2024 Air Quality Annual Status Report (ASR)

In fulfilment of Part IV of the Environment Act 1995 Local Air Quality Management, as amended by the Environment Act 2021

June 2024

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Executive Summary: Air Quality in our area

Air Quality in Kirklees

Breathing in polluted air affects our health and costs the NHS and our society billions of pounds each year. Air pollution is recognised as a contributing factor in the onset of heart disease and cancer and can cause a range of health impacts, including effects on lung function, exacerbation of asthma, increases in hospital admissions and mortality. In the UK, it is estimated that the reduction in healthy life expectancy caused by air pollution is equivalent to 29,000 to 43,000 deaths a year[1].

Air pollution particularly affects the most vulnerable in society, children, the elderly, and those with existing heart and lung conditions. Additionally, people living in less affluent areas are most exposed to dangerous levels of air pollution[2].

Table ES 1 provides a brief explanation of the key pollutants relevant to Local Air Quality Management and the kind of activities they might arise from.

Table ES 1 - Description of key pollutants

Pollutant	Description
Nitrogen Dioxide (NO_2)	Nitrogen dioxide is a gas which is generally emitted from high-temperature combustion processes such as road transport or energy generation.
Sulphur Dioxide (SO_2)	Sulphur dioxide (SO_2) is a corrosive gas which is predominantly produced from the combustion of coal or crude oil.
Particulate Matter (PM_{10} and $PM_{2.5}$)	Particulate matter is everything in the air that is not a gas. Particles can come from natural sources such as pollen, as well as human made sources such as smoke from fires, emissions from industry and dust from tyres and brakes. PM_{10} refers to particles under 10 micrometres. Fine particulate matter or $PM_{2.5}$ are particles under 2.5 micrometres.

Kirklees has population of approximately 440,000 and is one of the larger local authority districts in England. The main population centres are Huddersfield, along with Dewsbury and Batley in North Kirklees. The air quality issues within Kirklees primarily involve emissions from the road network connecting the various communities in the district, along with emissions from traffic which travel between the West Yorkshire conurbation along the

[1] UK Health Security Agency. Chemical Hazards and Poisons Report, Issue 28, 2022.

[2] Defra. Air quality and social deprivation in the UK: an environmental inequalities analysis, 2006

M62 and Greater Manchester. Emissions from industrial and domestic sources are still of importance however, and continue to be subject to the relevant regulation, where appropriate.

Previous assessment of the district's air quality revealed the breaching (exceedance) of health based air quality standards (objectives) at several locations. To date Kirklees has identified two primary airborne pollutants of concern. These are nitrogen dioxide (NO_2) gas and particulate matter (fine inhalable particles referred to PM_{10} and $PM_{2.5}$ particles). Nitrogen dioxide is strongly associated with traffic emissions and raised concentrations of this gas previously resulted in formal declaration of nine of Kirklees' ten air quality management areas (AQMAs), due to the breaching (exceedance) of the annual average objective (air quality standard) for this polluting gas, the other being declared due to exceedance of the 24-hour mean objective for PM_{10} particles.

NO_2 gas concentrations have be generally declining over the past few years and this welcome reduction means that we are now in a position to commence revocation (formal removal) of several of our AQMAs. This is discussed further in this report and the process for revocations will start later this year. We will continue to monitor to ensure that improvements in air quality are maintained.

Actions to improve Air Quality

Whilst air quality has improved significantly in recent decades, there are some areas where local action is needed to protect people and the environment from the effects of air pollution.

The Environmental Improvement Plan[3] sets out actions that will drive continued improvements to air quality and to meet the new national interim and long-term targets for fine particulate matter ($PM_{2.5}$), the pollutant of most harmful to human health. The Air Quality Strategy[4] provides more information on local authorities' responsibilities to work towards these new targets and reduce fine particulate matter in their areas.

The Road to Zero[5] details the Government's approach to reduce exhaust emissions from road transport through a number of mechanisms, in balance with the needs of the local community. This is extremely important given that cars are the most popular mode of personal travel and the majority of Air Quality Management Areas (AQMAs) are designated due to elevated concentrations heavily influenced by transport emissions.

Kirklees Council has taken forward several measures during the current reporting year of 2023 in pursuit of improving local air quality.

The Council acknowledged the important links between climate change, the council's Climate Emergency and the cross-cutting nature of the workstreams between air quality

[3] Defra. Environmental Improvement Plan 2023, January 2023

[4] Defra. Air Quality Strategy – Framework for Local Authority Delivery, August 2023

[5] DfT. The Road to Zero: Next steps towards cleaner road transport and delivering our Industrial Strategy, July 2018

and climate change. The councils' Climate Change Action Plan[6] was published in late 2022, with improved air quality acknowledged as key co-benefit of actions taken to reduce greenhouse gas emissions.

In 2023 NO_2 gas concentrations declined in all AQMAs, when compared to the post pandemic years of 2021 and 2022. NO_2 concentrations slightly exceeded the legal air quality standard (annual mean objective for NO_2) in only AQMA 5 at Eastborough, Dewsbury.

In addition to working towards compliance with legal objectives in our AQMAs we have also considered the wider public health impact of fine inhalable particles (referred to as PM_{10} and $PM_{2.5}$ particles), as approximately one in twenty deaths in Kirklees and West Yorkshire is attributable to this pollutant. In 2023 we worked with the West Yorkshire Combined Authority (WYCA) and the West Yorkshire local authorities on a project in order to increase our understanding of $PM_{2.5}$ particle pollution in the region.

A study was commissioned to understand the sources of non-road particle pollution and test various mitigation scenarios for reduction of these emissions. This study is nearing completion, and we expect to report on this work in the 2025 Annual Status Report. This work will inform the redrafting of the Council's Air Quality Strategy.

We continue to regulate polluting emissions from domestic and industrial sources, undertake active travel initiatives and develop our electric vehicle charge infrastructure within the district. We continue to assess new development for air quality impact and request mitigation when necessary. We have updated the Council's air quality webpage to enable users to learn more about air quality and actions that can be taken to improve it. We have links to real time monitoring data on the webpage, so residents can make informed decisions during periods of poor air quality.

Conclusions and priorities

From analysis of 2023 air quality data, we conclude that the annual mean NO_2 air quality objective was exceeded within one of our ten AQMAs. Outside of this area, monitoring indicates that the rest of Kirklees complied with the air quality objectives.

Real-time data for NO_2, PM_{10} and $PM_{2.5}$ for 2023, indicated compliance with the objectives at the one real-time monitoring location in the district.

We are now able to revoke (remove) or amend several AQMAs due to continuing compliance with legal objectives. We propose to remove three AQMAs and amend three to reflect the smaller geographical areas which are at risk of exceeding the objectives.

There is a risk of exceeding objectives within our remaining AQMAs, indicating that further measures are required. These AQMAs were either close to the legal objectives in 2023 or they had exceeded in recent years.

Our revised Air Quality Action Plan will take account of the proposed revocation and amendment of AQMAs, and primarily focus on those AQMAs still exceeding or at risk of exceeding the air quality objectives.

[6] Climate Change Action Plan for Kirklees

Kirklees Council has taken forward several measures during the current reporting year of 2023 in pursuit of improving local air quality. Kirklees Council's priorities for the coming year are:

- Revoke and amend AQMAs where appropriate.
- Updating our existing Air Quality Action Plan 2019-2024, including formal consultation. Defra expect completion by September 2025.
- Update our Air Quality Strategy, with particular emphasis on maintaining good air quality within revoked AQMAs and reducing local emissions of $PM_{2.5}$, building on regional work already undertaken.
- Develop a regional $PM_{2.5}$ monitoring network.
- Develop electric vehicle and infrastructure projects including:
- trialling innovative ways of installing on street charge points
- introducing a "try before you buy" project
- Complete the revision of the West Yorkshire Low Emission Strategy
- Support the services delivering actions which improve air quality e.g., active travel, climate change and environmental regulation.
- Ensure that air quality continues to be considered in other strategies and plans.

Local engagement and how to get involved

If you require further information on local air quality, please use the following websites:

Air quality | Kirklees Council

UK Air, Defra's air quality information service

or contact the Council on air.quality@kirklees.gov.uk

Later this year, we will begin work on our revised Air Quality Action Plan and Air Quality Strategy. In 2025, we will be conducting a formal consultation which will enable local stakeholders to contribute and help shape these documents.

Local responsibilities and commitment

This ASR was prepared by the Public Protection Department of Kirklees Council with the support and agreement of the following officers and departments:

- Energy and Climate Change team
- Electric Vehicle Infrastructure team
- Public Health
- Transport Strategy
- Highways
- Environmental Health (Pollution and Noise Control Team)
- Planning
- Major Projects

This ASR has been signed off by the Director of Public Health, following discussion at the Council's Corporate Strategy and Public Health Senior Leadership Team meeting on 13th June 2024.

Rachel Spencer-Henshall, Strategic Director, Corporate Strategy, Commissioning and Public Health, Kirklees Council

If you have any comments on this ASR, please send them to Chris Shields at:

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Huddersfield. HD1 2NF.

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1. Local Air Quality Management

This report provides an overview of air quality in Kirklees during 2023. It fulfils the requirements of Local Air Quality Management (LAQM) as set out in Part IV of the Environment Act (1995), as amended by the Environment Act (2021), and the relevant Policy and Technical Guidance documents.

The LAQM process places an obligation on all local authorities to regularly review and assess air quality in their areas, and to determine whether the air quality objectives are likely to be achieved. Where an exceedance is considered likely the local authority must declare an Air Quality Management Area (AQMA) and prepare an Air Quality Action Plan (AQAP) setting out the measures it intends to put in place to achieve and maintain the objectives and the dates by which each measure will be carried out. This Annual Status Report (ASR) outlines the strategies employed by Kirklees to improve air quality and impact they have had.

