of the 4DD. Paragraph 2 of Article 5 of the AQD and Article 4 (6) of the 4DD require that this assessment to be reviewed at least once every five years. Data from the period 2016-2020 have been reviewed and a zone assessment threshold classification report has been published summarising the classification outcomes⁵. Zone classification is the first stage in a complex process to determine the target number of monitoring stations required under the AQSR to ensure that the network and reporting approach remains compliant. The classifications are then used in accordance with criteria in the AQSR to evaluate potential changes in the number of stations and their distribution over the network. Evaluating the target number of stations also considers the UK approach to assessment using modelling (a supplementary assessment method that provides specific flexibility on sampling point calculations) making provision for a reduction in sampling point numbers provided other criteria are met. An additional consideration is the number, type and location of the stations needed for adequate model calibration and validation.

In addition to the 5-yearly classification reviews, the existing network is continually reviewed during the intervening period. This is delivered through the process of managing the sites under business as usual operations and ensures sites continue to meet the macroscale and microscale siting criteria for sampling points set out in Annex III of the AQD and Annex III of the 4DD. The macroscale criteria set out overarching principles for placement of sampling points, including the following:

⁵ UK Air Quality Zones Assessment Threshold Status (2016-2020) https://uk-air.defra.gov.uk/library/reports?report_id=1083

- the areas within zones and agglomerations where the highest concentrations occur to which the population is likely to be directly or indirectly exposed for a period which is significant in relation to the averaging period of the limit value(s) (Annex III, B1a);
- levels in other areas within the zones and agglomerations which are representative of the exposure of the general population (Annex III, B1a).

The microscale criteria include additional details such as ensuring a free 270 degree arc of air around the inlet and ensuring stations are not placed within 25 metres of a major junction.

It is important to recognise the complexities of the management of a national monitoring network and the need to ensure that it provides value for money. The network has many purposes beyond statutory compliance assessment. It must also aim to meet the needs of researchers, wider scientific community, policy makers, developers and requirements for public information. The network must be designed to maximise its value and stability should be ensured as far as possible.

Defra's compliance network contains a large number of stations that are shared with local authorities to reduce costs to both parties and many local authorities also undertake monitoring separately for the purpose of Local Air Quality Management. The majority of local authority monitoring stations are not part of Defra's national monitoring network. Local authority monitoring is separate for several reasons, for example, the stations fulfil a different purpose by focusing on concentration hotspots and the stations may not meet the prescriptive quality and station location criteria set out in the AQSR. Defra supplements the national network with modelling to achieve an evidence base which is equivalent to monitoring in all required locations. From 2020, Defra established a new national monitoring network – the UK Urban NO₂ Network (UUNN). The purpose of this supplemental monitoring network is to provide more representative compliance information in areas where Local Authorities are working with Defra or the Devolved Administrations to reduce NO₂ concentrations in line with the UK plan for tackling roadside NO₂ concentrations. While this network is not governed by the same business rules regarding number of sampling points and site classification as the NO₂ monitoring in the AURN, it is used for compliance reporting in addition to the other measured and modelled evidence. This approach conveyed a significant advantage for reporting for 2020 in producing a more representative air quality compliance situation (for NO₂ only) than the compliance model for NO₂ would have been capable of (the National Atmospheric Inventory inputs to the model in this Covid-19 affected year would have been uncertain).

The first chapter of this report summarises the UK air quality compliance monitoring network. The report then outlines the monitoring for each pollutant including the target number of stations. Annexes provide a detailed overview of the network and proposed changes.

Approach

The review has been undertaken to ensure that the monitoring network remains compliant with the requirements of the Air Quality Standards Regulations (AQSR) and continues to provide value to the wider scientific community (as noted by the Air Quality Expert Group, AQEG⁶). The AQSR references the Directives which set out how monitoring for the purpose of compliance assessment should be undertaken, including how many stations are required and detailed criteria on where to locate stations and the equipment that should be used. The number of stations required is calculated for each pollutant for each zone and is based on an assessment of concentrations over a five year period, together with population information for that zone. The AQSR also allows use of supplementary assessment (SA) such as modelling which allows flexibility in the number of stations required. The existing national monitoring network (i.e. the network in place prior to 2020) is the product of previous monitoring regime assessments^{7,8} and legacy monitoring networks dating as far back as the 1950s. The purpose of the approach is to ensure:

- that the monitoring network continues to provide a fit-for-purpose assessment under the AQSR;
- monitoring is retained to support supplementary assessment techniques (air quality modelling and supplementary monitoring networks such as the UUNN);

⁶ AQEG (2015) Evidential Value of Defra Air Quality Compliance Monitoring (https://uk-air.defra.gov.uk/assets/documents/reports/cat11/1509290925_DEF-PB14312_Evidential_value_of_Defra_air_quality_compliance_monitoring.pdf)

⁷ AQD Regime Review https://uk-air.defra.gov.uk/assets/documents/reports/cat09/1312171445_UK_Air_Quality_Assessment_Regime_Review_for_AQD.pdf

⁸ 4DD Regime Review https://uk-air.defra.gov.uk/assets/documents/reports/cat09/1510080931_140220-UK_Air_Quality_Compliance_Networks_Monitoring_Strategy_DD4_v5.pdf

- monitoring of specific scientific value is retained;
- that the network provides value for money.

The approach adopted draws on information from both measurements and atmospheric dispersion models (Defra's Pollution Climate Mapping (PCM) model⁹). Key inputs are the data from measurements and models used for annual compliance reporting under the AQD and 4DD between 2016 and 2019 and under the AQSR in 2020. These data sources have been used to evaluate pollutant levels within the UK air quality zones relative to AQSR assessment thresholds and long-term objectives (set out in Articles 5 and 9 of the AQD) and for each pollutant, in order to assign a classification in each zone¹⁰. Information on the population¹¹ and area of each zone and the UK as a whole has been used to calculate the number of monitors required in accordance with Article 6 and Article 10 of the AQD. Measurement data, network and station metadata have been compiled from the UKAIR database¹² for all relevant pollutants.

⁹ Pugsley, K. et al. (2022) Technical report on UK supplementary modelling assessment under the Air Standards Regulations 2010 for 2020 (Ricardo Energy & Environment/R/3474 Issue 1) https://uk-air.defra.gov.uk/assets/documents/reports/cat09/2203150935_2020_PCM_technical_report.pdf

¹⁰ UK Air Quality Zones Assessment Threshold Status (2016-2020) https://uk-air.defra.gov.uk/library/reports?report_id=1083

¹¹ Gridded population data for 2019, prepared by the NAEI from 2019 ONS population estimates (ons.gov.uk)

¹² UK-AIR monitoring networks <https://uk-air.defra.gov.uk/networks/>

Year range

A period of five years is required to determine the Assessment Threshold Classification by zone. This ensures that the outcome is less sensitive to a single extraordinary year and reflects the longer term 'pollution climate'. The period of review for this report covers 2020 which is known to have been an exceptional year with lower measured concentrations across the national monitoring networks associated with reduced activity during national and local Covid-19 lockdowns. In order to understand the impact that 2020 has on the assessment, several approaches have been considered:

1. Using 2016-2020 data in its original form consistent with the previous assessment
2. Use 2016-2019 (4 years in the calculation) as a better representation of the pollution climate without the impact of Covid-19 pollution climate
3. Use 2019 as a proxy for 2020 (5 years in the calculation)
4. Use 2020 only in place of the five individual years in order to represent a potential step-change in concentrations in the longer term (there is some early evidence to suggest that pollutant concentrations have not returned to pre-lockdown levels).

The selected approach was the standard five-year scenario (2016-2020). This method maintains consistency with the methodology of the previous review (2011-2016) and ensures that future monitoring requirements are not understated by the reductions in concentrations resulting from the Covid-19 lockdown and after. This approach relies on a robust interim update to provide confidence in the representativity of the five-year period used. The results of this decision were carried forward into the Assessment Threshold classifications used to calculate the monitoring requirement for diffuse sources.

Supplementary assessment

In accordance with the AQSR (details set out in Articles 7 and 10 of the AQD and Article 4 (parts 2 and 11) of the 4DD), the UK utilises atmospheric dispersion model outputs (PCM model) as a source of Supplementary Assessment (SA) information. This approach has several advantages. It provides a more comprehensive compliance assessment (covering each 1 x 1 km square of the UK and major urban roads) than fixed point monitoring alone. Air quality modelling also provides useful policy-relevant outputs to facilitate scenario evaluation and future projections that are associated with the results of the compliance assessment. The application of modelling for the

compliance assessment enables the UK to reduce the target number of monitoring stations as stipulated by the AQSR by up to 50% (as detailed in the AQD). This applies for all pollutants other than ozone, for which the flexibility in monitoring is governed by its own set of rules set out in Article 10 of the AQD. Supporting information on the models used is presented in a separate technical report to Defra¹³. The models utilised are compliant with the data quality objectives for model data set out by Annex I of the AQD and Annex IV of the 4DD. The UK's compliance reporting approach also makes use of evidence in the form of supplementary measured NO₂ concentrations from the UUNN which is explained below.

Applying SA techniques in order to reduce the dependence on fixed measurement means that due consideration must be given to the value of monitoring stations above the minimum required for compliance with the AQSR. For example, it is often prudent to retain more monitoring than the minimum required in a zone if that monitoring is valuable for model calibration or checking of the model outputs.

Reductions to target diffuse monitoring

The reduction to the number of monitoring stations required as a result of SA (modelling) varies between pollutants. The approach adopted in this assessment is summarised below:

- NO_x, NO₂, PM₁₀, PM_{2.5}, SO₂, Pb, benzene. The AQD allows a reduction of up to 50% (Article 7, para.3). The minimum monitoring requirements have been calculated on the basis of the maximum allowable reduction (i.e. the full 50%). This is rounded up (see rounding section above) to nearest integer (monitoring station) as a conservative approach.

For consistency with the 2011-2016 MRA, the approach adopted for the calculation of NO_x and NO₂ target monitoring does not apply a SA reduction for either metric. This ensures that the monitoring network for national compliance assessment for NO_x and NO₂ is designed to meet the requirements of the AQSR using fixed monitoring alone. The PCM modelling results available annually for NO_x and NO₂ are used to support the monitoring in the assessment

¹³ Pugsley, K. et al. (2022) Technical report on UK supplementary modelling assessment under the Air Standards Regulations 2010 for 2020 (Ricardo Energy & Environment/R/3474 Issue 1) https://uk-air.defra.gov.uk/assets/documents/reports/cat09/2203150935_2020_PCM_technical_report.pdf

but do not affect the number of target sites established for compliance reporting purposes.

Note that the criteria governing lead was specified under the AQD (unlike arsenic, cadmium and nickel which were specified under 4DD) and therefore lead is subject to a 50% reduction in target monitoring. Metals measurements for all species (Pb, As, Cd, Ni) are obtained on a single filter so any requirement to measure a single species also produces measurements for the other species at no additional cost. The target monitoring numbers presented in this document account for this by presenting the maximum number of monitoring stations ('worst case scenario') for any metal. In practice, Pb concentrations in the UK are very low and all zones are below the LAT¹⁴ which reduces the complexity of reconciling criteria for Pb with criteria for the other metals.

- Ozone. There is no quantified reduction in monitoring with the application of SA. Instead, AQD Article 10 para.3c provides criteria to apply to determine the minimum target monitoring number (1 station per 2m people or 1 station per 50,000 km² - whichever is greater - and not less than one station per zone). Note that the application of SA also removes the need to place monitoring at specific locations on the premise that the model informs on all location types (e.g. suburban, urban, rural environments) for compliance reporting.
- As, Cd, Ni, B[a]P. The 4DD details an alternative approach to SA than the AQD. Instead of calculating station numbers from a table and then applying a percentage reduction to that number, the 4DD simply prescribes a minimum monitoring target for zones above the LAT (i.e. one station per zone if SA is applied to inform on all other areas). This means that the target for zones above LAT is at least one monitoring station.

UK Urban NO₂ Network

The UK Urban NO₂ Network (UUNN) has been operational since 2020. The purpose of this supplemental monitoring network is to provide more representative compliance information in areas where Local Authorities are working with Defra or the Devolved Administrations to reduce NO₂ concentrations in line with the UK plan for tackling roadside NO₂ concentrations. This monitoring is intended to capture the impact of air

¹⁴ UK Air Quality Zones Assessment Threshold Status: Five year review (2011-2015) https://uk-air.defra.gov.uk/library/reports?report_id=916

quality control measures being implemented at local level that would otherwise be challenging to represent through the established national monitoring networks and through the compliance modelling process (which uses National level emissions inventories). The inclusion of this network in the compliance reporting does not affect the calculation or target numbers of sampling points listed above which are governed by rules established by the AQSR. This monitoring therefore represents supplementary measured evidence above the minimum required for compliance with the AQSR. The network comprised 177 triplicate tube locations in 2020 including 25 co-located with AURN monitoring sites for validation purposes. From December 2020 the network was expanded to over 300 monitoring stations (of which 38 were co-located with AURN sites).

Point sources

Point sources are emissions sources at fixed locations and are typically industrial in nature. Monitoring to assess contributions from point sources is referred to in Annex V, Section A, Part 2 of the AQD and in Annex III, Part IV (b) of 4DD. Existing stations in the UK network that have been classified as urban industrial are used to assess contributions from both diffuse sources and contributions from point sources. Where industrial stations fall within the footprint of a point source they provide additional information on that point source. Regard needs to be given to the impact on diffuse monitoring requirements where an industrial monitoring station measuring a point source is considered for closure as a result of changes to the point source.

The requirements for monitoring at industrial stations have been reviewed in the following way:

- A review of existing industrial stations within the national compliance monitoring networks, including a review of whether the current classification as industrial remains valid and whether the station is in close proximity to point sources. This is relevant for all AQSR pollutants.
- A review of information available from supplementary assessment modelling results in terms of the contribution to total concentrations from point sources at location above the LAT. This is relevant for all AQSR pollutants.
- A review of information on the locations of Air Quality Management Areas declared by UK local authorities as related to industrial sources.

Existing industrial stations

Stations have been classified as industrial for a pollutant if the sum of the industry, aircraft and shipping contributions within the source apportionment was greater than

the sum of the remaining local contributions. Account was also taken of local knowledge of stations and emission sources where the model under predicted measured concentration to determine whether this under prediction was likely to represent the impact of a local industrial source. The approach to station classification has been captured in a report¹⁵ covering all monitoring in the network in 2013 and the same approach has been applied to monitoring stations introduced or moved since then.

An analysis of model results for 2019 has been carried out to check that the classification as industrial remains valid. The 2019 modelling results were used as the best representation of pollution climate prior to the Covid-19 lockdowns which have affected evidence for 2020 as explained below. The locations for the stations have also been compared with the modelled contributions to ambient concentrations from industrial point sources.

Due to changes in the nature of the point source, a number of existing industrial stations now require review either of the station classification or the value of continued operation. These are summarised in Table 2 below. In the absence of point sources, the existing monitoring stations may have continued merit in representing diffuse sources (as described in the following section). It is recommended that monitoring is retained for a minimum of two calendar years following closure of the industrial source in order to verify the impact of the closure on ambient concentrations.

Table 2: Industrial monitoring stations where the point source has changed

Station	Recommendation
Billingham	<p>This is a long running station, at which measurements commenced in 1987. Due to closure of local industry, the classification as industrial is no longer appropriate.</p> <p>It is recommended that this station is reclassified as an urban background station and continues to serve a role in representing diffuse sources.</p>

¹⁵ Station classification report https://uk-air.defra.gov.uk/assets/documents/reports/cat13/1309250915_130923_Review_of_air_quality_monitoring_station_classifications.pdf

Station	Recommendation
Middlesbrough	<p>The Redcar and South Bank coke ovens within the Teesside integrated steel works ceased operation in 2015. Measured concentrations of B[a]P have declined since 2015 with this industrial source no longer present.</p> <p>It is recommended that this station is reclassified as urban background and continues to serve a role in representing diffuse sources (which adds value to the model calibration).</p>
Royston	<p>The Monkton coke ovens ceased operation in 2014. Measured concentrations since 2015 have been declining. These two stations no longer have large industrial contributions for B[a]P.</p> <p>It is recommended that the Royston station is reclassified as urban background and continues to serve a role in representing diffuse sources (it would be the one of the highest non-industrial measurements on the UK mainland and adds value to the model calibration).</p>
Sheffield Tinsley	<p>Station was classified as Urban Background for 2014. This station has a large industrial contribution for Ni and was within the industrial footprint in 2017. This station should be reclassified as Industrial for Ni. Measurements of Ni commenced at this station during 2013.</p> <p>It is recommended that this station is reclassified as urban industrial.</p>

Point source modelling (Supplementary Assessment)

A review of the 2019 compliance assessment modelling data has been completed to assess modelled total concentrations and the relative contribution of point sources across each 1x1 km² in the UK. The 2020 compliance assessment modelling data is available, however due to the exceptional influence of COVID-19, it is not used. This helps determine areas where a significant point source that may warrant consideration of specific monitoring.

Table 3 summarises the maximum modelled total concentration, the relevant Lower Assessment Threshold (LAT), Upper Assessment Threshold (UAT) and Limit Value (LV) for each AQSR pollutant modelled in $\mu\text{g m}^{-3}$. The area exceeding the LAT, and the area exceeding the LAT where the point source concentration is more than 25% of the total concentration and the maximum percentage contribution to total concentrations from point sources are also presented. The threshold of 25% has been chosen following a review of the frequency distributions of the percentage point source contribution in order to identify those locations above the LAT for which the point source contribution merits review.

Table 4 shows a similar analysis for the AQSR pollutants modelled in ng m^{-3} .

Table 3: Assessment of locations exceeding LAT as a result of point source contributions for 2019 (AQSR pollutants)

Pollutant	Max modelled total (background) concentration ($\mu\text{g m}^{-3}$)	Max modelled point source concentration ($\mu\text{g m}^{-3}$)	UAT ($\mu\text{g m}^{-3}$)	LAT ($\mu\text{g m}^{-3}$)	LV ($\mu\text{g m}^{-3}$)	Area exceeding LAT (km^2)	Area exceeding LAT where point source concentration > 25% of total (km^2)	Max percentage contribution from point sources to LAT exceedance
SO₂ *	53	41	75	50	125	14	14	79.1%
NO_x (NO₂) **	95(44)	25	32	26	40	531	3	72.6%
PM₁₀ †	22	5	28	20	40	151	0	13.2%
Pb	0.04	0.03	0.35	0.25	0.5	0	0	n/a
Benzene	3.3	2.7	3.5	2	5	3	2	84.1%
CO ††	n/a	n/a	7	5	10	n/a	n/a	n/a
PM_{2.5}	15	5	14	10	20	10998	7	45.6%

* SO₂: Assessment thresholds for the 24-hour LV

** NO₂: Assessment thresholds for the NO₂ annual mean LV, total concentrations are presented for both NO₂ and NO_x, point source contributions are for NO_x, areas exceeding are for NO₂

† PM₁₀: Assessment thresholds for the annual mean LV

†† CO: This pollutant is not assessed using a compliance model but by measurements where they exist and by Objective Estimation due to persistent evidence of concentrations significantly below the LAT. Therefore, no model results are available. Units are mg m^{-3}

Table 4: Assessment of locations exceeding LAT as a result of point source contributions for 2019 (4DD pollutants)

Pollutant	Max modelled total (background) concentration (ng m⁻³)	Max modelled point source concentration (ng m⁻³)	UAT (ng m⁻³)	LAT (ng m⁻³)	LV (ng m⁻³)	Area exceeding LAT (km²)	Area exceeding LAT where point source concentration > 25% of total (km²)	Max percentage contribution from point sources to LAT exceedance
B[a]P	7.8	0.06	0.6	0.4	1.0	152	0	1.1%
As	3.2	1.9	3.6	2.4	6.0	22	0	2.7%
Cd	3.9	1.2	2	3	5.0	2	0	0.3%
Ni	48	47	14	10	20	12	12	97.6%

NO₂

There are three grid squares where the modelled concentration exceeds the LAT and the contribution from point sources exceeds 25% for NO₂. Two are in the vicinity of wastewater treatment facilities in Manchester and Sheffield. The third is located in Reading. There is a monitoring station for NO₂ in the vicinity of the Sheffield location. The results from supplementary assessment provide an adequate assessment for these industrial sources without the need for additional monitoring evidence.

Benzene

There are two grid squares where the modelled concentration exceeds the LAT and the contribution from point sources exceeds 25% for benzene. Both are in the vicinity of the refineries at Killingholme and South Killingholme. There are no monitoring stations for benzene in the vicinity of these locations. The results from supplementary assessment provide an adequate assessment for these industrial sources without the need for additional monitoring evidence.

PM_{2.5}

There are seven grid squares where the modelled concentration exceeds the LAT and the contribution from point sources exceeds 25%. These squares are in the vicinity of various industries, brickworks near Horsham and Cinderford, agriculture chemicals in Ince, sludge processing in Widness, chipboard manufacture near Hexham and Chirk, and a paper mill in Shotton. The results from supplementary assessment provide an adequate assessment for this industrial source without the need for additional monitoring evidence.

B[a]P

There are no grid squares where the modelled concentration exceeds the LAT and the contribution from point sources exceeds 25% for B[a]P shown in the table above. Modelling of B[a]P does now include several locations at which detailed (fine scale) modelling takes place due specific industrial sources including locations in Port Talbot, Sheffield and Scunthorpe. Ongoing improvements in the NAEI that underpins the compliance modelling (specifically improvements to the distribution grids for domestic wood combustion from 2021 onwards) are likely to further improve the modelling for this pollutant.

Ni

There are 12 grid squares where the modelled concentration exceeds the LAT and the contribution from point sources exceeds 25% for Ni. Three of these grid squares are where the modelled concentration is informed by a combination of the measured concentration at the Pontardawe Tawe Terrace Urban Industrial monitoring station and the local modelling of a specific industrial source. Nine grid squares are where the modelled concentration is informed by a combination of the measured concentration at the Sheffield Tinsley Urban Background monitoring station and the local modelling of the steel production industrial

sources. The existing monitoring and supplementary assessment (particularly the additional fine scale modelling at these locations) provides an adequate assessment for this industrial source without the need for additional monitoring evidence.

SO₂

There are 14 grid squares where the modelled concentration exceeds the LAT and the contribution from point sources exceeds 25% for SO₂. These are all in the vicinity of a brickworks near Peterborough. There are no monitoring stations for SO₂ in the vicinity of this location. The results from the supplementary assessment provide an adequate assessment for these industrial sources without the need for additional monitoring evidence.

PM₁₀, CO, Pb, As and Cd

There are no locations with exceedances of the LAT where the contribution from point sources exceeds 25% for PM₁₀, CO, Pb, As and Cd. A modelling assessment has not been carried out for CO – the assessment is based on a combination of monitoring data and objective estimation, for this pollutant for which the main sources contributing to ambient concentrations are likely to be road transport and domestic emissions.

Industrial AQMAs

The database of UK Air Quality Management Areas as of March 2022 (AQMA¹⁶) was examined to identify all active AQMAs for which industrial sources are listed. This identified the following:

- 10 AQMAs for which industry is the only source identified
- 14 AQMAs for which the source identified is road transport and industry
- 7 AQMAs for which the source identified is domestic, road transport and industry

The declared industrial AQMAs cover a wide range of sources, both industrial and non-industrial. It is unlikely that additional, industrial AQMA-specific monitoring will provide significant insight into the industrial sources beyond that provided by existing monitoring and the PCM point sources model. Therefore, no additional monitoring is recommended.

¹⁶ UK-AIR AQMAs, [Summary AQMA data - Defra, UK](#) [accessed 24th March 2022]

Point source summary

SA techniques (modelling) are sufficiently robust to adequately assess contributions from industrial sources. Specific industrial stations are only recommended where already established or concentrations are high. Existing industrial stations will be retained for model calibration and verification and scientific purposes and to preserve long data records (where there are no extenuating circumstances forcing station closure for other reasons and if the classification as industrial remains valid).

Diffuse sources

Diffuse sources are emissions sources that cannot be represented by a defined set of location-specific release parameters, either because they are not known, or they are too numerous to be characterised effectively in this way. Examples are road traffic, domestic heating and small industry.

The monitoring requirements for diffuse sources (for AQSR pollutants other than ozone, for which there is a specific set of rules, discussed below) are determined in the AQD using the table in Annex V, Section A and are based on the assessment threshold classification (lower than the LAT, between the LAT and the UAT, or above the UAT)¹⁷ for each zone and its population. This target number may then be modified by the application of SA (as discussed above).

Further criteria in Annex V seek to ensure that a balance of urban background (UB) to urban traffic (UT) monitoring is achieved and that zones where concentrations have exceeded the UAT contain at least one UB and UT station, provided this does not increase station numbers, as shown below:

(¹) For nitrogen dioxide, particulate matter, benzene and carbon monoxide: to include at least one urban background monitoring station and one traffic-orientated station provided this does not increase the number of sampling points. For these pollutants, the total number of urban-background stations and the total number of traffic oriented stations in a Member State required under Section A(1) shall not differ by more than a factor of 2. Sampling points with exceedances of the limit value for PM₁₀ within the last three years shall be maintained, unless a relocation is necessary owing to special circumstances, in particular spatial development.

¹⁷ UK Air Quality Zones Assessment Threshold Status: Five year review (2011-2015) https://uk-air.defra.gov.uk/library/reports?report_id=916

This passage uses a complex set of terms to describe site classifications when placed in the broader context of the AQD. It explicitly states Urban Background but uses the terminology 'traffic-orientated' which could include Rural Traffic (RT), Suburban Traffic (ST) classifications. Given the explicit reference to 'urban background', our adopted approach has been to interpret 'traffic-orientated' to mean 'urban traffic' which is consistent with the aims of the AQSR to promote monitoring where the highest concentrations occur to which the population is likely to be directly or indirectly exposed (according to AQD Annex II. B.1.a). Traffic-orientated sites that are not UT undermine this aim. The calculations for this criterion have therefore used UB and UT classifications explicitly.

The number of monitoring stations required for ozone is governed by a different set of requirements provided by Article 10 of the AQD that describe how supplementary assessment techniques can be applied and the number of monitors should be determined. Article 10 (paragraph 3.c.) prescribes a minimum number of stations for each zone based on a combination of population or area (with at least one monitoring station within each zone) as long as other criteria in the Article 10 are also met. Additional criteria on the breakdown of station classifications (Urban, Suburban, Rural) for ozone given in Annex IX are not relevant because the UK uses modelled supplementary assessment. These classification criteria are only applicable if fixed monitoring is the only source of data. The application of air quality modelling ensures that the compliance assessment represents all area types irrespective of specific monitoring locations. The required monitoring can therefore be located freely within each zone.

Chapter 3 of the AQSR (Article 11) requires the UK to measure arsenic (As), cadmium (Cd), nickel (Ni) and polycyclic aromatic hydrocarbons (using Benzo(a)Pyrene as a marker) in zones where concentrations are classified as above the LAT and states that measurements may be supplemented by modelling techniques to provide an adequate level of information on air quality. The supplementary assessment used by the UK includes modelling concentrations at background locations. Emissions data from the UK's National Atmospheric Emissions Inventory (NAEI) demonstrates that emissions of metals and B[a]P from traffic sources are not deemed to be significant in the UK¹⁸, so modelling at traffic locations is not undertaken as part of the UK compliance approach. As a result of supplementary assessment methods for these pollutants, the minimum number of sampling points has been determined as one per zone. This approach ensures that all zones above the LAT have at least one fixed measurement station where supplementary assessment is applied. A characteristic of the metals monitoring process (sampling on a filter from which all metals species are analysed) is that the requirement to measure a single species as defined by the assessment thresholds will provide data for the other species as a by-product irrespective

¹⁸ Brookes, D. et al. (2013) Technical report on UK supplementary assessment under the Air Quality Directive (2008/50/EC), the Air Quality Framework Directive (96/62/EC) and Fourth Daughter Directive (2004/107/EC) for 2013 (Ricardo-AEA/R/3421 Issue 1) https://uk-air.defra.gov.uk/assets/documents/reports/cat09/1511251423_AQ0650_2013_MAAQ_technical_report.pdf

of the assessment threshold status of these other species. As a result, the recommendation for measurements of one metal results in a recommendation to measure all.