The statutory air quality objectives applicable to LAQM in England are presented in Table E.1.

2. Actions to improve Air Quality

2.1. Air Quality Management Areas

Air Quality Management Areas (AQMAs) are declared when there is an exceedance or likely exceedance of an air quality objective. After declaration, the authority should prepare an Air Quality Action Plan (AQAP) within 18 months. The AQAP should specify how air quality targets will be achieved and maintained and provide dates by which measures will be carried out.

A summary of AQMAs declared by Kirklees Council can be found in Table 2.1. The table presents a description of the ten AQMAs that are currently designated within Kirklees. Appendix D: Map(s) of monitoring locations and AQMAs provides maps of AQMAs and also the air quality monitoring locations in relation to the AQMAs. The air quality objectives pertinent to the current AQMA designations are as follows:

- NO_2 annual mean of 40 µg/m^3 (AQMA 1, and 3 to 10)
- PM_{10} 24-hour mean of 50 µg/m^3, not to be exceeded more than 35 times a year (AQMA 2)

We propose to amend AQMAs 3, 7 and 10 (see monitoring section).

We propose to revoke AQMAs 1, 2, and 4 (see monitoring section).

In completing Table 2.1 we have calculated the number of years of compliance with the relevant air quality objectives for the last five year period only (2019-2023 inclusive). Furthermore, in calculating the 2023 data at the point of relevant exposure, we have undertaken additional distance correction calculations for the locations within AQMAs 3 and 4 respectively.

Prior to the COVID pandemic we proposed revocation of AQMAs 1 and 2 in our 2016 ASR. Defra's appraisal agreed with our proposal. However, due to the pandemic, this was not undertaken. A major road scheme is now proposed for the area encompassing AQMA 1 and PM_{10} monitoring in AQMA 2 ceased in 2015. We have therefore discussed the status of these AQMAs with Defra again to establish whether these AQMAs can still be revoked.

We provided information on the road scheme for AQMA 1 to Defra along with the historic data for AQMA 2. Defra's subsequent response is reproduced below:

***AQMA 1** - With 5 years full compliance and no likely exceedance identified, we recommend that AQMA 1 is revoked. Kirklees should have a local air quality strategy in place to manage the risk of the future road scheme and ensure air quality remains a high-profile issue, thereby enabling a quick response should there be any deterioration in condition. See LAQM Policy Guidance for more information.*

***AQMA 2** - Based on the information provided, we recommend that Kirklees Council proceed with revocation as originally planned in 2016. While passive monitors cannot be used to assess compliance with PM10 objectives, they can be a useful tool to continue to keep the area under review and enable further investigation if concentrations increase. Kirklees*

Council could also look to include the area as an item in a local air quality strategy or annual status reports, to facilitate a quick response should there be a deterioration in conditions.

On this basis therefore, we shall proceed with revocation of these AQMAs following submission of this ASR.

Within Chapter Three (Air Quality Data and Comparisons with Air Quality Objectives and National Compliance), we set our reasoning for:

- the revocation of AQMA 4 (in addition to revocation of AQMAs 1 and 2 discussed above),
- amendments to AQMAs 3, 7 and 10
- explanation of our decisions not to revoke our other AQMAs, even where there is compliance in 2023.

We welcome Defra's comments on our proposals above and await feedback within the Defra appraisal response in Summer 2024. Following appraisal and approval by Defra, will then proceed with the above recommendations.

Table 2.1 Air Quality Management Area declared

Table 2.1 Details of Air Quality Management Areas declared

AQMA Name	Date of declaration	Pollutants and Air Quality Objectives	One Line description	Is air quality in the AQMA influenced by roads controlled by Highways England?	Level of exceedance at declaration	Level of exceedance in current year	Number of years compliant with Air Quality Objective	Name and date of AQAP publication	Web link to AQAP
AQMA 1 Bradley	Declared 20/10/08	NO2 Annual Mean	The designated area incorporates the Leeds Road (A62) - Bradley Road (A6107) junction	NO	73 µg/m3	29.1 µg/m3	Five	Air Quality Action Plan for Kirklees Council Version 1.4 Published; Sept 2019	Air quality | Kirklees Council
AQMA 2 Scouthill	Declared 02/03/09	PM10 24 Hour Mean	The designated area incorporates part of Huddersfield Road (A644) in Scouthill	NO	43 Days	n/a	n/a	Air Quality Action Plan for Kirklees Council Version 1.4 Published; Sept 2019	Air quality | Kirklees Council
AQMA 3 Ainley Top	Declared 01/11/17	NO2 Annual Mean	The designated area incorporates Halifax Road (A629), Lindley Moor	YES	44 µg/m3	21.6 µg/m3	Five	Air Quality Action Plan for Kirklees Council Version 1.4 Published; Sept 2019	Air quality | Kirklees Council

AQMA Name	Date of declaration	Pollutants and Air Quality Objectives	One Line description	Is air quality in the AQMA influenced by roads controlled by Highways England?	Level of exceedance at declaration	Level of exceedance in current year	Number of years compliant with Air Quality Objective	Name and date of AQAP publication	Web link to AQAP
			Road Bradley Road (A643), Warren House Lane and Stirling Wood Close, which is in close proximity to the Ainley Top Roundabout at Birchencliffe						
AQMA 4 Birkenshaw	Declared 01/11/17	NO2 Annual Mean	The designated area incorporates Bradford Road (A651), Whitehall Road East (A58), Carlton Court, Grove Terrace, Swincliffe Crescent, Milford Grove, Tetley Drive and Manor Park Gardens, which is in close proximity	YES	45 µg/m3	23.6 µg/m3	Five	Air Quality Action Plan for Kirklees Council Version 1.4 Published; Sept 2019	Air quality | Kirklees Council

AQMA Name	Date of declaration	Pollutants and Air Quality Objectives	One Line description	Is air quality in the AQMA influenced by roads controlled by Highways England?	Level of exceedance at declaration	Level of exceedance in current year	Number of years compliant with Air Quality Objective	Name and date of AQAP publication	Web link to AQAP
			to the M62 and A651- A58 Roundabout at Birkenshaw						
AQMA 5 Eastborough	Declared 01/11/17	NO2 Annual Mean	The designated area incorporates Leeds Road (A653), Dewsbury Ring Road (A638), Wakefield Road (A638), Highgate Road, Highgate Terrace, Bank Street and Old Bank Road, which is in close proximity to Dewsbury Town Centre	NO	60 µg/m3	40.1 µg/m3	Not compliant	Air Quality Action Plan for Kirklees Council Version 1.4 Published; Sept 2019	Air quality | Kirklees Council

AQMA Name	Date of declaration	Pollutants and Air Quality Objectives	One Line description	Is air quality in the AQMA influenced by roads controlled by Highways England?	Level of exceedance at declaration	Level of exceedance in current year	Number of years compliant with Air Quality Objective	Name and date of AQAP publication	Web link to AQAP
AQMA 6 Edgerton	Declared 01/11/17	NO2 Annual Mean	The designated area incorporates Edgerton Road (A629) and Blacker Road, which is in close proximity to Huddersfield Town Centre	NO	54 µg/m3	34 µg/m3	Five	Air Quality Action Plan for Kirklees Council Version 1.4 Published; Sept 2019	Air quality | Kirklees Council
AQMA 7 Liversedge	Declared 01/11/17	NO2 Annual Mean	The designated area incorporates Huddersfield Road (A62), Bradford Road (A638), Wakefield Road (A638), Wormald Street and Well Street, which is in Liversedge	NO	45 µg/m3	38 µg/m3	One	Air Quality Action Plan for Kirklees Council Version 1.4 Published; Sept 2019	Air quality | Kirklees Council

AQMA Name	Date of declaration	Pollutants and Air Quality Objectives	One Line description	Is air quality in the AQMA influenced by roads controlled by Highways England?	Level of exceedance at declaration	Level of exceedance in current year	Number of years compliant with Air Quality Objective	Name and date of AQAP publication	Web link to AQAP
AQMA 8 Outlane	Declared 01/11/17	NO2 Annual Mean	The designated area incorporates New Hey Road and Round Ings Road, which is in close proximity to the M62 at Outlane	YES	54 µg/m3	30.2 µg/m3	Four	Air Quality Action Plan for Kirklees Council Version 1.4 Published; Sept 2019	Air quality | Kirklees Council
AQMA 9 Huddersfield Town Centre	Declared 01/11/17	NO2 Annual Mean	The designated area incorporates roads bordering and within the Huddersfield Ring Road	NO	55 µg/m3	37.9 µg/m3	One	Air Quality Action Plan for Kirklees Council Version 1.4 Published; Sept 2019	Air quality | Kirklees Council
AQMA 10 Thornton Lodge	Declared 15/06/19	NO2 Annual Mean	The designated area incorporates Manchester Road	NO	47 µg/m3	35.9 µg/m3	Five	Air Quality Action Plan for Kirklees Council Version 1.4 Published; Sept 2019	Air quality | Kirklees Council

☒ Kirklees Council confirm the information on UK-Air regarding their AQMA(s) is up to date.

☒ Kirklees Council confirm that all current AQAPs have been submitted to Defra.