Consideration of different pollutant metrics

A key feature of the UK regime assessment approach (specifically in classifying each zone according to the assessment thresholds as required by the AQSR) has been to ensure that pollutant levels are not underestimated or over estimated. In doing so, where pollutants have more than one averaging period specified for assessment thresholds, a conservative approach has been taken whereby the most “stringent metric” i.e. the metric which is hardest to comply with, and that leads to the requirement for the greatest number of stations in a zone, has been used in the calculation.

Table 5 summarises the metrics used for the calculation of monitoring requirements for each pollutant. The PCM compliance model for NO₂ provides an annual mean output only and cannot provide a robust estimation of such a highly variable and uncertain metric as 1-hr across the UK. As a result, the assessment threshold classified under this assessment for NO₂ 1-hr metric has been based on measurement data only and the annual mean NO₂ metric classification has been based on a combination of measurements and model results.

For PM₁₀ the most stringent metric of either the annual mean or the 24-hr mean metric has been used on a zone by zone basis to calculate the monitoring requirements in order to ensure a conservative approach to calculating station numbers. Similarly, for ozone, the most stringent metric has been used on a zone by zone basis to determine requirements.

Table 5: Averaging periods used in the UK AQSR regime assessment

Pollutant	Averaging period used in this assessment
NO₂ for health protection	Annual mean/ 1-hr mean *
NO_x for vegetation & ecosystem protection	Annual mean
PM	Annual mean/24-hr mean *
CO	8-hr mean
SO₂ for health protection	24-hr mean
SO₂ for vegetation protection	Winter mean

Pollutant	Averaging period used in this assessment
Benzene	Annual mean
Ozone	Maximum daily 8-hr mean/AOT40*
Lead	Annual mean
Arsenic	Annual mean
Cadmium	Annual mean
Nickel	Annual mean
Benzo[a]pyrene	Annual mean

* most stringent metric on a zone by zone basis

Data capture

A data capture threshold of 85% has been used to determine monitoring data incorporated into this assessment. A data capture threshold of 85% has been used since 2012 in line with guidance under European Implementing Provisions Rules (IPR¹⁹) (i.e. 90% DQO requirement amended by -5% to account for scheduled maintenance) and has been maintained for consistency and accepted best practice.

PM₁₀ stations to retain

Annex V part A of the AQD requires any monitoring station that has reported PM₁₀ exceedance in any of the preceding three years (2018-2020) to be retained. In previous assessments the exceedance was counted for the annual mean LV if the data capture criteria (specified above) had been met. No data capture criteria was applied to identify exceedances of the 24-hr LV. The exceedances had been calculated without the application of any natural correction (e.g. sea salt quantification) and therefore represented a

¹⁹ MS IPR guidance (v2.0.1), p.57,
https://www.eionet.europa.eu/aqportal/doc/IPR%20guidance_2.0.1_final.pdf

conservative approach. This assessment has not identified any exceedances and as such there are no stations that require retention.

PM_{2.5} Average Exposure Indicator (AEI)

The number of stations to be used for the PM_{2.5} national exposure reduction target have been calculated in accordance with AQD Annex V paragraph 2B, requiring one sampling point per million inhabitants of agglomerations and other urban areas in excess of 100,000 inhabitants across the remainder of the UK. The approach defines an overall AEI monitoring target which may subsequently include any relevant urban background or suburban location within urban areas with $\geq 100,000$ population and is consistent with AQD Annex V guidance. The required number of stations was determined for the baseline AEI (using measurements from 2009-2011) and are to remain unchanged (as far as possible) until the final assessment in 2018-2020. The requirement is therefore unchanged since the previous assessment (although the stations list may have changed slightly).

A total of 33 AEI monitoring stations are needed for the UK and in 2020 there were 44 urban background PM_{2.5} monitoring stations suitable for use. In order to undertake a valid calculation of the AEI it is advisable to maintain more than the minimum stations required. This is because obtaining the required data capture is challenging using the real time monitoring instrumentation. In addition, station closures are sometimes forced through planning decisions. Therefore the actual AEI calculations in 2010, 2015 and 2020 are not likely to contain data from exactly the same stations. A definitive list of urban background PM_{2.5} monitoring stations that have been classified for use in the AEI calculations is provided in Annex 1.

Application of rounding

Several sets of calculations to derive target numbers of monitoring stations in this assessment have required rounding to integers. A conservative approach has been adopted whereby the reduction by half of required monitoring according to Annex V is **rounded up** to the nearest whole number of monitoring stations. For example, a requirement to measure at 7 stations is amended to 4 stations with the application of SA. Thus we have followed conventional commercial rounding rules.

The determination of target numbers of monitoring stations for PM_{2.5} speciation, PAH deposition and Total Gaseous Mercury (TGM) deposition and of NO_x and SO₂ stations for vegetation and ecosystem assessment has been calculated using the total area of the UK and **rounding down**.

Monitoring for Ecosystems, VOCs, and PM_{2.5} speciation and deposition

Ecosystem and vegetation zones

Monitoring for the protection of ecosystems and vegetation (relevant to NO_x and SO₂ only) is limited to defined ecosystem areas, the criteria for which are set out in the AQD (Annex III, para. B. 2). These criteria exclude areas within 5 km of built-up areas, industrial installations, motorways or other major roads with traffic counts of more than 50,000 vehicles per day. Measured and modelled data for SO₂ and NO_x were used to determine the assessment threshold classification. To calculate the monitoring needed for protection of ecosystems and vegetation, the maximum observed NO_x and SO₂ model observations were used in conjunction with the area of the UK designated as an ecosystem and vegetation area to establish the monitoring needed for the UK as a whole. Annex V Section C of the AQD provides guidance on this. Historically the UK has used measurements from all rural and remote monitoring stations measuring NO_x and SO₂ for assessments relative to the ecosystem and vegetation thresholds, rather than the more limited subset of these stations specifically located in ecosystem and vegetation areas. As a result, the UK's assessment approach is conservative; providing more monitoring than the calculated target number of stations and being more representative of locations closer to emission sources with higher observed concentrations.

Volatile organic compounds (VOCs)

A suite of recommended volatile organic compounds (VOCs) is listed in Annex X of the AQD and are to be measured by at least one station in the territory according to Article 10 para. 6, in order to assess concentrations of ozone precursor substances. The station that fulfils this role within the UK networks is London Eltham.

PM_{2.5} monitoring for speciation

One rural background measurement for PM_{2.5} speciation is needed per 100,000 km² in the UK. The current network includes two stations for this function (Auchencorth Moss in Central Scotland zone and Chilbolton Observatory in South East zone). The AQD states that PM_{2.5} monitoring stations nominated to fulfil this role are additional to those required to satisfy Article 6 paragraphs 2, 3 and 4. There are currently MARGA (ion-chromatograph) instruments at these stations specifically for the purpose of obtaining speciated PM_{2.5} data for compliance with the AQD.

Deposition of As, Cd, Ni and PAHs

Article 9 of the 4DD requires at least one station per 100,000 km² to measure total deposition of arsenic, cadmium, nickel and mercury and of B[a]P and other PAHs. Two stations have been established in the UK for this purpose (Auchencorth Moss in Central Scotland zone

and Chilbolton Observatory in South East zone). Additional monitoring of metals deposition at stations other than these is not required for compliance assessment. Since the previous assessment, the rural metals network and urban metals network has been consolidated into a single metals network. The metals network provides deposition data at sites other than those listed above in order to perform UK-Wide deposition mapping but this is not required under the 4DD.

Mercury monitoring

Article 9 of the 4DD requires at least one station per 100,000 km² to measure total gaseous mercury (TGM). Two stations have been established in the UK for this purpose (Auchencorth Moss in Central Scotland zone and Chilbolton Observatory in South East zone). Measurements at these two stations utilise automated measurement systems that provide hourly values. Additional data of this sort is useful in establishing sources of mercury in the UK.

Monitoring station changes

Any new recommendations identified under this assessment result from changes to the operational monitoring network (e.g. unforeseen site closures, site relocations) or changes to the two key calculation inputs – the pollution climate (as represented by the assessment threshold status for each zone) or population changes. Changes to these inputs are summarised in the sections below.

Review of approach to station classification

Under the previous assessment regime review, station classifications were reviewed as has been required by the 2011 Commission Decision on the reciprocal exchange of information and reporting on ambient air quality (2011/850/EU)²⁰. Classifications were determined on a pollutant specific basis for all pollutants based on the predominant emissions source. An overall classification has been determined based on source apportionment information from the PCM model. Where a station was industrial for any pollutant, the classification was industrial overall. All traffic stations must be within ten metres of the kerb. For metals in PM₁₀, a single classification has been made based on the contribution of any of the regulated metals in PM₁₀ in the AQD or 4DD. Some station classifications have been updated as a

²⁰ 2011/850/EC <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2011:335:0086:0106:EN:PDF>

result of this review. Further information is available in a report summarising the approach and new classifications²¹.

All station classifications for monitoring stations commissioned and operational as a result of the previous assessment recommendations have been determined according to the same rules, resulting in consistent classifications across the national networks.

Population changes and zone geometries

The previous assessments were made using data from 2011-2015 and the population data available was census 2011. This 2016-2020 assessment uses mid-year estimates for 2019 derived from data provided by the Office for National Statistics for England and Wales, National Records of Scotland and Northern Ireland Statistics and Research Agency. The change in population by zone is relevant for these calculations because they affect the band in the table of Annex V (ADQ) and Annex III (4DD) that prescribes the number of monitoring stations required for diffuse sources. Population data are not a direct input to the modelled or measured data used to determine the assessment threshold status.

Table 6 shows the change in population by zone between the two censuses and summarises any changes to the band used in the calculations within the Directives.

²¹ Station classification report https://uk-air.defra.gov.uk/assets/documents/reports/cat13/1309250915_130923_Review_of_air_quality_monitoring_station_classifications.pdf

Table 6: Population changes: Census2011 and 2019 mid-year estimates (zones for which station calculations are affected)

Zone	Population (Census 2011)	Population (2019)	Results in change to station numbers *
Liverpool Urban Area	744,225	784,009	Yes ^{##}
Southend Urban Area	243,361	256,199	Yes [‡]
Edinburgh Urban Area	468,400	512,331	Yes [‡]
West Midlands	2,713,685	2,845,914	Yes [‡]
North Wales	749,705	761,992	Yes ^{##}

* according to bandings prescribed in AQD Annex V and 4DD Annex III or criteria for ozone prescribed in AQD Article 10 section C.

** ozone only

‡ Including ozone

^{##} Excluding ozone

No major changes have been made to the zone boundaries since the previous assessment. Any alterations that have occurred since the 2015 compliance assessment are to correct small anomalies in the way that the zone boundaries intersect with the spatial dataset used for the locations of major road links typically along coastal areas.

Assessment threshold classification changes

In order to summarise the drivers behind changes in the calculations from the previous assessment and this assessment, a review of changes to the assessment threshold status classifications for each zone of has been undertaken. Table 7 summarises those pollutants and zones for which this classification has changed since the last assessment and therefore which may have resulted in a calculated change in monitoring configuration.

Table 7: Changes in assessment threshold status: 2011-2015 and 2016-2020

Pollutant	Zone	Former classification (2011-2015)	Revised classification (2016-2020)
NO2	UK0022	>UAT	LAT-UAT
NO2	UK0039	>UAT	LAT-UAT
PM	UK0003	>UAT	LAT-UAT
PM	UK0004	>UAT	LAT-UAT

Pollutant	Zone	Former classification (2011-2015)	Revised classification (2016-2020)
PM	UK0005	>UAT	LAT-UAT
PM	UK0006	>UAT	LAT-UAT
PM	UK0007	>UAT	LAT-UAT
PM	UK0008	>UAT	LAT-UAT
PM	UK0009	>UAT	LAT-UAT
PM	UK0011	>UAT	LAT-UAT
PM	UK0012	>UAT	LAT-UAT
PM	UK0013	>UAT	LAT-UAT
PM	UK0014	>UAT	LAT-UAT
PM	UK0015	>UAT	LAT-UAT
PM	UK0016	>UAT	LAT-UAT
PM	UK0017	>UAT	LAT-UAT
PM	UK0018	>UAT	LAT-UAT
PM	UK0021	>UAT	LAT-UAT
PM	UK0026	>UAT	LAT-UAT
PM	UK0028	>UAT	LAT-UAT
PM	UK0030	>UAT	LAT-UAT
PM	UK0033	>UAT	LAT-UAT
PM	UK0034	>UAT	LAT-UAT
PM	UK0036	>UAT	LAT-UAT
PM	UK0037	>UAT	LAT-UAT
PM	UK0039	LAT-UAT	<LAT
PM	UK0040	LAT-UAT	<LAT
PM	UK0041	>UAT	LAT-UAT
PM	UK0042	>UAT	LAT-UAT
SO2	UK0027	>UAT	<LAT
SO2	UK0031	LAT-UAT	<LAT
SO2	UK0034	LAT-UAT	<LAT
Benzene	UK0001	LAT-UAT	<LAT
Benzene	UK0007	LAT-UAT	<LAT
Benzene	UK0027	>UAT	LAT-UAT
Benzene	UK0034	>UAT	LAT-UAT
Benzene	UK0037	LAT-UAT	<LAT
As	UK0031	>UAT	LAT-UAT
As	UK0035	>UAT	LAT-UAT
Ni	UK0002	LAT-UAT	<LAT
Ni	UK0029	>UAT	LAT-UAT