2.2 Progress and impact of measures to address Air Quality in Kirklees

Defra's appraisal of last year's ASR concluded:

"The revocation of an AQMA should be considered following three consecutive years of compliance with the relevant objective as evidenced through monitoring. Where there have been no exceedances for the past five years, local authorities must proceed with plans to revoke the AQMA. The LAQM Technical Guidance 2022 is clear in this respect:

- *"There should not be any declared AQMAs for which compliance with the relevant objective has been achieved for a consecutive five-year period." (Point 3.57, page 50).*
- *Please be aware that unless a likely exceedance has been identified in the area, Defra will not appraise AQAPs for AQMAs that have been in compliance for five years. Local Authorities will instead be advised to revoke the AQMA.*
- *AQMAs should identify areas where air quality objectives are not being met or are likely to be at risk of not meeting them. Keeping AQMAs in place longer than required risks diluting their meaning and impacting public trust in LAQM.*
- *Local authorities that do not have an AQMA should continue to monitor for exceedances and should still have a local air quality strategy in place to ensure air quality remains a high-profile issue, thereby enabling a quick response should there be any deterioration in condition. See LAQM Statutory Policy Guidance 2022 for more information.*
- *Defra recommends that Directors of Public Health approve draft ASRs. Sign off is not a requirement, however collaboration and consultation with those who have responsibility for Public Health is expected to increase support for measures to improve air quality, with co-benefits for all. Please bear this in mind for the next annual reporting process."*

This report has subsequently been presented to the Council's Director of Public Health, along with discussions on future LAQM actions to be undertaken by the Council, including:

- a programme of revocation and amendment of AQMAs
- development of a new Air Quality Action Plan
- updating the 2019 Air Quality Strategy.

On this basis therefore, the Director has approved this ASR. The Director emphasised the importance of reducing local particle emissions along with reducing the exposure of this pollutant to the local community. The links between poor air quality in areas of poor health and deprivation in Kirklees were also raised as issues to be included in the forthcoming Strategy revision.

Kirklees Council has taken forward a number of direct measures during 2023 in pursuit of improving local air quality. Details of all measures completed, in progress or planned are set out in Table 2.2. Over one hundred measures are included, with details of the type of measure and the progress made during 2023.

More detail on these measures can be found in the Air Quality Action Plan [7]. Key completed measures are:

- Completed delivery of OLEV (Office for Low Emission Vehicles) funded West Yorkshire Strategic Rapid Charger network for taxis and the general public (17 chargers within Kirklees)
- The ECO Stars Fleet Recognition Scheme
- West Yorkshire regional $PM_{2.5}$ source apportionment exercise to determine non-road $PM_{2.5}$ emission sources within Kirklees and West Yorkshire
- Procurement of $PM_{2.5}$ sensors to determine $PM_{2.5}$ and concentrations within Kirklees and West Yorkshire
- Upgrade of the of the Cycle Offset Optimisation technique (SCOOT) Traffic Management System within AQMA 1 in 2023.

The following measures have been delayed due to regional work:

- Development of a local EV strategy due to ongoing development of a regional EV strategy (WYCA).
- Update of the West Yorkshire Low Emissions Strategy due to work to enhance the $PM_{2.5}$ evidence base.

Kirklees Council expects the following measures to be completed over the course of the next reporting year:

Development stage

- Electric vehicle feasibility study for council fleet
- Develop an electric vehicle strategy
- Re-instate Air Quality Action Plan Steering Group to oversee development of the revised Air Quality Action Plan and Air Quality Strategy
- Kirklees Transport Strategy

Procurement stage

[7] Kirklees Air Quality Action Plan

- Upgrade and replacement of the Council's continuous air quality monitoring stations

Delivery stage

- Council "Salary Sacrifice scheme"
- West Yorkshire regional $PM_{2.5}$ monitoring exercise to determine $PM_{2.5}$ emissions and concentrations within Kirklees and West Yorkshire
- Publish an updated West Yorkshire Low Emission Strategy (WYLES) document.

Kirklees Council's priorities for the coming year

- Revoke and amend AQMAs where appropriate.
- Updating our existing Air Quality Action Plan 2019-2024, including formal consultation. Defra expect completion by September 2025. In particular, it is intended that the update will develop specific actions to reduce emissions within our AQMAs not yet in compliance.
- Update our Air Quality Strategy, with particular emphasis on maintaining good air quality within revoked AQMAs and reducing local emissions of $PM_{2.5}$, building on regional work already undertaken.
- Develop a regional $PM_{2.5}$ monitoring network, supported by a website displaying the data and highlighting actions to reduce emissions and personal exposure.
- Develop electric vehicle and infrastructure projects including:
- trialling innovative ways of installing on street charge points
- introducing a "try before you buy" project.
- Complete the revision of the West Yorkshire Low Emission Strategy – this has been delayed whilst work has been undertaken to increase understanding of the evidence of non-road emissions of $PM_{2.5}$.
- Support the services delivering actions which improve air quality, e.g., active travel, climate change and environmental regulation.
- Ensure that air quality continues to be considered in other strategies and plans.
- Ensure that air quality is embedded in the forthcoming update of the Council's Local Development Plan, including the Local Plan.

Kirklees Council worked to implement these measures in partnership with the following stakeholders:

- Neighbouring local authorities and the West Yorkshire Combined Authority
- The Highways authority (National Highways)
- Anchor Institutions (NHS Trusts / Universities)
- Energy and Climate Change team
- Electric Vehicle Infrastructure team
- Public Health
- Transport Strategy

- Highways and Urban Traffic Management Control
- Major Projects
- Environmental Health
- Planning

We anticipate some challenges when reintroducing schemes and measures which were put on hold or scaled back due to the pandemic. It is likely that the post pandemic socio-economic climate has impacted the priorities of partner organisations. This situation will be fully evaluated with our revision of the Air Quality Action Plan.

We also note the recent review of the annual Defra air quality grant. We are concerned that any loss of this grant will make it challenging to fund air quality measures within our forthcoming revised Air Quality Action Plan. We therefore request that this funding avenue is retained to enable us to fund schemes which cannot be funded by other budgets.

Whilst the measures stated above and in Table 2.2 will help to contribute towards compliance, we recognise that this is not enough. Further additional measures will be required to achieve compliance and enable the revocation of the remaining AQMAs.

Please note, due the significant amount of text we present in Table 2.2, we have created an additional appendix (Appendix F). Appendix F contains the text relating to the Key Performance Indicators column.

Table 2.2 – Progress on measures to improve Air Quality

Table 2.1 – Progress on measures to improve Air Quality

Measure no.	Measure title	Category	Classification	Year measure introduced in AQAP	Estimated / actual completion date	Organisations involved	Funding source	Defra AQ Grant funding	Funding status	Estimated cost of measure	Measure status	Reduction in pollutant / emission from measure	Key Performance Indicator	Progress to date	Comments / barriers to implementation
G.1	Adoption of the West Yorkshire Low Emissions Strategy (WYLES)	Policy Guidance and Development Control	Low Emissions Strategy	2015	2025	Kirklees Environmental Health	Air Quality Grant	YES	Funded	£10k - 50k	Implementation	NO2 & PM	See Appendix F	Active	Currently adopted within the authority and integrated into Kirklees Council policy and work instructions. This document is currently in the process of revision to take account of the updating of the West Yorkshire Air Quality Strategy and Environment and Climate Plan, and also inform the emerging regional Local Transport Plan. These documents will in turn inform the review of the Council's Air Quality Action Plan and Air Quality Strategy. This work to be undertaken in 2024/25.
G.2	Kirklees Council - workplace Active travel	Promoting travel alternatives	Workplace Travel Planning	2018	2030	Public Health in consultation with Transport Strategy	Council Budget	NO	Funded	< £10k	Implementation	NO2 & PM	See Appendix F	Active	Previously implemented in 2009. Frequency of review and the actual plans are currently under review to ensure they remain relevant and include changes in technology & behaviour since previous iteration. Conclusions to be implemented and comms plan devised to promote actions within the plans. Once new plans have been adopted, ongoing regular review and promotion will be required to ensure this action is still relevant. Data for evaluation for this measure to be collected from

Measure no.	Measure title	Category	Classification	Year measure introduced in AQAP	Estimated / actual completion date	Organisations involved	Funding source	Defra AQ Grant funding	Funding status	Estimated cost of measure	Measure status	Reduction in pollutant / emission from measure	Key Performance Indicator	Progress to date	Comments / barriers to implementation
															Employee Travel Survey Results. Development of plans to support staff to make sustainable journeys whilst undertaking council business
G.3	Kirklees Sustainable Travel to School Strategy	Promoting travel alternatives	School Travel Plans	2020	Ongoing within schools	Public Health / Economy and Infrastructure	Council Budget / Active Travel England / West Yorkshire Combined Authority	NO	Funded	< £10k	Planning	NO2 and PM	See Appendix F	The Council is delivering the "modeshift stars" initiative with local schools, promoting cycling and walking to and from schools. Currently 38 local schools are "active" within the scheme, as part of an initial target of 50. The Council has also received Active Travel Funding to undertake a "Schools Streets" scheme at 5 local schools in 2023/24	Previously implemented in 2005. Committee set up to review the policy, construction process, pre-existing documents and implementation to reflect changes in school operations, in technology and behaviour. Conclusions to be implemented and comms plan devised to promote actions within the plans. Currently under review. Once new plans have been adopted, ongoing regular review and promotion will be required to ensure this action is still relevant.
G.4	Bikeability training provided to school children	Promoting travel alternatives	Promotion of cycling	2010	Ongoing	Kirklees Public Health	Council Budget / Active Travel England / West Yorkshire Combined Authority / DfT Access Fund	NO	Funded	£100k - £500k	Implementation	NO2 & PM	See Appendix F	This scheme is now operational after being put on hold during the pandemic, working with School Games Organisers placed within local schools who co-ordinate delivery. https://www.kirklees.gov.uk/beta/food-exercise-and-	This scheme is an ongoing project to provide access and training to children on the use of cycling with the long term goals to promote cycling as a leisure activity and also a mode of transport.

Measure no.	Measure title	Category	Classification	Year measure introduced in AQAP	Estimated / actual completion date	Organisations involved	Funding source	Defra AQ Grant funding	Funding status	Estimated cost of measure	Measure status	Reduction in pollutant / emission from measure	Key Performance Indicator	Progress to date	Comments / barriers to implementation
														sport/cycling-training.aspx	
G.5	City Cycle Grant	Promoting travel alternatives	Promotion of cycling	2016	2020	Kirklees Public Health / West Yorkshire Combined Authority	Grant	NO	Funded	< £10k	Implementation	NO2 & PM	See Appendix F	Completed	Completed and no longer operational
G.6	Green Parking Permit allowing free parking for ULEV Vehicles within Council owned car parks.	Promoting Low Emission Transport	Priority parking for LEV's	2008	2019	Kirklees Economy and Infrastructure	Council Budget	NO	Funded	< £10k	Implementation	NO2 & PM	See Appendix F	In 2024 charges were introduced, but at a reduced cost for ULEV vehicles compared to ICE vehicles	Currently this scheme is available for Kirklees residents and workers. This action is designed to reduce the cost of Electric Vehicles ownership and to increase the uptake of electric vehicle ownership within the domestic market. Further information can be found at Apply for a green parking season ticket | Kirklees Council
G.7	Service level agreements across West Yorkshire for ULEV Parking permits to allow free parking across the region	Promoting Low Emission Transport	Priority parking for LEV's	2019	Ongoing within the district	Kirklees Environmental Health	Estimated to be Council Budgets	NO	Partially Funded	< £10k	Planning	NO2 & PM	See Appendix F	Concept	This action is designed to reduce the cost of Electric Vehicles ownership and to increase the uptake of electric vehicle ownership within the domestic market. Further information can be found at Apply for a green parking season ticket | Kirklees Council

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G.8	City Car Club ran within Kirklees district	Alternatives to private vehicle use	Car Clubs	2009	Ongoing	Kirklees Economy and Resilience	3rd Party Business	NO	Funded	< £10k	Implementation	NO2 & PM	See Appendix F	Active	City Car Club is currently available to local residents to use. The scheme reduces vehicle ownership while also providing access to a vehicle when required. Booking of the car is done via an available "app", with use of e-bikes a recent development.
G.9	Finance & Promote Car Sharing Website	Promoting Travel Alternatives	Other	2007	2024	Kirklees Economy and Infrastructure	Local Transport Plan	NO	Funded	< £10k	Planning	NO2 & PM	See Appendix F	Active	Car Club and Car Share
G.10	E.V Fleet Feasibility Study for council fleet	Promoting Low Emission Transport	Company Vehicle Procurement - Prioritising uptake of low emission vehicles	2019	Ongoing	Kirklees Operational Service	Council Budget	NO	Funded	< £10k	Implementation	NO2 & PM	See Appendix F	There are two parts to this work. Working with the Energy savings Trust (EST), there has been a feasibility assessment of the fleet and development of a forward plan. Work is ongoing to assess charging infrastructure requirements	Internal document, which will steer internal fleet purchasing options and help introduction of charging facilities at council depots. Delivery targets to be determined from outcome of survey. In 2024, the Council updated its vehicle replacement programme - this will be reported in next years' ASR and form part of the Council's AQAP.

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G.11	Conversion of applicable council fleet to electric vehicles	Promoting Low Emission Transport	Company Vehicle Procurement - Prioritising uptake of low emission vehicles	2019	Ongoing within the district	Kirklees Operational Service	Council Budget	NO	Funded	£1 million - £10 million	Implementation	NO2 & PM	See Appendix F	It is estimated that there are now over 100 EVs (full EVs and hybrids) within the council fleet, including the procurement of 35 Electric vans which were introduced in 2021/22. Due to current charging infrastructure limitations, a home charging scheme is being piloted to support service operations for up to 25 electric vans. As an ongoing commitment, we continue to trial new EV's as they become available on the market to assess their suitability for our operations. To date, this has included an electric refuse vehicle, 3.5t panel vans, cars and sweepers.	Delivery targets to be determined from outcome of survey outlined in measure G.10 It is estimated that there are now over 100 EVs (full EVs and hybrids within the council fleet, including the procurement of x 35 Electric vans which were introduced in 2021/22. Due to current charging infrastructure limitations, a home charging scheme is being piloted to support service operations for up to 25 electric vans. In 2024, the Council updated its vehicle replacement programme - this will be reported in next years' ASR and form part of the Council's AQAP.

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G.12	Kirklees Bike to Work Scheme	Promoting Travel Alternatives	Promotion of cycling	2017	2024	Kirklees Public Health	Council Budget	NO	Funded	< £10k	Implementation	NO2 & PM	See Appendix F	Active	This scheme is an ongoing project to provide assistance to funding purchases with the long term goals to promote cycling as a leisure activity and also a mode of transport. Grant accessed to purchase 3 push bikes for staff Active travel in Kirklees Council. The grant continues to be promoted by West Yorkshire Combined Authority to workplaces in the Kirklees district. A salary sacrifice scheme is now in place for Kirklees employees to purchase bikes.
G.13	Update Kirklees Air Quality Strategy	Policy Guidance and Development Control	Other Policy	2018	2025	Kirklees Environmental Health	Council Budget	NO	Funded	£10k - 50k	Completed	NO2 & PM	See Appendix F	Completed	Kirklees Council originally adopted an Air Quality Strategy in 2006 then updated in 2019. This Strategy will also be updated in 2024/25 following passing of the Environment Act 2021, and subsequent local authority emphasis on actions to reduce PM2.5 emissions This document is in conjunction with the action plan and reviewed periodically in line with Action Plan review process.
G.14	Assess planning applications in accordance with procedures in the WYLES Planning Guidance Document and require the relevant mitigation included on development	Policy Guidance and Development Control	Air Quality Planning and Policy Guidance	2015	Ongoing	Kirklees Planning & Environmental Health	Council Budget	NO	Funded	£10k - 50k	Implementation	NO2 & PM	See Appendix F	Active	This document is currently used to assess all planning applications and integrated into Local Plan policy documents As such all planning applications will be assessed against the West Yorkshire Low Emission Strategy Planning Technical Guidance Document and mitigation requirements for each application will be determined according to criteria outlined within the aforementioned document. The planning guidance is available at Air Quality & Emissions Technical Planning Guidance Currently reviewing the document.

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G.15	Create a Green Procurement Toolkit	Policy Guidance and Development Control	Sustainable Procurement Guidance	2019	Ongoing within the district	Kirklees Procurement	Estimated to be Council Budgets	NO	Funded	< £10k	Planning	NO2 & PM	See Appendix F	Proposed	The Green Procurement Toolkit is a key outcome from action G.1. A pre-requisite Procurement Guidance document was included part of the West Yorkshire Low Emission Strategy and is to be used to facilitate the creation of a toolkit that ensures a number of environmental impacts is a key consideration in procurement exercises. WYLES contains green procurement. WYLES Procurement Guidance Document is available at; West Yorkshire Low Emission Procurement Guidance Vehicle / Transport Procurement
G.16	Subsidised Bus/Rail Card for Kirklees Council Staff	Promoting Travel Alternatives	Workplace Travel Planning	Pre 2006	Ongoing within the district	Kirklees Operational Services	West Yorkshire Combined Authority Travel Plan Network	NO	Funded	< £10k	Implementation	NO2 & PM	See Appendix F	Active	The passes are made available in accordance with Council Travel plans, action G.2 and because the Council is a member of the travel plan network available to businesses in the West Yorkshire Region (see action G.43). As part of the travel plan network, discounted Bus/Rail Cards are available for Kirklees Council employees to purchase. The Council also have company rail cards, allowing officers to use public transport in their duties as a council officer. This mode of transport is preferred for low millage trips or town centre meetings and is a primary tool to reduce the councils fleet emissions.
G.17	Kirklees Policy on Employee Transport (Employee Handbook)	Policy Guidance and Development Control	Other policy	2015	Ongoing Process as funding becomes available	Kirklees Operational Services	Council Budget	NO	Funded	< £10k	Implementation	NO2 & PM	See Appendix F	Completed	This is the primary policy document to control employee travel both as part of their commute or within their working capacity. The document outlines best practice for travel options within the workplace and also promotes alternative commute options in accordance with council travel plans, action G.2. As such, the document recommendations continue to be relevant and in accordance with the council's ambitions to reduce emissions.

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G.18	Retro-fitting Applicable vehicles within the Bus Fleet with Emissions Abatement Equipment	Vehicle Fleet Efficiency	Vehicle Retrofitting programmes	2013 & 2018	2020	West Yorkshire Combined Authority & Kirklees	Clean Bus Technology Fund	NO	Funded	£1 million - £10 million	Implementation	NO2 & PM	See Appendix F	Completed	Bus fleets within the district are key for model shift and vehicle number controls at the AM and PM peaks. As such it is important that the bus fleet remains a transport option available to the public, but also does incorporate relevant technology to ensure lowest emissions possible. The Clean Bus Technology Fund provides financial incentive to private bus operators to continue to improve their own fleet. Therefore, the Council will continue to seek funding within this sector to assist with a full conversion of all Euro V & Euro IV buses within the Kirklees district. Previously, through partnership working with West Yorkshire, we have achieved the following; 2013 - £1m CBTF retrofit of 119 School Buses were retrofitted in 2014/15 and branding added to sides of the buses to promote pollution reduction2018 - £4.1m CBFT plan to retrofit 300 Buses within WY.
G.19	Electric Vehicle Strategy	Policy Guidance and Development Control	Other policy	2019	Ongoing within the district	Kirklees Environmental Health	Local Transport Plan	NO	Funded	£10k - 50k	Planning	NO2 & PM	See Appendix F	Active	The strategy is being created to determine the infrastructure needs within the Kirklees District and to outline an approach to facilitate the move from the combustion engine towards Electric vehicle in both the domestic and commercial sectors within the district. It is hoped to complete the Strategy by the end of 2024 with this being dependent on completion and approval of the emerging WYCA EV Strategy, which will overarch and inform the eventual completion of the draft Kirklees Strategy.
G.20	West Yorkshire ECO-Stars Scheme	Vehicle Fleet Efficiency	Fleet efficiency and recognition schemes	2016	2020	Kirklees Environmental Health	Local Transport Plan	NO	Funded	£50k - £100k	Completed	NO2 & PM	See Appendix F	Complete	The WY ECO Stars scheme is now complete. A decision has to be taken regionally whether to pursue further funding to continue the scheme. This issue will be addressed in the revision of the Council's AQAP.