Pollutant	Zone	Former classification (2011-2015)	Revised classification (2016-2020)
Ni	UK0032	LAT-UAT	<LAT
Ni	UK0034	<LAT	>UAT
B[a]P	UK0001	LAT-UAT	<LAT
B[a]P	UK0003	LAT-UAT	<LAT
B[a]P	UK0006	>UAT	LAT-UAT
B[a]P	UK0009	LAT-UAT	<LAT
B[a]P	UK0010	LAT-UAT	<LAT
B[a]P	UK0016	LAT-UAT	<LAT
B[a]P	UK0019	LAT-UAT	<LAT
B[a]P	UK0020	LAT-UAT	<LAT
B[a]P	UK0023	LAT-UAT	<LAT
B[a]P	UK0026	LAT-UAT	<LAT
B[a]P	UK0030	LAT-UAT	<LAT
B[a]P	UK0031	>UAT	LAT-UAT
B[a]P	UK0033	>UAT	LAT-UAT

Monitoring station targets

Calculated target number of monitoring stations and existing monitoring

Summary tables based on the diffuse requirement calculations prescribed in the AQSR have been compiled for each pollutant. These tables are presented in each pollutant section:

- Table 8 oxides of nitrogen and nitrogen dioxide;
- Table 9 particulate matter;
- Table 10 carbon monoxide;
- Table 11 sulphur dioxide;
- Table 12 ozone;
- Table 13 benzene;
- Table 14 Metals; and
- Table 15 B[a]P

The tables summarise the following information:

- the assessment threshold status of each zone (worst case scenario for multiple metrics);
- the calculated target number of monitoring stations;
- whether a specific UB and UT station is needed in the zone;
- the breakdown of existing monitoring station classifications (UB, UT, other);
- a list of specific monitoring stations in each zone and their classification;

the difference between the existing network and the target number of stations as an indicator of potential network reconfiguration (including the recommendations for UT or UB monitoring changes). Negative numbers indicate the presence of more monitoring than the calculated target and positive numbers indicate that more monitoring is required to meet the target. Note that potential changes to the UB and UT targets would also contribute to the zonal diffuse target (i.e. a single station can satisfy both criteria). Monitoring station information used in this analysis was gathered in February 2022. Any new stations planned at that time have been included as such to best reflect the network. Ongoing dialogue between Defra,

the Environment Agency and the Network managers ensures that rapidly developing plans are captured within individual network designs.

For PM, the existing monitoring stations are split to show the balance between PM₁₀ and PM_{2.5} monitoring and the size fraction is listed for each station. Note that individual PM₁₀ and PM_{2.5} instruments at the same location count as two separate PM monitors under the AQSR. Additional collocated measurement methods for the same size fractions are not counted as additional stations. To illustrate this point, London Marylebone Road has for example, both PM₁₀ and PM_{2.5} and is an urban traffic station. This therefore accounts for one of the UT stations in both the PM₁₀ and PM_{2.5} columns. There are additional PM instruments (often gravimetric instruments – Partisols) that are collocated. These instruments fulfil additional science and research functions but where there are several different instruments measuring the same size fraction at a single location, only one set is counted towards the requirement for compliance with the AQSR. For example, despite the broad range of different PM monitoring at Auchencorth Moss, this one station cannot be allowed to satisfy the whole of the diffuse monitoring target for Central Scotland.

A single table is provided for As, Cd, Ni and Pb given the interdependencies of monitoring these species from the same filters and the assessment threshold Status presented is the worst case across all four species.

A comparison of the current network configuration against the network-wide criteria for UB to UT ratios and PM₁₀ to PM_{2.5} ratios is provided in Table 16.

NO_x and NO₂

Table 8: Monitoring targets and existing NO_x and NO₂ monitoring stations

Zone code	Zone name	AT status	Required monitoring	Required UT	Required UB	UT	UB	OTHER	Existing Monitoring		Number to target	UT target	UB target
									Site name	Site type			
UK0001	Greater London Urban Area	>UAT	10	1	1	5	5	3	Camden Kerbside	UT	-3	No change required	No change required
									Haringey Roadside	UT			
									London Bexley	SB			
									London Bloomsbury	UB			
									London Eltham	SB			
									London Haringey Priory Park South	UB			
									London Harlington	UI			
									London Hillingdon	UB			
									London Marylebone Road	UT			
									London N. Kensington	UB			
									London Westminster	UB			
									Southwark A2 Old Kent Road	UT			
Tower Hamlets Roadside	UT												
UK0002	West Midlands Urban Area	>UAT	6	1	1	2	4	0	Birmingham A4540 Roadside	UT	0	No change required	No change required
									Birmingham Acocks Green	UB			
									Birmingham Ladywood	UB			
									Oldbury Birmingham Road	UT			
									Walsall Woodlands	UB			
									West Bromwich Kenrick Park	UB			
UK0003	Greater Manchester Urban Area	>UAT	6	1	1	2	2	1	Bury Whitefield Roadside	UT	1	No change required	No change required
									Manchester Piccadilly	UB			
									Manchester Sharston	SI			
									Salford Eccles	UB			
									Shaw Crompton Way	UT			
UK0004	West Yorkshire Urban Area	>UAT	4	1	1	2	2	0	Bradford Mayo Avenue	UT	0	No change required	No change required
									Dewsbury Ashworth Grove	UB			
									Leeds Centre	UB			
									Leeds Headingley Kerbside	UT			
UK0005	Tyneside	>UAT	3	1	1	1	1	0	Newcastle Centre	UB	1	No change required	No change required
									Newcastle Cradlewell Roadside	UT			
UK0006	Liverpool Urban Area	>UAT	3	1	1	1	0	1	Liverpool Speke	UI	1	No change required	Change required
									St Helens Linkway	UT			
UK0007	Sheffield Urban Area	>UAT	2	1	1	1	2	0	Sheffield Barnsley Road	UT	-1	No change required	No change required
									Sheffield Devonshire Green	UB			
									Sheffield Tinsley	UB			
UK0008	Nottingham Urban Area	>UAT	2	1	1	1	1	0	Nottingham Centre	UB	0	No change required	No change required
									Nottingham Western Boulevard	UT			
UK0009	Bristol Urban Area	>UAT	2	1	1	1	1	0	Bristol St Paul's	UB	0	No change required	No change required
									Bristol Temple Way	UT			
UK0010	Brighton/ Worthing/ Littlehampton	>UAT	2	1	1	1	1	0	Brighton Preston Park	UB	0	No change required	No change required
									Worthing A27 Roadside	UT			
UK0011	Leicester Urban Area	>UAT	2	1	1	1	1	0	Leicester A594 Roadside	UT	0	No change required	No change required
									Leicester University	UB			
UK0012	Portsmouth Urban Area	>UAT	2	1	1	1	1	0	Portsmouth	UB	0	No change required	No change required
									Portsmouth Anglesea Road	UT			
UK0013	Teesside Urban Area	>UAT	2	1	1	1	0	2	Billingham	UI	-1	No change required	Change required
									Middlesbrough	UI			
									Stockton-on-Tees A1305 Roadside	UT			
UK0014	The Potteries	>UAT	2	1	1	1	1	0	Stoke-on-Trent A50 Roadside	UT	0	No change required	No change required
									Stoke-on-Trent Centre	UB			
UK0015	Bournemouth Urban Area	>UAT	2	1	1	1	1	0	Bournemouth	UB	0	No change required	No change required

Zone code	Zone name	AT status	Required monitoring	Required UT	Required UB	Existing Monitoring			Site name	Site type	Number to target	UT target	UB target
						UT	UB	OTHER					
									Christchurch Barrack Road	UT			
UK0016	Reading/ Wokingham Urban Area	>UAT	2	1	1	1	1	0	Reading London Road	UT	0	No change required	No change required
									Reading New Town	UB			
UK0017	Coventry/ Bedworth	>UAT	2	1	1	1	1	0	Coventry Allesley	UB	0	No change required	No change required
									Coventry Binley Road	UT			
UK0018	Kingston upon Hull	>UAT	2	1	1	1	1	0	Hull Freetown	UB	0	No change required	No change required
									Hull Holderness Road	UT			
UK0019	Southampton Urban Area	>UAT	2	1	1	1	1	0	Southampton A33	UT	0	No change required	No change required
									Southampton Centre	UB			
UK0020	Birkenhead Urban Area	>UAT	2	1	1	1	1	0	Birkenhead Borough Road	UT	0	No change required	No change required
									Wirral Tranmere	UB			
UK0021	Southend Urban Area	>UAT	2	1	1	0	1	0	Southend-on-Sea	UB	1	Change required	No change required
UK0022	Blackpool Urban Area	LAT-UAT	1	0	0	0	1	0	Blackpool Marton	UB	0	No change required	No change required
UK0023	Preston Urban Area	>UAT	1	0	0	0	1	0	Preston	UB	0	No change required	No change required
UK0024	Glasgow Urban Area	>UAT	4	1	1	3	1	0	Glasgow Great Western Road	UT	0	No change required	No change required
									Glasgow High Street	UT			
									Glasgow Kerbside	UT			
									Glasgow Townhead	UB			
UK0025	Edinburgh Urban Area	>UAT	2	1	1	1	1	0	Edinburgh Nicolson Street	UT	0	No change required	No change required
									Edinburgh St Leonards	UB			
UK0026	Cardiff Urban Area	>UAT	2	1	1	1	1	0	Cardiff Centre	UB	0	No change required	No change required
									Cardiff Newport Road	UT			
UK0027	Swansea Urban Area	>UAT	1	0	0	1	0	1	Port Talbot Margam	UI	-1	No change required	No change required
									Swansea Roadside	UT			
UK0028	Belfast Urban Area	>UAT	2	1	1	1	1	0	Belfast Centre	UB	0	No change required	No change required
									Belfast Stockman's Lane	UT			
UK0029	Eastern	>UAT	9	1	1	4	3	2	Borehamwood Meadow Park	UB	0	No change required	No change required
									Cambridge Roadside	UT			
									Luton A505 Roadside	UT			
									Norwich Lakenfields	UB			
									Sandy Roadside	UT			
									St Osyth	RB			
									Stanford-le-Hope Roadside	UT			
									Thurrock	UB			
Wicken Fen	RB												
UK0030	South West	>UAT	8	1	1	3	3	2	Bath A4 Roadside	UT	0	No change required	No change required
									Charlton Mackrell	RB			
									Exeter Roadside	UT			
									Honiton	UB			
									Plymouth Centre	UB			
									Plymouth Tavistock Road	UT			
									Swindon Walcot	UB			
Yarner Wood	RB												
UK0031	South East	>UAT	10	1	1	3	3	4	Canterbury	UB	0	No change required	No change required
									Chatham Roadside	UT			
									Chilbolton Observatory	RB			
									Eastbourne	UB			
									Horley	SI			
									Lullington Heath	RB			
									Oxford Centre Roadside	UT			
									Oxford St Ebbes	UB			
									Rochester Stoke	RB			
Storrington Roadside	UT												
UK0032	East Midlands	>UAT	7	1	1	3	2	1	Chesterfield Loundsley Green	UB	1	No change required	No change required
									Chesterfield Roadside	UT			
									Derby St Alkmund's Way	UT			
									Ladybower	RB			

Zone code	Zone name	AT status	Required monitoring	Required UT	Required UB	UT	UB	OTHER	Existing Monitoring		Number to target	UT target	UB target
									Site name	Site type			
									Lincoln Canwick Road	UT			
									Northampton Spring Park	UB			
UK0033	North West & Merseyside	>UAT	7	1	1	3	2	2	Blackburn Accrington Road	UT	0	No change required	No change required
									Carlisle Morton A595	UT			
									Crewe Coppenhall	UB			
									Glazebury	RB			
									Warrington	UI			
									Widnes Milton Road	UT			
									Wigan Centre	UB			
UK0034	Yorkshire & Humberside	>UAT	7	1	1	2	3	2	Barnsley Gawber	UB	0	No change required	No change required
									Doncaster A630 Cleveland Street	UT			
									High Muffles	RB			
									Immingham Woodlands Avenue	UB			
									Scunthorpe Town	UI			
									York Bootham	UB			
York Fishergate	UT												
UK0035	West Midlands	>UAT	7	1	1	2	3	1	Burton-on-Trent Horninglow	UB	1	No change required	No change required
									Cannock A5190 Roadside	UT			
									Leamington Spa	UB			
									Leamington Spa Rugby Road	UT			
									Leominster	SB			
									Telford Hollinswood	UB			
UK0036	North East	>UAT	5	1	1	2	2	0	Hartlepool St Abbs Walk	UB	1	No change required	No change required
									Stockton-on-Tees Eaglescliffe	UT			
									Sunderland Silksworth	UB			
									Sunderland Wessington Way	UT			
UK0037	Central Scotland	>UAT	5	1	1	2	0	3	Bush Estate	RB	0	No change required	Change required
									Dumbarton Roadside	UT			
									Grangemouth	UI			
									Grangemouth Moray	UI			
									Greenock A8 Roadside	UT			
UK0038	North East Scotland	>UAT	4	1	1	2	2	0	Aberdeen Erroll Park	UB	0	No change required	No change required
									Aberdeen Union Street Roadside	UT			
									Aberdeen Wellington Road	UT			
									Dundee Mains Loan	UB			
UK0039	Highland	LAT-UAT	1	0	0	1	0	1	Fort William	SB	-1	No change required	No change required
									Inverness	UT			
UK0040	Scottish Borders	LAT-UAT	1	0	0	1	1	1	Dumfries	UT	-2	No change required	No change required
									Eskdalemuir	RB			
									Peebles	UB			
UK0041	South Wales	>UAT	5	1	1	3	1	1	Chepstow A48	UT	0	No change required	No change required
									Cwmbran Crownbridge	UT			
									Hafod-yr-ynys Roadside	UT			
									Narberth	RB			
UK0042	North Wales	>UAT	3	1	1	1	0	1	Newport	UB	1	No change required	Change required
									Aston Hill	RB			
UK0043	Northern Ireland	>UAT	4	1	1	2	2	0	Wrexham	UT	0	No change required	No change required
									Armagh Roadside	UT			
									Ballymena Antrim Road	UT			
									Ballymena Ballykeel	UB			
									Derry Rosemount	UB			