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G.21	West Yorkshire Electric Vehicle Taxi Scheme	Promoting Low Emission Transport	Taxi emission incentives	2018	2026	West Yorkshire Combined	OLEV Taxi Grant	NO	Funded	£100k - £500k	Implementation	NO2 & PM	See Appendix F	Active	Kirklees Council have previously installed 34 Rapid Charging Bays within Kirklees, these being 17 Taxi Bays and 17 Public Bays. These have now been transferred to another operator who is undertaking repairs and installing a further 3 bays, with the aim to be fully operational by the end of 2024. Review of taxi use is expected to undertake in 2025 to determine future use.
G.22	West Yorkshire Low Emission Strategy Officer	Other	Other	2019	2019	Kirklees Environmental Health	Air Quality Grant	YES	Funded	£50k - £100k	Completed	NO2 & PM	See Appendix F	Complete	Work now complete with drafting of the West Yorkshire Low Emission Strategy and this officer is no longer employed
G.23	Joint Strategic Assessment for Air Quality	Policy Guidance and Development Control	Other policy	2018	2031	Kirklees Public Health	Council Budget	NO	Funded	< £10k	Completed	NO2 & PM	See Appendix F	Complete	Currently the strategy adopted within the authority and integrated into Kirklees Council policy and work instructions. This is a 10 year policy document. Available at Joint Strategic Needs Assessment for Air Quality. This will be reviewed in due course following passing of the Environment Act 2021 and will align with the Council's revised Air Quality Action Plan and Air Quality Strategy

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G.24	Corporate Carbon Reduction Targets	Other	Other	2020-2021	2021	Kirklees Economy and Infrastructure	Council Budget	NO	Funded	< £10k	Completed	Primary Target: CO2	See Appendix F	Completed	Kirklees Council has declared a Climate Emergency and in the process of constructing an action plan to achieve CO2 reduction goals. Prior to this Kirklees Council has been working towards CO2 targets outlined in target column. This is an ongoing process with aim of constant reduction, targets of which are subject to change as a result Climate Emergency Board decisions. 2010 target of 40% reduction due to be reported on for 18/19 in 20. These targets have now been achieved. The forthcoming revision of the Councils' Air Quality Action Plan (2019-2024) will take account of the Councils revised Net Zero / Climate Ready targets for 2038. https://www.kirklees.gov.uk/beta/climate-emergency/pdf/kirklees-climate-change-action-plan.pdf
G.25	West Yorkshire Energy Accelerator Project	other	other	TBC	Once adopted, use of the SPD would be an ongoing activity	Kirklees Economy and Infrastructure	Source of funding to be confirmed	NO	Not Funded	< £10k	Completed	Secondary reductions in NO2 & PM	See Appendix F	Completed	Kirklees Council has declared a Climate Emergency and in the process of constructing an action plan to achieve CO2 reduction goals. This project will contribute towards achieving the targets set out in the Climate Emergency process. The project also has the potential to reduce industrial emissions covered in the Air Quality Objectives. Air Quality and Carbon reduction have the shared aim of reducing emissions and Kirklees Council are committed to partnership working to reduce both pollutants rather than individual focus. The Council continues to work closely with WYCA and the regional Energy Hub to access equivalent schemes and funding opportunities due to the air quality and climate change co-benefits.

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G.26	Air Quality to be included in a relevant Supplementary Planning Guidance Document	Policy Guidance and Development Control	Air Quality Planning and Policy Guidance	2020	2021	Kirklees Planning & Environmental Health	Council Budget	NO	Funded	< £10k	Aborted	Primary Target: CO2 Secondary reductions in NO2 & PM	See Appendix F	Aborted	Kirklees Council adopted its Local Plan in 2019, which is now due for updating. The update will take account of national guidance which now does not require SPDS within updated Local Plans. Air Quality will be major consideration of this update to ensure following Plan adoption, Air Quality will continue to be fully considered for new development. This will be strengthened by the update of the WYLES planning guidance
G.27	Trialling Hybrid and E.V Bin Wagon	Promoting Low Emission Transport	Company Vehicle Procurement - Prioritising uptake of low emission vehicles	2020	2019	Kirklees Commercial, Regulatory & Operational Services	Council Budget	NO	Funded		Implementation	NO2	See Appendix F	E-RCV – In 2022, order placed for an electric RCV. The purchasing of this vehicle is to enable the Council to thoroughly test this new EV technology on our operations, providing our own datasets to analyse the vehicle's performance; to assist with making informed business decisions in the future. This vehicle is now operational and is being trialled.	Upon completion of the study, a report will be constructed and shared with other within the industry.
G.28	Feasibility Study on use of E.V Mobile Maintenance Equipment	Promoting Low Emission Transport	Company Vehicle Procurement - Prioritising uptake of low emission vehicles	2019	Ongoing activity once implement	Kirklees Commercial, Regulatory & Operational Services	Council Budget	NO	Funded	< £10k	Planning	NO2 & PM	See Appendix F	Active	Internal document, which will steer purchasing options and help introduction of E.V M.M. E's. Delivery targets to be determined from outcome of survey.

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G.29	Feasibility of delivery of Council Officer Car Lease Scheme and delivery (limiting the available options by emission output)	Promoting Low Emission Transport	Public Vehicle Procurement - Prioritising uptake of low emission vehicles	2020	2024	Kirklees Commercial, Regulatory & Operational Services	Estimated to be Council Budgets	NO	Partially Funded	< £10k	Planning	NO2 & PM	See Appendix F	Proposed	Collaborative working between Transport services and Environmental Health to determine viability of providing low emission transport to employees within the local authority
G.30	Grey Fleet Telematics Trial	Promoting Low Emission Transport	Company Vehicle Procurement - Prioritising uptake of low emission vehicles	2018	Ongoing within the district	Kirklees Commercial, Regulatory & Operational Services	Council Budget	NO	Funded	< £10k	Implementation	NO2 & PM	See Appendix F	Active Trial	Currently trialling a dongle that plugs into the vehicle cigarette lighter port and track via GPS and reports to an app. Initially used to data gather and support future projects to reduce grey millage fleet miles. Analysis of the data will allow the authority to identify short journeys and potentially promote use of public transport
G.31	Master naught Telematics System	Vehicle Fleet Efficiency	Other	2017	2019	Kirklees Commercial, Regulatory & Operational Services	Council Budget	NO	Funded	< £10k	Implementation	NO2 & PM	See Appendix F	Active - Master Naught now replaced by "Fleet clear" (which includes an EV suite). This also promotes operational efficiencies, assisting with emission reduction.	Use of the Fleet clear data allows the Authority to promote better driving and has already shown a reduction in fleet miles and fuel consumption. Further use of the telematics system can be used for identifying training needs. As such, use of the telematics system is an ongoing process within the lifespan of this action plan.

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G.32	Pool Bike Feasibility Study	Promoting Travel Alternatives	Promotion of cycling	2019	2024	Kirklees Public Health	Council Budget	NO	Funded	< £10k	Implementation	NO2 & PM	See Appendix F	Active, Operational Plan being developed	Kirklees Council public health have set up a pilot project of pool bikes to promote model shift option for shorter journeys. Exploring the viability of pool bike usage as part of a council fleet Kirklees Active Travel Staff Group established prior to COVID-19 to develop feasibility of pool bike implementation. Public Health engaged with third sector provider to explore options for establishing a pool bike library/ bike loan library, bike training and bike maintenance service for Kirklees Council and extend to other anchor organisations /businesses. WYCA provide the City Connect webpage to assist the active travel agenda.
G.33	Robust Travel Survey to determine better travel plans internally	Other	Other	2019	2022	Kirklees Public Health	Council Budget	NO	Funded	< £10k	Implementation	NO2 & PM	See Appendix F	Active	Kirklees Council Internal travel survey for all council employees to help better inform further decision making and influence future projects. Last staff travel survey undertaken in 2023 and are undertaken annually
G.34	Installation of pollution sensor technology within our AQMAS in conjunction with recognised monitoring to demonstrate validity of new devices	Traffic Management	Other	2019	2024	Kirklees Council UTC & Environmental Health	Council Budget	NO	Funded	£10k - 50k	Completed	NO2 & PM	See Appendix F	Complete	This study will be used as part of a rationalisation project to provide the most accurate, cost effective monitoring network to assist the Council to safeguard residents and the environment. Initial use of the monitoring equipment has been trialled.

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G.35	Engagement within the district with regional plans on alternative Low Emission Fuel Sources	Promoting Low Emission Plant	Other measure for low emission fuels for stationary and mobile sources	2020	Ongoing	Kirklees Environmental Health	Council Budget	NO	Funded	< £10k	Completed	NO2 & PM	See Appendix F	Completed	Ongoing regional work exploring introduction of low emission fuel sources into West Yorkshire This is a future project currently going through project planning phase Kirklees continue to be engaged with WYCA LCR Energy Strategy and delivery plan (now superseded by the WYCA Climate Change Plan) Going forward, this will be considered within the forthcoming Air Quality Action Plan revision, particularly around the roles of electric vehicles, public transport and active travel
G.36	Review how Environmental Health delivers regulatory requirements of the Clean Air Act	Policy Guidance and Development Control	Other policy	2020	2030	Kirklees Environmental Health	Council Budget	NO	Funded	< £10k	Planning	NO2 & PM	See Appendix F	Proposed	Kirklees District is currently a smoke control area and investigates complaints & enforces where required. The process will be reviewed to put the Council in a good position for future changes to solid fuel legislation. This process is an ongoing iterative process and planned changes to the Clean Air Act will need to be included into future working practices, as a result of the passing of the Environment Act 2021.
G.37	Implementation of the Medium Combustion Plant Directive through the planning process	Promoting Low Emission Plant	Other measure for low emission fuels for stationary and mobile sources	2018	2020	Kirklees Environmental Health / Environment Agency	Environment Agency / Council budgets	NO	Funded	< £10k	Implementation	PM	See Appendix F	Active	Kirklees Council to work with Environment Agency to discharge requirements of the Medium Combustion Plan Directive staggered process

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G.38	Zoning project to identify errant Environmental Permitting businesses	Other	Other	2019	Active	Kirklees Environmental Health	Council Budget	NO	Funded	< £10k	Planning	NO2 & PM	See Appendix F	Proposed	Kirklees Council routinely inspects businesses requiring permits as prescribed in the Environmental Permitting Regulations. This measure is a piece of work that aims to identify businesses that require permits, but currently do not possess one.
G39	Kirklees Walking and Cycling Strategic Framework	Promoting Travel Alternatives	Promotion of walking	2018	2030	Public Health	Council Budget	NO	Funded	< £10k	Implementation	NO2 & PM	See Appendix F	Active	This is a policy document to outline the council's ambition to promote walking and cycling and also contain a number of measures to assist in achieving the aim. Use of this document will be an ongoing process. - Kirklees walking and cycling framework The framework will eventually sit under the Council's proposed Transport Strategy.
G.40	Kirklees Neighbourhood Housing Solid Fuel Policy	Policy Guidance and Development Control	Other policy	2018	Ongoing	Kirklees Neighbourhood Housing	KnH Budget	NO	Funded	< £10k	Implementation	NO2 & PM	See Appendix F	Active	Policy prohibits installation of solid fuel stoves. Chimneys are blocked up when gas fires are removed in order to prevent solid fuel use. Completion date has been set as ongoing because of the continuous nature of the action.
G.41	West Yorkshire Travel Plan Network	Policy Guidance and Development Control	Other policy	2016	Ongoing review process of strategy as funding becomes available	West Yorkshire Combined Authority	West Yorkshire Combined Authority Budget	NO	Funded	£50k - £100k	Implementation	NO2 & PM	See Appendix F	Active	West Yorkshire Travel Plan network visit local businesses and assist with improving employee travel option and promote model shift. Revisits and frequent promotions to members of the network once assessment has been conducted. AQMA areas are a priority for business engagement. Completion date has been set as ongoing because of the continuous nature of the action. This project is a continuous, though subject to funding requirements. More information can be found at The Travel Plan Network/

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G.42	Development of a Comms Strategy to promote air quality, modal shift and successful emission reduction projects	Public Information	Other	2019	Ongoing	Kirklees Environmental Health Kirklees Communications and Marketing	Estimated to be Council Budgets	NO	Funded	< £10k	Planning	NO2 & PM	See Appendix F	Revision of the Council's air quality webpage - https://www.kirklees.gov.uk/beta/crime-and-safety/air-quality.aspx	Once the strategy is developed, further targets can be formulated to measure the success of promoting air quality within the district. More costly methods of promotion may not be viable at time on inception but can be considered as funding becomes available.
G.43	Collaborative working with NHS Trusts within District	Other	Other	2019	Ongoing	Kirklees Environmental Health NHS Trusts	Council Budget	NO	Funded	< £10k	Planning	NO2 & PM	See Appendix F	Active, there has been no progress in the last 12 months	Kirklees Council has 2 NHS Trust, Mid Yorkshire and Huddersfield Calderdale Trust. As a key partner in the district the Council will work with them to promote / deliver low emission projects and policy Require a continued engagement programme
G.44	Collaborative working with University of Huddersfield	Other	Other	2019	Ongoing	Kirklees Environmental Health University of Huddersfield	Council Budget	NO	Funded	< £10k	Planning	NO2 & PM	See Appendix F	Active	Kirklees Council has already begun to develop a number of projects with the university. As a key partner in the district the Council will continue to work with them to promote / deliver low emission projects and policy Require a continued engagement programme
G.45	Collaborative working with Commercial Bus Companies within the district	Other	Other	2019	Ongoing	Kirklees Environmental Health WYCA Local Bus Companies	Council Budget	NO	Funded	< £10k	Planning	NO2 & PM	See Appendix F	Active	Kirklees Council has already begun to develop a number of projects with the bus partners and the combined authority. As a key partner in the district the Council will continue to work with them to promote / deliver low emission projects and policy Require a continued engagement programme. In 2024, the WY Mayor, WY buses were brought back under local control (franchising). Our forthcoming revised AQAP will consider this.

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G.46	Collaborative working with National Highways	Other	Other	2019	Ongoing	Kirklees Environmental Health, National Highways	Council Budget	NO	Funded	< £10k	Implementation	NO2 & PM	See Appendix F	Active	As a key partner in the district the Council will work with them to promote / deliver low emission projects and policy. Two of our AQMAs (AQMA 4, Birkenshaw and AQMA 8, Outlane), are directly affected by emissions from the M62 motorway, whilst others are located close to, or impact by traffic accessing the strategic road network. National Highways will be consulted on revocation plans for these AQMAs.
G.47	De-centralised Energy Use	policy Guidance and Development Control	Other policy	TBC	TBC	Kirklees Economy and Infrastructure	Source of funding to be confirmed	NO	Not Funded	< £10k	Planning	NO2 & PM	See Appendix F	Proposed	The plan for this project is to undertake studies into future energy needs and how de-centralised energy supply will impact on emissions. This is a principle as opposed to a project, eg HEAT Network is one project, longer term we need to move to local energy sources rather than on the grid and another could be new housing developments getting their energy from ground source heat pumps. Working with planners to include details in their SPD. Decarbonisation of heat generation networks will also have air quality co-benefits

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G.48	Smart Systems to manage energy use within Local Authority Buildings	Promoting Low Emission Plant	Public Procurement of stationary combustion sources	TBC	TBC	Kirklees Economy and Infrastructure	Source of funding to be confirmed	NO	Not Funded	< £10k	Planning	Primary Target: CO2	See Appendix F	Proposed	The plan for this project is to integrate smart technology into council buildings to reduce energy usage. This is a future project currently going through project planning phase. Have Building Energy Management systems (BEMS) in all corporate buildings - needs funding for someone to manage - should be self-financing. Going forward, this action may be "refreshed" to take account of ongoing developments in this field and seek appropriate funding. The Council now has an Energy Task Force to consider these issues with the aim of reducing energy use across the Council estate.
G.49	Study the impact of Green Infrastructure	Other	Other	TBC	TBC	Kirklees Environmental Health	Local Transport Plan	NO	Not Funded		Planning	Primary Target: CO2	See Appendix F	Concept, there has no progress with this over the last 12 months	Planning Stage begun in 2020 to work in partnership with West Yorkshire. The plan for this project is to undertake a study looking into different vegetation and the impact of green screening along roadsides. This project includes analysing the viability of Moss Trees. This is a future project currently going through project planning phase
G.50	Generate a pollution based calculation similar to that currently used in carbon reduction calculations	Other	Other	TBC	TBC	Kirklees Economy and Infrastructure	Source of funding to be confirmed	NO	Not Funded		Planning	NO2 & PM	See Appendix F	Proposed, there has no progress with this over the last 12 months	The plan for this project is to create an easier process for calculating emission impacts from projects and schemes. WYCA carbon impact methodology is being developed - should standardise the calculation for transport schemes. Aim for compatible methodology to be used or all emissions. Exploratory discussions were held with a provider in 2022 regarding a proposed scheme, but the Council could not commit to this at that time.

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G.51	Research gathering to inform development of neighbourhood plans as part of Local Plan integration	Other	Other	TBC	TBC	Kirklees Planning	Source of funding to be confirmed	NO	Not Funded		Planning	NO2 & PM	See Appendix F	Proposed, there has no progress with this over the last 12 months	The plan for this project is to collect data that can be used to inform the development of the Council's neighbourhood plans This is a future project currently going through project planning phase
G.52	Development Clusters Research and Solution Systems	Other	Other	TBC	TBC	Kirklees Planning	Source of funding to be confirmed	NO	Not Funded		Aborted	NO2 & PM	See Appendix F	Aborted due to Local Plan revision	The plan for this project is to collect data that can be used to inform the development of the Council's Development Clusters This is a future project currently going through project planning phase. Require Environmental Health to propose schemes/clusters so they can be evaluated, and an SPD drawn up to enable the funding to be drawn from the planning process
G.53	Feasibility Study of current Traffic Model and identify further highways improvement projects	Traffic Management	Other	TBC	TBC	Kirklees Economy and Infrastructure	Source of funding to be confirmed	NO	Not Funded		Planning	NO2 & PM	See Appendix F	Proposed, there has no progress with this over the last 12 months	The plan for this project is to review the traffic model, validate and make improvements where required. This is a future project currently going through project planning phase. Linked to developing a forward plan of schemes. Intention to form part of Kirklees transport strategy
G.54	Voluntary Clean Air Zone Feasibility Study	Policy Guidance and Development Control	Low Emissions Strategy	TBC	TBC	Kirklees Environmental Health	Source of funding to be confirmed	NO	Not Funded		Planning	NO2 & PM	See Appendix F	Proposed, there has no progress with this over the last 12 months	The plan for this project is to undertake a feasibility assessment to determine the costs and impacts of both a Chargeable and Non-Charging Clean Air Zone.
G.55	Study into the impact of topography onto clean bus technology	Traffic management	Other	TBC	TBC	Kirklees Environmental Health	Source of funding to be confirmed	NO	Not Funded		Planning	NO2 & PM	See Appendix F	Proposed, there has no progress with this over the last 12 months	The plan for this project is to undertake a research project that looks into the impact topography on ULEV Bus Technology. This is a future project currently going through project planning phase