PM₁₀ and PM_{2.5}

Table 9: Monitoring targets and existing PM₁₀ and PM_{2.5} monitoring stations

Zone code	Zone name	AT status	Target monitoring	Required UT	Required UB	UT (PM10)	UB (PM10)	OTHER (PM10)	UT (PM2.5)	UB (PM2.5)	OTHER (PM2.5)	Existing monitoring					
												Station name	Station type	Number to target (diffuse)	Required UB	Existing monitoring	Number to target (diffuse)
UK0001	Greater London Urban Area	>UAT	8	1	1	5	5	3	3	6	3	Camden Kerbside	UT	-17	No change required	No change required	Both
												Ealing Horn Lane	UT				PM10
												London Bexley*	SB				Both
												London Bloomsbury*	UB				Both
												London Eltham*	SB				Both
												London Harlington	UI				Both
												London Honor Oak Park*	UB				Both
												London Marylebone Road	UT				Both
												LONDON MARYLEBONE ROAD PARTISOL	UT				Both
												London N. Kensington*	UB				Both
												London Teddington Bushy Park*	UB				Both
												London Westminster*	UB				PM2.5
												Southwark A2 Old Kent Road	UT				PM10
												London Hillingdon (planned)	UB				Both
UK0002	West Midlands Urban Area	>UAT	4	1	1	1	3	0	1	3	0	Birmingham A4540 Roadside	UT	-4	No change required	No change required	Both
												Birmingham Acocks Green*	UB				Both
												Birmingham Ladywood*	UB				Both
												Walsall Woodlands (planned)	UB				Both
UK0003	Greater Manchester Urban Area	LAT-UAT	2	0	0	1	2	0	0	2	0	Bury Whitefield Roadside	UT	-3	No change required	No change required	PM10
												Manchester Piccadilly*	UB				Both
												Salford Eccles	UB				Both
UK0004	West Yorkshire Urban Area	LAT-UAT	2	0	0	1	2	0	1	2	0	Leeds Centre*	UB	-4	No change required	No change required	Both
												Leeds Headingley Kerbside	UT				Both
												Dewsbury Ashworth Grove (planned)	UB				Both
UK0005	Tyneside	LAT-UAT	1	0	0	1	1	0	0	1	0	Newcastle Centre*	UB	-2	No change required	No change required	Both
												Newcastle Cradlewell Roadside	UT				PM10
UK0006	Liverpool Urban Area	LAT-UAT	1	0	0	1	1	1	0	1	1	Liverpool Speke	UI	-4	No change required	No change required	Both
												St Helens Linkway	UT				PM10
												Unknown UB Liverpool Urban Area	UB				Both
UK0007	Sheffield Urban Area	LAT-UAT	1	0	0	0	2	0	1	2	0	Sheffield Barnsley Road	UT	-4	No change required	No change required	PM2.5
												Sheffield Devonshire Green*	UB				Both
												Sheffield Tinsley (planned)	UB				Both
UK0008	Nottingham Urban Area	LAT-UAT	1	0	0	1	1	0	0	1	0	Nottingham Centre*	UB	-2	No change required	No change required	Both
												Nottingham Western Boulevard	UT				PM10
UK0009	Bristol Urban Area	LAT-UAT	1	0	0	1	1	0	0	1	0	Bristol St Paul's*	UB	-2	No change required	No change required	Both
												Bristol Temple Way	UT				PM10

Existing monitoring																	
Zone code	Zone name	AT status	Target monitoring	Required UT	Required UB	UT (PM10)	UB (PM10)	OTHER (PM10)	UT (PM2.5)	UB (PM2.5)	OTHER (PM2.5)	Station name	Station type	Number to target (diffuse)	Required UB	Existing monitoring	Number to target (diffuse)
UK0010	Brighton/Worthing/Littlehampton	LAT-UAT	1	0	0	0	0	0	1	1	0	Brighton Preston Park*	UB	-1	No change required	No change required	PM2.5
												Worthing A27 Roadside	UT				PM2.5
UK0011	Leicester Urban Area	LAT-UAT	1	0	0	1	1	0	0	1	0	Leicester A594 Roadside	UT	-2	No change required	No change required	PM10
												Leicester University*	UB				Both
UK0012	Portsmouth Urban Area	LAT-UAT	1	0	0	1	1	0	0	1	0	Portsmouth*	UB	-2	No change required	No change required	Both
												Portsmouth Anglesea Road	UT				PM10
UK0013	Teesside Urban Area	LAT-UAT	1	0	0	0	1	1	1	1	1	Middlesbrough	UI	-4	No change required	No change required	Both
												Stockton-on-Tees A1305 Roadside	UT				PM2.5
												Unknown UB Teesside Urban Area	UB				Both
UK0014	The Potteries	LAT-UAT	1	0	0	1	1	0	0	1	0	Stoke-on-Trent A50 Roadside	UT	-2	No change required	No change required	PM10
												Stoke-on-Trent Centre*	UB				Both
UK0015	Bournemouth Urban Area	LAT-UAT	1	0	0	0	0	0	1	1	0	Bournemouth*	UB	-1	No change required	No change required	PM2.5
												Christchurch Barrack Road	UT				PM2.5
UK0016	Reading/Wokingham Urban Area	LAT-UAT	1	0	0	1	1	0	0	1	0	Reading London Road	UT	-2	No change required	No change required	PM10
												Reading New Town*	UB				Both
UK0017	Coventry/Bedworth	LAT-UAT	1	0	0	1	1	0	0	1	0	Coventry Allesley*	UB	-2	No change required	No change required	Both
												Coventry Binley Road	UT				PM10
UK0018	Kingston upon Hull	LAT-UAT	1	0	0	1	1	0	0	1	0	Hull Freetown*	UB	-2	No change required	No change required	Both
												Hull Holderness Road	UT				PM10
UK0019	Southampton Urban Area	>UAT	2	1	1	1	1	0	0	1	0	Southampton A33	UT	-1	No change required	No change required	PM10
												Southampton Centre*	UB				Both
UK0020	Birkenhead Urban Area	LAT-UAT	1	0	0	0	1	0	0	1	0	Wirral Tranmere*	UB	-1	No change required	No change required	Both
UK0021	Southend Urban Area	LAT-UAT	1	0	0	0	1	0	0	1	0	Southend-on-Sea*	UB	-1	No change required	No change required	Both
UK0022	Blackpool Urban Area	LAT-UAT	1	0	0	0	1	0	0	1	0	Blackpool Marton*	UB	-1	No change required	No change required	Both
UK0023	Preston Urban Area	LAT-UAT	1	0	0	0	1	0	0	1	0	Preston*	UB	-1	No change required	No change required	Both
UK0024	Glasgow Urban Area	LAT-UAT	2	0	0	1	1	0	1	1	0	Glasgow High Street	UT	-2	No change required	No change required	Both
												Glasgow Townhead*	UB				Both
UK0025	Edinburgh Urban Area	LAT-UAT	1	0	0	0	1	0	0	1	0	Edinburgh St Leonards*	UB	-1	No change required	No change required	Both
UK0026	Cardiff Urban Area	LAT-UAT	1	0	0	1	1	0	0	1	0	Cardiff Centre*	UB	-2	No change required	No change required	Both
												Cardiff Newport Road	UT				PM10
UK0027	Swansea Urban Area	>UAT	1	0	0	1	0	2	1	0	1	Port Talbot Margam	UI	-4	No change required	No change required	Both
												PORT TALBOT MARGAM PM2.5	UI				PM10
												Swansea Roadside	UT				Both
UK0028	Belfast Urban Area	LAT-UAT	1	0	0	1	1	0	0	1	0	Belfast Centre*	UB	-2	No change required	No change required	Both
												Belfast Stockman's Lane	UT				PM10
UK0029	Eastern	>UAT	7	1	1	2	2	4	2	3	4	Norwich Lakenfields*	UB	-10	No change required	No change required	Both
												Sandy Roadside	UT				Both
												Stanford-le-Hope Roadside	UT				Both

Existing monitoring																	
Zone code	Zone name	AT status	Target monitoring	Required UT	Required UB	UT (PM10)	UB (PM10)	OTHER (PM10)	UT (PM2.5)	UB (PM2.5)	OTHER (PM2.5)	Station name	Station type	Number to target (diffuse)	Required UB	Existing monitoring	Number to target (diffuse)
												Borehamwood Meadow Park (planned)	UB				Both
												Sibton (planned)	RB				Both
												St Osyth (planned)	RB				Both
												Thurrock (planned)	UB				PM2.5
												Weybourne (planned)	RB				Both
												Wicken Fen (planned)	RB				Both
UK0030	South West	LAT-UAT	3	0	0	2	3	2	2	3	2	Barnstaple A39	UT	-11	No change required	No change required	Both
												Plymouth Centre*	UB				Both
												Saltash Callington Road	UT				Both
												Charlton Mackrell (planned)	RB				Both
												Honiton (planned)	UB				Both
												Swindon Walcot (planned)	UB				Both
												Yarner Wood (planned)	RB				Both
UK0031	South East	>UAT	8	1	1	1	3	4	1	3	4	Chatham Roadside	UT	-8	No change required	No change required	Both
												Chilbolton Observatory	RB				Both
												Eastbourne*	UB				Both
												Oxford St Ebbes*	UB				Both
												Rochester Stoke	RB				Both
												Canterbury (planned)	UB				Both
												Lullington Heath (planned)	RB				Both
												Unknown RB South East	RB				Both
UK0032	East Midlands	>UAT	5	1	1	1	2	3	1	3	3	Chesterfield Loundsley Green*	UB	-8	No change required	No change required	Both
												Chesterfield Roadside	UT				Both
												Northampton Spring Park*	UB				PM2.5
												Ladybower (planned)	RB				Both
												Unknown RB East Midlands	RB				Both
												Unknown RB East Midlands 2	RB				Both
												Unknown UB East Midlands	UB				Both
UK0033	North West & Merseyside	LAT-UAT	2	0	0	1	3	3	1	3	3	Carlisle Morton A595	UT	-12	No change required	No change required	Both
												Warrington	UI				Both
												Wigan Centre*	UB				Both
												Crewe Coppenhall (planned)	UB				Both
												Glazebury (planned)	RB				Both
												Unknown RB North West & Merseyside	RB				Both
												Unknown UB North West & Merseyside	UB				Both
UK0034	Yorkshire & Humberside	LAT-UAT	2	0	0	1	3	2	1	3	1	Scunthorpe Town	UI	-9	No change required	No change required	PM10
												York Bootham*	UB				Both
												York Fishergate	UT				Both
												Barnsley Gawber (planned)	UB				Both
												High Muffles (planned)	RB				Both

Existing monitoring																	
Zone code	Zone name	AT status	Target monitoring	Required UT	Required UB	UT (PM10)	UB (PM10)	OTHER (PM10)	UT (PM2.5)	UB (PM2.5)	OTHER (PM2.5)	Station name	Station type	Number to target (diffuse)	Required UB	Existing monitoring	Number to target (diffuse)
												Immingham Woodlands Avenue (planned)	UB				Both
UK0035	West Midlands	>UAT	5	1	1	1	2	1	1	2	1	Leamington Spa*	UB	-3	No change required	No change required	Both
												Leamington Spa Rugby Road	UT				Both
												Telford Hollinswood (planned)	UB				Both
												Unknown RB West Midlands	RB				Both
UK0036	North East	LAT-UAT	2	0	0	1	2	0	1	2	0	Stockton-on-Tees Eaglescliffe	UT	-4	No change required	No change required	Both
												Sunderland Silksworth*	UB				Both
												Hartlepool St Abbs Walk (planned)	UB				Both
UK0037	Central Scotland	LAT-UAT	2	0	0	1	0	2	1	0	2	AUCHENCORTH MOSS PM10 PM25	RB	-4	No change required	No change required	Both
												Grangemouth	UI				Both
												Greenock A8 Roadside	UT				Both
UK0038	North East Scotland	LAT-UAT	2	0	0	0	1	0	0	1	0	Aberdeen Erroll Park	UB	0	No change required	No change required	Both
UK0039	Highland	<LAT	0	0	0	1	0	0	1	0	0	Inverness	UT	-2	No change required	No change required	PM2.5
												INVERNESS PM10	UT				PM10
UK0040	Scottish Borders	<LAT	0	0	0	0	0	0	0	0	0			0	No change required	No change required	
UK0041	South Wales	LAT-UAT	2	0	0	1	1	1	1	1	1	Chepstow A48	UT	-4	No change required	No change required	Both
												Narberth	RB				Both
												Newport*	UB				Both
UK0042	North Wales	LAT-UAT	1	0	0	1	0	0	1	0	0	Wrexham	UT	-1	No change required	No change required	PM2.5
												WREXHAM PM10	UT				PM10
UK0043	Northern Ireland	LAT-UAT	2	0	0	1	1	1	0	1	1	Armagh Roadside	UT	-3	No change required	No change required	PM10
												Derry Rosemount	UB				Both
												Lough Navar	RB				Both

Table 10: Monitoring targets and existing CO monitoring stations

Zone code	Zone name	AT status	Target monitoring	Target UT	Target UB	UT	UB	OTHER	Existing monitoring				
									Station name	Station type	Number to target (diffuse)	UT target	UB target
UK0001	Greater London Urban Area	<LAT	0	0	0	1	1	0	London Marylebone Road	UT	-2	No change required	No change required
									London N. Kensington	UB			
UK0002	West Midlands Urban Area	<LAT	0	0	0	0	0	0			0	No change required	No change required
UK0003	Greater Manchester Urban Area	<LAT	0	0	0	0	0	0			0	No change required	No change required
UK0004	West Yorkshire Urban Area	<LAT	0	0	0	0	1	0	Leeds Centre	UB	-1	No change required	No change required
UK0005	Tyneside	<LAT	0	0	0	0	0	0			0	No change required	No change required
UK0006	Liverpool Urban Area	<LAT	0	0	0	0	0	0			0	No change required	No change required
UK0007	Sheffield Urban Area	<LAT	0	0	0	0	0	0			0	No change required	No change required
UK0008	Nottingham Urban Area	<LAT	0	0	0	0	0	0			0	No change required	No change required
UK0009	Bristol Urban Area	<LAT	0	0	0	0	0	0			0	No change required	No change required
UK0010	Brighton/Worthing/Littlehampton	<LAT	0	0	0	0	0	0			0	No change required	No change required
UK0011	Leicester Urban Area	<LAT	0	0	0	0	0	0			0	No change required	No change required
UK0012	Portsmouth Urban Area	<LAT	0	0	0	0	0	0			0	No change required	No change required
UK0013	Teesside Urban Area	<LAT	0	0	0	0	0	0			0	No change required	No change required
UK0014	The Potteries	<LAT	0	0	0	0	0	0			0	No change required	No change required
UK0015	Bournemouth Urban Area	<LAT	0	0	0	0	0	0			0	No change required	No change required
UK0016	Reading/Wokingham Urban Area	<LAT	0	0	0	0	0	0			0	No change required	No change required
UK0017	Coventry/Bedworth	<LAT	0	0	0	0	0	0			0	No change required	No change required
UK0018	Kingston upon Hull	<LAT	0	0	0	0	0	0			0	No change required	No change required
UK0019	Southampton Urban Area	<LAT	0	0	0	0	0	0			0	No change required	No change required
UK0020	Birkenhead Urban Area	<LAT	0	0	0	0	0	0			0	No change required	No change required
UK0021	Southend Urban Area	<LAT	0	0	0	0	0	0			0	No change required	No change required
UK0022	Blackpool Urban Area	<LAT	0	0	0	0	0	0			0	No change required	No change required
UK0023	Preston Urban Area	<LAT	0	0	0	0	0	0			0	No change required	No change required
UK0024	Glasgow Urban Area	<LAT	0	0	0	0	0	0			0	No change required	No change required
UK0025	Edinburgh Urban Area	<LAT	0	0	0	0	1	0	Edinburgh St Leonards	UB	-1	No change required	No change required
UK0026	Cardiff Urban Area	<LAT	0	0	0	0	1	0	Cardiff Centre	UB	-1	No change required	No change required
UK0027	Swansea Urban Area	<LAT	0	0	0	0	0	1	Port Talbot Margam	UI	-1	No change required	No change required
UK0028	Belfast Urban Area	<LAT	0	0	0	0	1	0	Belfast Centre	UB	-1	No change required	No change required
UK0029	Eastern	<LAT	0	0	0	0	0	0			0	No change required	No change required
UK0030	South West	<LAT	0	0	0	0	0	0			0	No change required	No change required
UK0031	South East	<LAT	0	0	0	0	0	0			0	No change required	No change required
UK0032	East Midlands	<LAT	0	0	0	0	0	0			0	No change required	No change required
UK0033	North West & Merseyside	<LAT	0	0	0	0	0	0			0	No change required	No change required
UK0034	Yorkshire & Humberside	<LAT	0	0	0	0	0	0			0	No change required	No change required
UK0035	West Midlands	<LAT	0	0	0	0	0	0			0	No change required	No change required
UK0036	North East	<LAT	0	0	0	0	0	0			0	No change required	No change required
UK0037	Central Scotland	<LAT	0	0	0	0	0	0			0	No change required	No change required

Zone code	Zone name	AT status	Target monitoring	Target UT	Target UB	UT	UB	OTHER	Existing monitoring				
									Station name	Station type	Number to target (diffuse)	UT target	UB target
UK0038	North East Scotland	<LAT	0	0	0	0	0	0			0	No change required	No change required
UK0039	Highland	<LAT	0	0	0	0	0	0			0	No change required	No change required
UK0040	Scottish Borders	<LAT	0	0	0	0	0	0			0	No change required	No change required
UK0041	South Wales	<LAT	0	0	0	0	0	0			0	No change required	No change required
UK0042	North Wales	<LAT	0	0	0	0	0	0			0	No change required	No change required
UK0043	Northern Ireland	<LAT	0	0	0	0	0	0			0	No change required	No change required

SO₂

Table 11: Monitoring targets and existing SO₂ monitoring stations

Zone code	Zone name	AT status	Target monitoring	Existing monitoring			Station name	Station type	Number to target (diffuse)
				UT	UB	OTHER			
UK0001	Greater London Urban Area	<LAT	0	1	2	0	London Bloomsbury	UB	-3
							London Marylebone Road	UT	
							London N. Kensington	UB	
UK0002	West Midlands Urban Area	<LAT	0	0	1	0	Birmingham Ladywood	UB	-1
UK0003	Greater Manchester Urban Area	<LAT	0	0	1	0	Manchester Piccadilly	UB	-1
UK0004	West Yorkshire Urban Area	<LAT	0	0	1	0	Leeds Centre	UB	-1
UK0005	Tyneside	<LAT	0	0	0	0			0
UK0006	Liverpool Urban Area	<LAT	0	0	0	1	Liverpool Speke	UI	-1
UK0007	Sheffield Urban Area	<LAT	0	0	0	0			0
UK0008	Nottingham Urban Area	<LAT	0	0	1	0	Nottingham Centre	UB	-1
UK0009	Bristol Urban Area	<LAT	0	0	0	0			0
UK0010	Brighton/Worthing/Littlehampton	<LAT	0	0	0	0			0
UK0011	Leicester Urban Area	<LAT	0	0	0	0			0
UK0012	Portsmouth Urban Area	<LAT	0	0	0	0			0
UK0013	Teesside Urban Area	<LAT	0	0	0	1	Middlesbrough	UI	-1
UK0014	The Potteries	<LAT	0	0	0	0			0
UK0015	Bournemouth Urban Area	<LAT	0	0	0	0			0
UK0016	Reading/Wokingham Urban Area	<LAT	0	0	0	0			0
UK0017	Coventry/Bedworth	<LAT	0	0	0	0			0
UK0018	Kingston upon Hull	<LAT	0	0	1	0	Hull Freetown	UB	-1
UK0019	Southampton Urban Area	<LAT	0	0	1	0	Southampton Centre	UB	-1
UK0020	Birkenhead Urban Area	<LAT	0	0	0	0			0
UK0021	Southend Urban Area	<LAT	0	0	0	0			0
UK0022	Blackpool Urban Area	<LAT	0	0	0	0			0
UK0023	Preston Urban Area	<LAT	0	0	0	0			0
UK0024	Glasgow Urban Area	<LAT	0	0	0	0			0
UK0025	Edinburgh Urban Area	<LAT	0	0	1	0	Edinburgh St Leonards	UB	-1
UK0026	Cardiff Urban Area	<LAT	0	0	1	0	Cardiff Centre	UB	-1
UK0027	Swansea Urban Area	<LAT	0	0	0	1	Port Talbot Margam	UI	-1
UK0028	Belfast Urban Area	<LAT	0	0	1	0	Belfast Centre	UB	-1
UK0029	Eastern	<LAT	0	0	1	1	Thurrock	UB	-2
							Wicken Fen	RB	
UK0030	South West	<LAT	0	0	0	0			0
UK0031	South East	<LAT	0	0	0	3	Chilbolton Observatory	RB	-3
							Lullington Heath	RB	
							Rochester Stoke	RB	
UK0032	East Midlands	<LAT	0	0	0	1	Ladybower	RB	-1

Zone code	Zone name	AT status	Target monitoring	UT	UB	Existing monitoring			Number to target (diffuse)
						OTHER	Station name	Station type	
UK0033	North West & Merseyside	<LAT	0	0	0	0			0
UK0034	Yorkshire & Humberside	<LAT	0	0	1	1	Barnsley Gawber	UB	-2
							Scunthorpe Town	UI	
UK0035	West Midlands	<LAT	0	0	0	0			0
UK0036	North East	<LAT	0	0	0	0			0
UK0037	Central Scotland	<LAT	0	0	0	1	Grangemouth	UI	-1
UK0038	North East Scotland	<LAT	0	0	0	0			0
UK0039	Highland	<LAT	0	0	0	0			0
UK0040	Scottish Borders	<LAT	0	0	0	0			0
UK0041	South Wales	<LAT	0	0	0	1	Narberth	RB	-1
UK0042	North Wales	<LAT	0	1	0	0	Wrexham	UT	-1
UK0043	Northern Ireland	<LAT	0	0	2	0	Ballymena Ballykeel	UB	-2
							Derry Rosemount	UB	

Ozone

Table 12: Monitoring targets and existing ozone monitoring stations

Zone code	Zone name	AT status	Target monitoring	UT	UB	OTHER	Existing monitoring		
							Station name	Station type	Number to target (diffuse)
UK0001	Greater London Urban Area	>LTO	5	1	4	2	London Bloomsbury	UB	-2
							London Eltham	SB	
							London Haringey Priory Park South	UB	
							London Harlington	UI	
							London Hillingdon	UB	
							London Marylebone Road	UT	
							London N. Kensington	UB	
UK0002	West Midlands Urban Area	>LTO	2	1	3	0	Birmingham A4540 Roadside	UT	-2
							Birmingham Acocks Green	UB	
							Birmingham Ladywood	UB	
							Walsall Woodlands	UB	
UK0003	Greater Manchester Urban Area	>LTO	2	0	1	1	Manchester Piccadilly	UB	0
							Manchester Sharston	SI	
UK0004	West Yorkshire Urban Area	>LTO	1	0	1	0	Leeds Centre	UB	0
UK0005	Tyneside	>LTO	1	0	1	0	Newcastle Centre	UB	0
UK0006	Liverpool Urban Area	>LTO	1	0	0	1	Liverpool Speke	UI	0
UK0007	Sheffield Urban Area	>LTO	1	0	1	0	Sheffield Devonshire Green	UB	0
UK0008	Nottingham Urban Area	>LTO	1	0	1	0	Nottingham Centre	UB	0
UK0009	Bristol Urban Area	>LTO	1	0	1	0	Bristol St Paul's	UB	0
UK0010	Brighton/Worthing/Littlehampton	>LTO	1	0	1	0	Brighton Preston Park	UB	0
UK0011	Leicester Urban Area	>LTO	1	0	1	0	Leicester University	UB	0
UK0012	Portsmouth Urban Area	>LTO	1	0	1	0	Portsmouth	UB	0
UK0013	Teesside Urban Area	>LTO	1	0	0	1	Middlesbrough	UI	0
UK0014	The Potteries	>LTO	1	0	1	0	Stoke-on-Trent Centre	UB	0
UK0015	Bournemouth Urban Area	>LTO	1	0	1	0	Bournemouth	UB	0
UK0016	Reading/Wokingham Urban Area	>LTO	1	0	1	0	Reading New Town	UB	0
UK0017	Coventry/Bedworth	>LTO	1	0	1	0	Coventry Allesley	UB	0
UK0018	Kingston upon Hull	>LTO	1	0	1	0	Hull Freetown	UB	0
UK0019	Southampton Urban Area	>LTO	1	0	1	0	Southampton Centre	UB	0
UK0020	Birkenhead Urban Area	>LTO	1	0	1	0	Wirral Tranmere	UB	0
UK0021	Southend Urban Area	>LTO	1	0	1	0	Southend-on-Sea	UB	0
UK0022	Blackpool Urban Area	>LTO	1	0	1	0	Blackpool Marton	UB	0
UK0023	Preston Urban Area	>LTO	1	0	1	0	Preston	UB	0
UK0024	Glasgow Urban Area	>LTO	1	0	1	0	Glasgow Townhead	UB	0
UK0025	Edinburgh Urban Area	<LTO	0	0	1	0	Edinburgh St Leonards	UB	-1
UK0026	Cardiff Urban Area	>LTO	1	0	1	0	Cardiff Centre	UB	0
UK0027	Swansea Urban Area	>LTO	1	0	0	1	Port Talbot Margam	UI	0

Zone code	Zone name	AT status	Target monitoring	UT	UB	OTHER	Existing monitoring		
							Station name	Station type	Number to target (diffuse)
UK0028	Belfast Urban Area	>LTO	1	0	1	0	Belfast Centre	UB	0
UK0029	Eastern	>LTO	3	0	2	4	Norwich Lakenfields	UB	-3
							Sibton	RB	
							St Osyth	RB	
							Thurrock	UB	
							Weybourne	RB	
							Wicken Fen	RB	
UK0030	South West	>LTO	3	1	1	2	Charlton Mackrell	RB	-1
							Exeter Roadside	UT	
							Plymouth Centre	UB	
							Yarner Wood	RB	
UK0031	South East	>LTO	4	0	1	3	Canterbury	UB	0
							Chilbolton Observatory	RB	
							Lullington Heath	RB	
							Rochester Stoke	RB	
UK0032	East Midlands	>LTO	2	0	1	1	Ladybower	RB	0
							Northampton Spring Park	UB	
UK0033	North West & Merseyside	>LTO	2	0	1	1	Glazebury	RB	0
							Wigan Centre	UB	
UK0034	Yorkshire & Humberside	>LTO	2	0	1	1	Barnsley Gawber	UB	0
							High Muffles	RB	
UK0035	West Midlands	>LTO	2	0	1	1	Leamington Spa	UB	0
							Leominster	SB	
UK0036	North East	>LTO	1	0	1	0	Sunderland Silksworth	UB	0
UK0037	Central Scotland	>LTO	1	0	0	2	Auchencorth Moss	RB	-1
							Bush Estate	RB	
UK0038	North East Scotland	>LTO	1	0	1	0	Aberdeen Erroll Park	UB	0
UK0039	Highland	>LTO	1	0	0	3	Fort William	SB	-2
							Lerwick	RB	
							Strathvaich	RB	
UK0040	Scottish Borders	>LTO	1	0	1	1	Eskdalemuir	RB	-1
							Peebles	UB	
UK0041	South Wales	>LTO	1	1	0	1	Cwmbran Crownbridge	UT	-1
							Narberth	RB	
UK0042	North Wales	>LTO	1	0	0	1	Aston Hill	RB	0
UK0043	Northern Ireland	>LTO	1	0	1	1	Derry Rosemount	UB	-1
							Lough Navar	RB	