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G.56	Project to engage with public on solid fuel regarding compliance into UK Clean Air Strategy	Public Information	Other	TBC	TBC	Kirklees Environmental Health	Source of funding to be confirmed	NO	Not Funded		Planning	NO2 & PM	See Appendix F	Proposed	The plan for this project is to devise and run a comms project for both the domestic and commercial sector to promote clean air and smokeless solid fuel practices. This is a future project currently going through project planning phase
G.57	Feasibility study into changing internal governance and decision making to further incorporate air quality	Policy Guidance and Development Control	Other	TBC	TBC	Kirklees Environmental Health	Source of funding to be confirmed	NO	Not Funded		Planning	NO2 & PM	See Appendix F	Proposed, there has no progress with this over the last 12 months	The plan for this project is to undertake an assessment of council working practices and identify areas where improvement could reduce emissions and benefit air quality. This is a future project currently going through project planning phase
G.58	Feasibility Study into On street electric vehicle charging solutions	Promoting Low Emission Transport	Procuring alternative Refuelling infrastructure to promote Low Emission Vehicles, EV recharging, Gas fuel recharging	2023	TBC	Environmental Health	Source of funding to be confirmed	NO	Not Funded	£1 million - £10 million	Implementation	NO2 & PM	See Appendix F	Active	A bid has been submitted to City Region Sustainable Transport Settlement (CRSTS) which is managed by WYCA, for a project involving innovative ways of installing charge points on our streets on a trial basis and a free loan "try before you buy" for local residents. A Full Business Case is intended to be submitted later this Summer.
G.59	Creation of a delivery plan for Kirklees EV Charging	Promoting Low Emission Transport	Procuring alternative Refuelling infrastructure to promote Low Emission Vehicles, EV recharging, Gas fuel recharging	2020	2026	Kirklees Environmental Health	Local Transport Plan	NO	Partially Funded	£1 million - £10 million	Planning	NO2 & PM	See Appendix F	Active	This will be contained with the EV Strategy (see G19) and will identify national, regional and local funding sources in order take forward the identified schemes and actions and will involve use of various funding sources such as the CRSTS bid in G58

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G.60	Provision of EV Charging in all communities of Kirklees	Promoting Low Emission Transport	Procuring alternative Refuelling infrastructure to promote Low Emission Vehicles, EV recharging, Gas fuel recharging	2022	2030	Kirklees Environmental Health	Council Budget	NO	Partially Funded	£1 million - £10 million	Planning	NO2 & PM	See Appendix F	Active	The plan for this project is to provide charging to each council ward to meet ULEV demands. This will be contained within the EV Strategy (see G19).
G.61	Improvements to the Cycling Network, linking all the Kirklees Towns and with neighbouring districts	Transport Planning and Infrastructure	Cycle network	TBC	TBC	Kirklees Economy and Infrastructure	Source of funding to be confirmed	NO	Not Funded		Planning	NO2 & PM	See Appendix F	Proposed	The plan for this project is to maintain the current cycling infrastructure and identify where there are gaps between cycle only routes between the major Kirklees towns. Where towns are not connected, this project aim is to connect them with cycle only infrastructure. This is a future project currently going through project planning phase
G.62	Use of Technology and publicity to incentivise and increase Active travel during commute and business activities	Public Information	Other	TBC	TBC	Kirklees Public Health Environmental Health Transport University of Huddersfield	Source of funding to be confirmed	NO	Not Funded		Planning	NO2 & PM	See Appendix F	Proposed, there has been no progress with this action over the last 12 months	The plan for this project is to work with Huddersfield University and a 3rd party company to develop an app that monitors travel and recommend mode of transport. This is a future project currently going through project planning phase. Partnership with Huddersfield University. Development of this project would require partnership with an appropriate business partner, as yet identified
G.63	Project to promote and incentivise working at home to reduce commuter miles	Promoting Travel Alternatives	Encourage / Facilitate home-working	TBC	TBC	Kirklees Council Environmental Health	Source of funding to be confirmed	NO	Not Funded		Aborted	NO2 & PM	See Appendix F	Aborted, the Council adopted homeworking procedures during the COVID pandemic and has continued with these since.	Aborted, the Council adopted homeworking procedures during the COVID pandemic and has continued with these since. Homeworking was used in some form by companies and other organisations during the pandemic

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														Homeworking was used in some form by companies and other organisations during the pandemic	
G.64	E.V research project to identify appropriate demographics and locations within the district.	Promoting Low Emission Transport	Promoting Low Emission Transport	2022	2026	Kirklees Environmental Health & Public Health	Local Transport Plan	NO	Funded	< £10k	Planning	NO2 & PM	See Appendix F	Completed	A report undertaken in 2023/24 by the Energy Savings Trust is now completed. This will feed into the Kirklees EV Strategy
G.65	Feasibility study into the integration of National and Local UTMC	Traffic Management	UTC, Congestion management, traffic reduction	TBC	TBC	Kirklees UTMC & National Highways	Source of funding to be confirmed	NO	Not Funded		Planning	NO2 & PM	See Appendix F	Proposed, there has been no progress with this action over the last 12 months	Project will look at the feasibility of integrating local and national UTMC, which would allow for whole network reactivity during traffic events. This is a future project currently going through project planning phase
G.66	Feasibility study into the use of anti-idling measures as a control on emissions, giving focus to areas of poor air quality	Traffic Management	Other	2022	2026	Environmental Health	Council Budget	NO	Not Funded	< £10k	Planning	NO2 & PM	See Appendix F	Proposed	Proposal to undertake feasibility study into the introduction of anti-idling, prioritising areas where there is evidence, through monitoring, there are air quality problems.
G.67	E.V Salary Sacrifice Scheme	Promoting Low Emission Transport	Other	2020	2026	Environmental Health	Council Budget	NO	Not Funded	< £10k	Implementation	NO2 & PM	See Appendix F	Active	Provide affordable E.V's to council staff to benefit grey fleet and domestic traffic. This will be contained within the EV Strategy (see G19). It is anticipated that this will "go live" later in 2024.

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G.68	£1million E.V Infrastructure Project	Transport Planning and Infrastructure	Other	2020	2025	Environmental Health	Council Budget	NO	Funded	£500k - £1 million	Implementation	NO2 & PM	See Appendix F	Active	Install E.V charging infrastructure at strategic locations to promote uptake of E.V. This will be contained within the EV Strategy (see G19) and is intended to be spent in financial year 2024/2025
AQMA1.1	Install Split Cycle Offset Optimisation technique (SCOOT) Traffic Managements System within AQMA 1	Traffic Management	UTC, Congestion management, traffic reduction	2013	2013	Kirklees Highways UTC	Council Budget	NO	Funded	£100k - £500k	Completed	NO2 & PM	See Appendix F	Complete	Reduction of pollutants in AQMA 1 of 12ug/m3 and given rise to further works to improve the system. This was stage 1 of a multistage improvement project with the aim to reduce emissions through the use of technology to improve flow at junctions. The SCOOT facility within this AQMA was upgraded in 2023.
AQMA1.2	Feasibility Study to Alter SCOOT to incorporate actual Air Quality pollution levels	Traffic Management	UTC, Congestion management, traffic reduction	2017	2017	Kirklees Highways UTC	Council Budget	NO	Funded	£100k - £500k	Completed	NO2 & PM	See Appendix F	Complete	This project was a pre-requisite for the development of project AQMA.1.3 and resulted in collaborative working with our business partners to develop a virtual emissions model to improve UTMC.
AQMA1.3	Kirklees "Virtual Emissions Monitoring Project" to rationale SCOOT system	Traffic Management	UTC, Congestion management, traffic reduction	2018	2019	Kirklees Highways UTC / 3rd Party Partner	Council Budget	NO	Funded	£100k - £500k	Completed	NO2 & PM	See Appendix F	Complete	Stage 2 of a multistage Air Quality UTMC improvement project. Stage 3 contained within P.9 and awaiting funding
AQMA1.4	Cooper Bridge Road Improvements Project	Traffic Management	Other	2021	2025	Kirklees Economy and Infrastructure	Central Transport Fund	NO	Funded	> £10 million	Planning	NO2 & PM	See Appendix F	Planning	The project is a highways improvement scheme within the AQMA and is currently at outline Business Case Stage

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AQMA1.5	Resource Smart Corridor	Traffic Management	UTC, Congestion management, traffic reduction	2020	2025	Kirklees Economy and Infrastructure	Central Transport Fund	NO	Funded	> £10 million	Planning	NO2 & PM	See Appendix F	Planning	The project is a highways improvement scheme within the AQMA and is currently at Business Case Stage
AQMA1.6	Kirklees Northern Orbital Route	Traffic Management	UTC, Congestion management, traffic reduction	No date set	TBC	Kirklees Economy and Infrastructure	Central Transport Fund	NO	Not Funded		Planning	NO2 & PM	See Appendix F	Concept	The project is a highways improvement scheme within the AQMA and is a future project currently going through project planning phase
AQMA1.7	Trial of Smart UTMC Technology systems within relevant AQMAs	Traffic Management	UTC, Congestion management, traffic reduction	2021	2022	Kirklees Environmental Health / UTC	Council Budget	NO	Funded	£100k - £500k	Aborted	NO2 & PM	See Appendix F	Aborted	The project is a Traffic Light improvement scheme within the AQMA and is a future project currently aborted
AQMA2.1	A640 Road improvements (Mirfield to Dewsbury)	Traffic Management	UTC, Congestion management, traffic reduction	Estimated >2021	TBC	Kirklees Economy and Infrastructure	Central Transport Fund	NO	Funded	£1 million - £10 million	Planning	NO2 & PM	See Appendix F	Concept	The project is a highways improvement scheme within the AQMA and is at very early stages. Pre outline business case stage
AQMA2.2	Program of Deep Cleaning to Paths and Road within the AQMA	Traffic Management	UTC, Congestion management, traffic reduction	2014	Ongoing	Kirklees Environmental Health	Council Budget	NO	Funded	£10k - 50k	Implementation	Short Term PM10 Exceedances	See Appendix F	Active	AQMA now compliant after this measure was put into place. Number of exceedance days fell from 36 to 6.
AQMA2.3	Extension of Ravensthorpe Train Station	Alternatives to private vehicle use	Other	2018	2019	West Yorkshire Combined Authority	Central Transport Fund	NO	Funded	£500k - £1 million	Completed	NO2 & PM	See Appendix F	Complete	The project is a Network Rail improvement scheme within the AQMA and is complete
AQMA2.4	Kirklees "Virtual Emissions Monitoring Project" to rationale SCOOT system	Traffic Management	UTC, Congestion management, traffic reduction	Estimated 2020	2021	Kirklees Highways UTC / 3rd Party Partner	Council Budget	NO	Funded	£100k - £500k	Implementation	NO2 & PM	See Appendix F	Active	Stage 2 of a multistage Air Quality UTMC improvement project. Stage 3 contained within P.9 and awaiting funding