Benzene

Table 13: Monitoring targets and existing benzene monitoring stations

Zone code	Zone name	AT status	Target monitoring	Target UT	Target UB	UT	UB	OTHER	Existing monitoring				
									Station name	Station type	Number to target (diffuse)	UT target	UB target
UK0001	Greater London Urban Area	<LAT	0	0	0	3	1	1	Haringey Roadside	UT	-5	No change required	No change required
									London Bloomsbury	UB			
									London Eltham	SB			
									London Marylebone Road	UT			
									Tower Hamlets Roadside	UT			
UK0002	West Midlands Urban Area	<LAT	0	0	0	1	1	0	Birmingham A4540 Roadside	UT	-2	No change required	No change required
									Birmingham Ladywood	UB			
UK0003	Greater Manchester Urban Area	<LAT	0	0	0	1	1	0	Bury Whitefield Roadside	UT	-2	No change required	No change required
									Manchester Piccadilly	UB			
UK0004	West Yorkshire Urban Area	<LAT	0	0	0	0	1	0	Leeds Centre	UB	-1	No change required	No change required
UK0005	Tyneside	<LAT	0	0	0	0	1	0	Newcastle Centre	UB	-1	No change required	No change required
UK0006	Liverpool Urban Area	<LAT	0	0	0	0	0	1	Liverpool Speke	UI	-1	No change required	No change required
UK0007	Sheffield Urban Area	<LAT	0	0	0	0	1	0	Sheffield Devonshire Green	UB	-1	No change required	No change required
UK0008	Nottingham Urban Area	<LAT	0	0	0	0	1	0	Nottingham Centre	UB	-1	No change required	No change required
UK0009	Bristol Urban Area	<LAT	0	0	0	0	0	0			0	No change required	No change required
UK0010	Brighton/Worthing/Littlehampton	<LAT	0	0	0	0	0	0			0	No change required	No change required
UK0011	Leicester Urban Area	<LAT	0	0	0	0	0	0			0	No change required	No change required
UK0012	Portsmouth Urban Area	<LAT	0	0	0	0	0	0			0	No change required	No change required
UK0013	Teesside Urban Area	<LAT	0	0	0	0	0	1	Middlesbrough	UI	-1	No change required	No change required
UK0014	The Potteries	<LAT	0	0	0	0	1	0	Stoke-on-Trent Centre	UB	-1	No change required	No change required
UK0015	Bournemouth Urban Area	<LAT	0	0	0	0	0	0			0	No change required	No change required
UK0016	Reading/Wokingham Urban Area	<LAT	0	0	0	0	0	0			0	No change required	No change required
UK0017	Coventry/Bedworth	<LAT	0	0	0	0	0	0			0	No change required	No change required
UK0018	Kingston upon Hull	<LAT	0	0	0	0	0	0			0	No change required	No change required
UK0019	Southampton Urban Area	<LAT	0	0	0	0	1	0	Southampton Centre	UB	-1	No change required	No change required
UK0020	Birkenhead Urban Area	<LAT	0	0	0	0	0	0			0	No change required	No change required
UK0021	Southend Urban Area	<LAT	0	0	0	0	0	0			0	No change required	No change required
UK0022	Blackpool Urban Area	<LAT	0	0	0	0	0	0			0	No change required	No change required
UK0023	Preston Urban Area	<LAT	0	0	0	0	0	0			0	No change required	No change required
UK0024	Glasgow Urban Area	<LAT	0	0	0	1	0	0	Glasgow Kerbside	UT	-1	No change required	No change required
UK0025	Edinburgh Urban Area	<LAT	0	0	0	0	0	0			0	No change required	No change required
UK0026	Cardiff Urban Area	<LAT	0	0	0	0	0	0			0	No change required	No change required
UK0027	Swansea Urban Area	LAT-UAT	1	0	0	0	0	1	Port Talbot Margam	UI	0	No change required	No change required
UK0028	Belfast Urban Area	<LAT	0	0	0	0	1	0	Belfast Centre	UB	-1	No change required	No change required
UK0029	Eastern	<LAT	0	0	0	1	1	0	Cambridge Roadside	UT	-2	No change required	No change required
									Norwich Lakenfields	UB			
UK0030	South West	<LAT	0	0	0	1	0	0	Bath A4 Roadside	UT	-1	No change required	No change required
UK0031	South East	<LAT	0	0	0	2	1	1	Chatham Roadside	UT	-4	No change required	No change required

Zone code	Zone name	AT status	Target monitoring	Target UT	Target UB	UT	UB	OTHER	Existing monitoring				
									Station name	Station type	Number to target (diffuse)	UT target	UB target
									Chilbolton Observatory	RB			
									Oxford Centre Roadside	UT			
									Oxford St Ebbes	UB			
UK0032	East Midlands	<LAT	0	0	0	1	0	0	Chesterfield Roadside	UT	-1	No change required	No change required
UK0033	North West & Merseyside	<LAT	0	0	0	1	0	0	Carlisle Morton A595	UT	-1	No change required	No change required
UK0034	Yorkshire & Humberside	LAT-UAT	2	0	0	1	2	1	Barnsley Gawber	UB	-2	No change required	No change required
									Scunthorpe Town	UI			
									York Bootham	UB			
									York Fishergate	UT			
UK0035	West Midlands	<LAT	0	0	0	0	1	0	Leamington Spa	UB	-1	No change required	No change required
UK0036	North East	<LAT	0	0	0	1	0	0	Stockton-on-Tees Eaglescliffe	UT	-1	No change required	No change required
UK0037	Central Scotland	<LAT	0	0	0	0	0	0	Auchencorth Moss	RB	-2	No change required	No change required
									Grangemouth	UI			
UK0038	North East Scotland	<LAT	0	0	0	0	0	0			0	No change required	No change required
UK0039	Highland	<LAT	0	0	0	0	0	0			0	No change required	No change required
UK0040	Scottish Borders	<LAT	0	0	0	0	0	0			0	No change required	No change required
UK0041	South Wales	<LAT	0	0	0	0	1	0	Newport	UB	-1	No change required	No change required
UK0042	North Wales	<LAT	0	0	0	0	0	0			0	No change required	No change required
UK0043	Northern Ireland	<LAT	0	0	0	0	0	0			0	No change required	No change required

Metals

Table 14: Monitoring targets and existing metals monitoring stations

Zone code	Zone name	Assessment Threshold classification				Target monitoring (any metal)*	Existing monitoring							Stations (name, classification)	Number to target (diffuse)
		As	Cd	Ni	Pb		Rural Background	Urban Background	Urban Industrial	Urban Traffic	Suburban Industrial	Suburban Background			
UK0001	Greater London Urban Area	<LAT	<LAT	<LAT	<LAT	0	0	1	0	1	0	0	London Marylebone Road(UT); London Westminster(UB)	-2	
UK0002	West Midlands Urban Area	<LAT	LAT-UAT	<LAT	<LAT	1	0	1	0	0	0	0	Walsall Pleck Park(UB)	0	
UK0003	Greater Manchester Urban Area	<LAT	<LAT	<LAT	<LAT	0	0	0	0	0	0	0		0	
UK0004	West Yorkshire Urban Area	<LAT	<LAT	<LAT	<LAT	0	0	0	0	0	0	0		0	
UK0005	Tyneside	<LAT	<LAT	<LAT	<LAT	0	0	0	0	0	0	0		0	
UK0006	Liverpool Urban Area	<LAT	<LAT	<LAT	<LAT	0	0	0	0	0	0	0		0	
UK0007	Sheffield Urban Area	<LAT	<LAT	>UAT	<LAT	1	0	1	1	0	0	0	Sheffield Devonshire Green(UB); Sheffield Tinsley(UI)	-1	
UK0008	Nottingham Urban Area	<LAT	<LAT	<LAT	<LAT	0	0	0	0	0	0	0		0	
UK0009	Bristol Urban Area	<LAT	<LAT	<LAT	<LAT	0	0	0	0	0	0	0		0	
UK0010	Brighton/Worthing/Littlehampton	<LAT	<LAT	<LAT	<LAT	0	0	0	0	0	0	0		0	
UK0011	Leicester Urban Area	<LAT	<LAT	<LAT	<LAT	0	0	0	0	0	0	0		0	
UK0012	Portsmouth Urban Area	<LAT	<LAT	<LAT	<LAT	0	0	0	0	0	0	0		0	
UK0013	Teesside Urban Area	<LAT	<LAT	<LAT	<LAT	0	0	0	0	0	0	0		0	
UK0014	The Potteries	<LAT	<LAT	<LAT	<LAT	0	0	0	0	0	0	0		0	
UK0015	Bournemouth Urban Area	<LAT	<LAT	<LAT	<LAT	0	0	0	0	0	0	0		0	
UK0016	Reading/Wokingham Urban Area	<LAT	<LAT	<LAT	<LAT	0	0	0	0	0	0	0		0	
UK0017	Coventry/Bedworth	<LAT	<LAT	<LAT	<LAT	0	0	0	0	0	0	0		0	
UK0018	Kingston upon Hull	<LAT	<LAT	<LAT	<LAT	0	0	0	0	0	0	0		0	
UK0019	Southampton Urban Area	<LAT	<LAT	<LAT	<LAT	0	0	0	0	0	0	0		0	
UK0020	Birkenhead Urban Area	<LAT	<LAT	<LAT	<LAT	0	0	0	0	0	0	0		0	
UK0021	Southend Urban Area	<LAT	<LAT	<LAT	<LAT	0	0	0	0	0	0	0		0	
UK0022	Blackpool Urban Area	<LAT	<LAT	<LAT	<LAT	0	0	0	0	0	0	0		0	
UK0023	Preston Urban Area	<LAT	<LAT	<LAT	<LAT	0	0	0	0	0	0	0		0	
UK0024	Glasgow Urban Area	<LAT	<LAT	<LAT	<LAT	0	0	0	0	0	0	0		0	
UK0025	Edinburgh Urban Area	<LAT	<LAT	<LAT	<LAT	0	0	0	0	0	0	0		0	
UK0026	Cardiff Urban Area	<LAT	<LAT	<LAT	<LAT	0	0	0	0	0	0	0		0	
UK0027	Swansea Urban Area	<LAT	<LAT	>UAT	<LAT	1	0	1	2	1	1	0	Pontardawe Brecon Road(SI); Pontardawe Tawe Terrace(UI); Port Talbot Margam(UI); Swansea Coedgwilym(UB); Swansea Morriston(UT)	-4	
UK0028	Belfast Urban Area	<LAT	<LAT	<LAT	<LAT	0	0	1	0	0	0	0	Belfast Centre(UB)	-1	
UK0029	Eastern	<LAT	<LAT	LAT-UAT	<LAT	1	1	1	0	0	0	0	Chadwell St Mary(UB); Heigham Holmes(RB)	-1	
UK0030	South West	LAT-UAT	<LAT	<LAT	<LAT	1	1	0	0	0	0	0	Yarner Wood(RB)	0	
UK0031	South East	LAT-UAT	<LAT	<LAT	<LAT	1	2	0	0	0	0	0	Chilbolton Observatory(RB); Detling(RB)	-1	
UK0032	East Midlands	>UAT	<LAT	<LAT	<LAT	1	0	1	0	0	0	0	Chesterfield Loundsley Green(UB)	0	
UK0033	North West & Merseyside	LAT-UAT	<LAT	<LAT	<LAT	1	0	0	0	0	0	0		1	
UK0034	Yorkshire & Humberside	>UAT	<LAT	>UAT	<LAT	1	0	0	2	0	0	0	Scunthorpe Low Santon(UI); Scunthorpe Town(UI)	-1	
UK0035	West Midlands	LAT-UAT	<LAT	<LAT	<LAT	1	1	0	0	0	0	0	Fenny Compton(RB)	0	
UK0036	North East	<LAT	<LAT	<LAT	<LAT	0	0	0	0	0	0	0		0	

Zone code	Zone name	Assessment Threshold classification				Target monitoring (any metal)*	Existing monitoring							Stations (name, classification)	Number to target (diffuse)
		As	Cd	Ni	Pb		Rural Background	Urban Background	Urban Industrial	Urban Traffic	Suburban Industrial	Suburban Background			
UK0037	Central Scotland	<LAT	<LAT	<LAT	<LAT	0	1	0	0	0	0	0	Auchencorth Moss(RB)	-1	
UK0038	North East Scotland	<LAT	<LAT	<LAT	<LAT	0	0	0	0	0	0	0		0	
UK0039	Highland	<LAT	<LAT	<LAT	<LAT	0	0	0	0	0	0	0		0	
UK0040	Scottish Borders	LAT-UAT	<LAT	<LAT	<LAT	1	1	0	0	0	0	0	Eskdalemuir(RB)	0	
UK0041	South Wales	<LAT	<LAT	>UAT	<LAT	1	1	0	0	0	0	0	Cwmystwyth(RB)	0	
UK0042	North Wales	<LAT	<LAT	<LAT	<LAT	0	0	0	0	0	0	0		0	
UK0043	Northern Ireland	<LAT	<LAT	<LAT	<LAT	0	0	0	0	0	0	0		0	

* Target monitoring associated with any zone where concentrations are above the LAT for any metal (because all metals species are analysed as a suite therefore the need for one species also provides for the other species).

Benzo(a)pyrene

Table 15: Monitoring targets and existing B[a]P monitoring stations

Zone code	Zagglom	AT status	Required monitoring	UT	UB	OTHER	Site name	Site type	Number to target (diffuse)
UK0001	Greater London Urban Area	<LAT	0	1	1	0	London Brent	UB	-2
							London Marylebone Road	UT	
UK0002	West Midlands Urban Area	<LAT	0	0	1	0	Birmingham Ladywood	UB	-1
UK0003	Greater Manchester Urban Area	<LAT	0	0	1	0	Salford Eccles	UB	-1
UK0004	West Yorkshire Urban Area	LAT-UAT	1	0	1	0	Leeds Millshaw	UB	0
UK0005	Tyneside	<LAT	0	0	1	0	Newcastle Centre	UB	-1
UK0006	Liverpool Urban Area	LAT-UAT	1	0	0	1	Liverpool Speke	UI	0
UK0007	Sheffield Urban Area	<LAT	0	0	1	0	Sheffield Tinsley	UB	-1
UK0008	Nottingham Urban Area	<LAT	0	0	1	0	Nottingham Centre	UB	-1
UK0009	Bristol Urban Area	<LAT	0	0	1	0	Bristol St Paul's	UB	-1
UK0010	Brighton/Worthing/Littlehampton	<LAT	0	0	0	0			0
UK0011	Leicester Urban Area	<LAT	0	0	0	0			0
UK0012	Portsmouth Urban Area	>UAT	1	0	1	0	Unknown UB Portsmouth Urban Area	UB	0
UK0013	Teesside Urban Area	<LAT	0	0	0	1	Middlesbrough	UI	-1
UK0014	The Potteries	<LAT	0	0	0	0			0
UK0015	Bournemouth Urban Area	<LAT	0	0	0	0			0
UK0016	Reading/Wokingham Urban Area	<LAT	0	0	0	0			0
UK0017	Coventry/Bedworth	<LAT	0	0	0	0			0
UK0018	Kingston upon Hull	<LAT	0	0	0	0			0
UK0019	Southampton Urban Area	<LAT	0	0	1	0	Southampton Centre	UB	-1
UK0020	Birkenhead Urban Area	<LAT	0	0	0	0			0
UK0021	Southend Urban Area	<LAT	0	0	0	0			0
UK0022	Blackpool Urban Area	<LAT	0	0	0	0			0
UK0023	Preston Urban Area	<LAT	0	0	1	0	Preston	UB	-1
UK0024	Glasgow Urban Area	<LAT	0	0	1	0	Glasgow Townhead	UB	-1
UK0025	Edinburgh Urban Area	<LAT	0	0	1	0	Edinburgh St Leonards	UB	-1
UK0026	Cardiff Urban Area	<LAT	0	0	1	0	Cardiff Lakeside	UB	-1
UK0027	Swansea Urban Area	>UAT	1	0	1	2	Port Talbot Margam	UI	-2
							Swansea Cwm Level Park	UB	
							Unknown UB Swansea Urban Area	UI	
UK0028	Belfast Urban Area	>UAT	1	0	1	0	Kilmakee Leisure Centre	UB	0
UK0029	Eastern	<LAT	0	0	0	1	Stoke Ferry	RB	-1
UK0030	South West	<LAT	0	0	1	0	Plymouth Centre	UB	-1
UK0031	South East	LAT-UAT	1	0	0	1	Chilbolton Observatory	RB	0
UK0032	East Midlands	<LAT	0	0	1	0	Bolsover	UB	-1
UK0033	North West & Merseyside	LAT-UAT	1	0	0	1	Hazelrigg	RB	0
UK0034	Yorkshire & Humberside	>UAT	1	0	0	4	High Muffles	RB	-3
							Royston	UI	
							Scunthorpe Low Santon	UI	

Zone code	Zagglom	AT status	Required monitoring	UT	UB	OTHER	Site name	Site type	Number to target (diffuse)
							Scunthorpe Town	UI	
UK0035	West Midlands	<LAT	0	0	0	0			0
UK0036	North East	<LAT	0	0	0	0			0
UK0037	Central Scotland	<LAT	0	0	0	1	Auchencorth Moss	RB	-1
UK0038	North East Scotland	<LAT	0	0	0	0			0
UK0039	Highland	<LAT	0	0	1	0	Kinlochleven	UB	-1
UK0040	Scottish Borders	<LAT	0	0	0	0			0
UK0041	South Wales	>UAT	1	0	1	0	Newport	UB	0
UK0042	North Wales	<LAT	0	0	0	0			0
UK0043	Northern Ireland	>UAT	1	0	3	0	Ballymena Ballykeel	UB	-2
							Derry Brandywell	UB	
							Unknown UB Northern Ireland	UB	

Network wide criteria

Table 16 shows the calculated ratios of urban background to urban traffic monitoring for NO_x and NO₂, PM (both size fractions combined), CO and benzene as specified in the footnote of the table in AQD Annex V. The monitoring balance does not differ by more than a factor of two for any species except CO (see below).

The ratio of PM₁₀ to PM_{2.5} does not differ by more than a factor of 2.

The ratio has been calculated for CO as part of the assessment for completeness, but no change is recommended because all zones are classified as below the LAT and monitoring is not a requirement.

Historical approaches to network design have resulted in ratios that offer some degree of flexibility in the future configuration of the network without challenging the requirements (i.e. most are close to a 1:1 ratio).

Table 16: Network wide criteria summary

Ratio Type	Pollutant	Ratio value	Change required
UB to UT ratio	NO _x /NO ₂	1.1	N
	PM (PM ₁₀ and PM _{2.5} combined)	1.9	N
	CO	5.0	N*
	Benzene	1.1	N
PM₁₀ to PM_{2.5} ratio		1.1	N

* Ratio calculated but irrelevant because CO is <LAT across all zones therefore no monitoring required

Actions and recommendations

Underpinned by the approach and analysis detailed above, this section presents recommendations for consideration to ensure compliant national networks that continue to deliver value for money.

A number of changes are advisable under this assessment that result from changes in the:

- pollution climate (as represented in the Assessment Threshold status)
- population assigned to the zone as a result of data from mid-year estimates for 2019 derived from data provided by the Office for National Statistics for England and Wales, National Records of Scotland and Northern Ireland Statistics and Research Agency.
- operational monitoring network (e.g. unforeseen site closures, site relocations)

Due to the exceptional year of 2020, it is recommended that additional analysis be undertaken before the next five-year reporting period (2021-2025). The effects of lockdown and behavioural changes since the start of the COVID-19 pandemic in 2020 are uncertain. It is recommended that the network design strategy adopted benefits from this interim assessment when there are additional years' worth of ratified data available. This will identify whether a new 'normal' can be seen in concentrations and will capture any changes in the UK's evolving approach. In line with our commitments in the Environmental Improvement Plan, this interim assessment will also explore the implications of re-aligning regional air quality zones with local government boundaries to drive effective coordinated action.

In spite of the 2020 evidence and the recommendation for further analysis, there remain a number of recommendations that can be taken forward as a result of this review. This approach means that adequate preparations can be made ahead of time and capital outlay and time is directed in the most effective way. Those recommendations that can be actioned with confidence as a result of this analysis will benefit from immediate attention given the time it can take to establish new monitoring locations and infrastructure.

For pollutants where no new monitoring requirement has been identified (all except NO₂, metals, and BaP), we recommend that these networks remain stable in their current configuration in order to support compliance modelling activities.

NO_x and NO₂

Previous assessments introduced significant new monitoring for NO_x and NO₂ in order to achieve a network configuration based on a target number of monitoring stations using fixed monitoring alone (without the application of SA).

For clarity, the recommendations are divided below into those recommendations which can be actioned as a result of this analysis and those that can be paused pending confirmation in the interim assessment.

Recommendations for immediate consideration

Greater Manchester Urban Area requires an additional monitoring station as a result of population increases since the 2006-2010 MRA. The classification of the station is flexible. Since concentrations in 2020 (despite the lockdowns) remained above the upper assessment threshold therefore it is recommended that this is actioned without waiting for a revision of analysis in upcoming interim assessment.

East Midlands zone requires an additional monitoring station as a result of the closure of the Market Harborough station in 2019. A replacement for this station has been considered but despite progress on the logistics, the planned location and been dismissed and other locations are being considered. Since concentrations for this zone have remained above the UAT in 2020 (despite the lockdowns) it is recommended that new monitoring continues as planned.

Teesside Urban Area needs an urban background monitoring station and currently has two urban industrial monitoring stations (Billingham and Middlesbrough). It is recommended that Billingham is reclassified as urban background as a result of the most recent evidence (see Table 2) and this action satisfies the requirement.

Central Scotland needs an urban background monitoring station. Bush Estate is classified as rural background but is excluded from modelling tasks on premise that it is a poor example of rural background (concentrations too high). It is recommended that Bush Estate is relocated to a genuinely urban background location to meet this criterion. Or if the current location already meets the need, we could reclassify it as UB.

Recommendations for consideration pending interim assessment

Liverpool Urban Area and North Wales zone both require an additional station at urban background locations.

Southend Urban Area requires an additional station at an urban traffic location.

West Midlands zone requires an additional station (the site classification is flexible).

These zones have moved into a higher population tier of the table in AQD Annex V according to the 2019 population data. The assessment threshold classifications for all of these zones changed from above UAT to LAT-UAT in 2020.

Tyneside Urban Area and North East zone require an additional monitoring station as a result of population increases since the 2006-2010 MRA. The classification of the station in these zones is flexible. The assessment threshold classifications for all of these zones changed from above UAT to LAT-UAT in 2020.

Metals

A single zone (North West & Merseyside Urban Area) requires a station under this assessment. This requirement is driven by modelled Arsenic concentrations for the years 2016-2018, for the two most recent years concentrations have dropped below the LAT.

It is therefore recommended to wait for the interim assessment to ascertain whether this drop in concentration has been maintained.

Benzo(a)pyrene

This analysis has incorporated details of a planned monitoring station in the Portsmouth Urban Area. This is required for the zone to meet the requirements and it is recommended that this installation be completed as planned.

A new BaP monitoring station at Port Talbot would further inform the compliance modelling for this challenging source location. In recent years, modelling has shown that the existing Port Talbot Margam location is not representative of the typical emission footprint from the steel works and more representative monitoring location could better characterise the impact of emissions from the coke ovens and sinter plant. This is expected to improve the agreement with the modelling result and the source apportionment for that location.

Table 2 summarises recommendations for sites classified as industrial where the source has now changed. This includes recommendations to reclassify Middlesbrough and Royston (retaining them to inform on diffuse sources in their respective zones) in the PAH network.

An additional BaP monitoring station in Armagh (Northern Ireland) is planned following a request from Department of Agriculture, Environment and Rural Affairs NI.

Annex 1 – AEI stations (2020)

List of urban and suburban background monitoring stations used in AEI calculation

Eol code	Station name	Station classification	Instrument type
GB0729A	Aberdeen	Urban Background	(Ref.eq)
GB0567A	Belfast Centre	Urban Background	(Ref.eq)
GB1013A	Birmingham Acocks Green	Urban Background	(Ref.eq)
GB1097A	Birmingham Ladywood	Urban Background	(Ref.eq)
GB0851A	Birmingham Tyburn*	Urban Background	(TEOM FDMS)
GB0882A	Blackpool Marton	Urban Background	(Ref.eq)
GB0741A	Bournemouth	Urban Background	(BAM)
GB0860A	Brighton Preston Park	Urban Background	(BAM)
GB0884A	Bristol St Paul's	Urban Background	(BAM)
GB0580A	Cardiff Centre	Urban Background	mixed
GB1046A	Chesterfield Loundsley Green	Urban Background	(Ref.eq)
GB0929A	Chesterfield*	Urban Background	(TEOM FDMS)
GB1034A	Coventry Allesley	Urban Background	(Ref.eq)
GB0739A	Coventry Memorial Park*	Urban Background	(TEOM FDMS)
GB1005A	Eastbourne	Urban Background	(Ref.eq)
GB0839A	Edinburgh St Leonards	Urban Background	(Ref.eq)

Eol code	Station name	Station classification	Instrument type
GB0641A	Glasgow Centre*	Urban Background	(TEOM FDMS)
GB1028A	Glasgow Townhead	Urban Background	(Ref.eq)
GB0776A	Hull Freetown	Urban Background	(Ref.eq)
GB0643A	Leamington Spa	Urban Background	(Ref.eq)
GB0584A	Leeds Centre	Urban Background	mixed
GB1026A	Leicester University	Urban Background	mixed
GB0608A	London Bexley	Suburban Background	mixed
GB0566A	London Bloomsbury	Urban Background	mixed
GB0586A	London Eltham	Suburban Background	(TEOM FDMS)
GB0959A	London Harrow Stanmore*	Urban Background	(TEOM FDMS)
GB0620A	London N. Kensington	Urban Background	(Ref.eq)
GB0620A	London N. Kensington	Urban Background	(Ref.eq)
GB1025A	London Teddington Bushy Park	Urban Background	(Ref.eq)
GB0644A	London Teddington*	Urban Background	(TEOM FDMS)
GB0743A	London Westminster	Urban Background	(BAM)
GB0613A	Manchester Piccadilly	Urban Background	(Ref.eq)
GB0568A	Newcastle Centre	Urban Background	mixed

Eol code	Station name	Station classification	Instrument type
GB0962A	Newport	Urban Background	(Ref.eq)
GB1019A	Northampton Kingsthorpe*	Urban Background	(GRAV EMFAB)
GB1073A	Northampton Spring Park	Urban Background	(BAM)
GB0738A	Northampton*	Urban Background	(GRAV EMFAB)
GB0995A	Norwich Lakenfields	Urban Background	(Ref.eq)
GB0646A	Nottingham Centre	Urban Background	(Ref.eq)
GB0920A	Oxford St Ebbes	Urban Background	(Ref.eq)
GB0687A	Plymouth Centre	Urban Background	(TEOM FDMS)
GB0733A	Portsmouth	Urban Background	(Ref.eq)
GB0731A	Preston	Urban Background	(Ref.eq)
GB0840A	Reading New Town	Urban Background	(BAM)
GB0615A	Sheffield Centre*	Urban Background	(TEOM FDMS)
GB1027A	Sheffield Devonshire Green	Urban Background	(Ref.eq)
GB0598A	Southampton Centre	Urban Background	(Ref.eq)
GB0728A	Southend-on-Sea	Urban Background	(Ref.eq)
GB0658A	Stoke-on-Trent Centre	Urban Background	(Ref.eq)
GB0863A	Sunderland Silksworth	Urban Background	(Ref.eq)
GB0864A	Wigan Centre	Urban Background	(Ref.eq)
GB0730A	Wirral Tranmere	Urban Background	(Ref.eq)

Eol code	Station name	Station classification	Instrument type
GB0918A	York Bootham	Urban Background	mixed

* No longer operational.