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AQMA2.5	Kirklees Northern Orbital Route	Traffic Management	UTC, Congestion management, traffic reduction	No date set	TBC	Kirklees Economy and Infrastructure	Central Transport Fund	NO	Funded	£1 million - £10 million	Planning	NO2 & PM	See Appendix F	Concept	The project is a highways improvement scheme within the AQMA and is a future project currently going through project planning phase
AQMA2.6	Trial of Smart UTMC Technology systems within relevant AQMAS	Traffic Management	UTC, Congestion management, traffic reduction	2021	2022	Kirklees Environmental Health / UTC	Council Budget	NO	Funded	£100k - £500k	Aborted	NO2 & PM	See Appendix F	Aborted	The project is a Traffic Light improvement scheme within the AQMA and is a future project currently aborted
AQMA3.1	A629 Road improvements as part of Halifax to Huddersfield Road Scheme	Traffic Management	UTC, Congestion management, traffic reduction	2020	TBC	Kirklees Economy and Infrastructure	Central Transport Fund	NO	Funded	£1 million - £10 million	Planning	NO2 & PM	See Appendix F	Proposed	The project is a highways improvement scheme within the AQMA and is currently at Business Case Stage, and submission of air quality impact assessments
AQMA3.2	Assessment of Cycling Infrastructure between Ainley Top and Huddersfield Town Centre	Promoting Travel Alternatives	Promotion of cycling	2020	TBC	Kirklees Economy and Infrastructure	Central Transport Fund	NO	Funded	£1 million - £10 million	Planning	NO2 & PM	See Appendix F	Planning	The project is a cycling / highways improvement scheme within the AQMA and is currently at Business Case Stage
AQMA3.3	Feasibility into the development of System Activated Planned Cycles	Traffic Management	UTC, Congestion management, traffic reduction	No set date	TBC	Kirklees UTC	Estimated to be Council Budgets	NO	Funded	£50k - £100k	Planning	NO2 & PM	See Appendix F	Concept	The project is a UTMC improvement scheme within the AQMA and is a future project currently going through project planning phase
AQMA4.1	Study into the impact of speed control along the national highway as an emissions	Transport Planning and Infrastructure	Other	2020	TBC	Environmental Health / National Highways	Council Budget	NO	Funded	£10k - 50k	Planning	NO2 & PM	See Appendix F	Proposed, there has been no progress with this action over the last 12 months	Study into the impact of speed control along the national highway as an emissions reduction tool. This is a future project currently going through project planning phase

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	reduction tool.														
AQMA 4.2	Trial of NOx absorbent material integrated into roundabout design	Traffic Management	UTC, Congestion management, traffic reduction	2020	2020/21	Environmental Health	Council Budget	NO	Funded	£10k - 50k	Completed	NO2 & PM	See Appendix F	Completed	The project is to redesign Whitehall Road East / West roundabout install green infrastructure where applicable into highway design to bring about NO2 concentrations. Roundabout realignment works have now completed
AQMA5.1	Free City Bus for Dewsbury Town Centre	Alternatives to private vehicle use	Other	2006	Ongoing	Kirklees Economy and Infrastructure	Council Budget	NO	Funded	£100k - £500k	Implementation	NO2 & PM	See Appendix F	Active	Dewsbury freetownbus
AQMA5.2	A640 Road improvements (Mirfield to Dewsbury)	Traffic Management	UTC, Congestion management, traffic reduction	Estimated >2021	TBC	Kirklees Economy and Infrastructure	Central Transport Fund	NO	Not Funded		Planning	NO2 & PM	See Appendix F	Concept	The project is a highways improvement scheme within the AQMA and is at very early stages. https://www.kirklees.gov.uk/beta/transport-roads-and-parking/mirfield-to-dewsbury-to-leeds.aspx Funding for this project has now been cut due to the current economic situation
AQMA5.4	Install Split Cycle Offset Optimisation technique (SCOOT) Traffic Management System	Traffic Management	UTC, Congestion management, traffic reduction	2019	2021	Kirklees Highways UTC	Council Budget	NO	Funded	£500k - £1 million	Completed	NO2 & PM	See Appendix F	Complete	This is stage 1 of a multistage improvement project with the aim to reduce emissions through the use of technology to improve flow at junctions. The system was subsequently refurbished in 2019.
AQMA5.5	Kirklees "Virtual Emissions Monitoring Project" to rationale	Traffic Management	UTC, Congestion management, traffic reduction	Estimated 2020	TBC	Kirklees Highways UTC / 3rd Party Partner	Council Budget	NO	Funded	£500k - £1 million	Implementation	NO2 & PM	See Appendix F	Active	Stage 2 of a multistage Air Quality UTMC improvement project. Stage 3 contained within P.9 and awaiting funding

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	SCOOT system														
AQMA5.6	Trial of Smart UTMC Technology systems within relevant AQMAS	Traffic Management	UTC, Congestion management, traffic reduction	2021	2022	Kirklees Environmental Health / UTC	Council Budget	NO	Funded	£500k - £1 million	Planning	NO2 & PM	See Appendix F	Planning	The project is a Traffic Light improvement scheme within the AQMA and is a future project currently going through project planning phase.
AQMA 5.7	Installation of Green Screen at Eastborough J&I School	Other	Other	2020	2020/21	Kirklees Environmental Health	Council Budget	NO	Funded	£10k - 50k	Aborted	NO2 & PM	See Appendix F	Aborted	The design of the Green Screen is to improve visual amenity and also provide a barrier between the school playground and the ring road. Further inspection of the site in 2022 highlighted difficulties in potentially installing the green screen
AQMA6.1	A629 Road improvements as part of Halifax to Huddersfield Road Scheme	Traffic Management	UTC, Congestion management, traffic reduction	2020	2021	Kirklees Economy and Infrastructure	Central Transport Fund	NO	Funded	> £10 million	Planning	NO2 & PM	See Appendix F	Planning	The project is a highways improvement scheme within the AQMA and is currently at Business Case Stage - https://www.kirklees.gov.uk/beta/transport-roads-and-parking/a629.aspx
AQMA6.2	Install Split Cycle Offset Optimisation technique (SCOOT) Traffic Management System	Traffic Management	UTC, Congestion management, traffic reduction	2019	2021	Kirklees Highways UTC	Council Budget	NO	Funded	£500k - £1 million	Completed	NO2 & PM	See Appendix F	Complete	MOVA was originally installed at this junction. Subject to funding there are plans to upgrade at this junction
AQMA6.3	Kirklees "Virtual Emissions Monitoring Project" to	Traffic Management	UTC, Congestion management, traffic reduction	Estimated 2020	2021	Kirklees Highways UTC / 3rd Party Partner	Council Budget	NO	Funded	£500k - £1 million	Implementation	NO2 & PM	See Appendix F	Planning	Stage 2 of a multistage Air Quality UTMC improvement project. Stage 3 contained within P.9 and awaiting funding

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	rationale SCOOT system														
AQMA6.4	Trial of Smart UTMC Technology systems within relevant AQMAS	Traffic Management	UTC, Congestion management, traffic reduction	2021	2022	Kirklees Environmental Health / UTC	Council Budget	NO	Funded	£500k - £1 million	Planning	NO2 & PM	See Appendix F	Planning	The project is a Traffic Light improvement scheme within the AQMA and is a future project currently going through project planning phase.
AQMA7.1	Install Split Cycle Offset Optimisation technique (SCOOT) Traffic Managements System	Traffic Management	UTC, Congestion management, traffic reduction	2019	2021	Kirklees Highways UTC	Council Budget	NO	Funded	£500k - £1 million	Completed	NO2 & PM	See Appendix F	Complete	This is stage 1 of a multistage improvement project with the aim to reduce emissions through the use of technology to improve flow at junctions.
AQMA7.2	Kirklees "Virtual Emissions Monitoring Project" to rationale SCOOT system	Traffic Management	UTC, Congestion management, traffic reduction	Estimated 2020	2021	Kirklees Highways UTC / 3rd Party Partner	Council Budget	NO	Funded	£500k - £1 million	Implementation	NO2 & PM	See Appendix F	Planning	Stage 2 of a multistage Air Quality UTMC improvement project. Stage 3 contained within P.9 and awaiting funding
AQMA7.3	Trial of Smart UTMC Technology systems within relevant AQMAS	Traffic Management	UTC, Congestion management, traffic reduction	2021	2022	Kirklees Environmental Health / UTC	Council Budget	NO	Funded	£500k - £1 million	Planning	NO2 & PM	See Appendix F	Planning	The project is a Traffic Light improvement scheme within the AQMA and is a future project currently going through project planning phase
AQMA8.1	Study into the impact of speed control along the national highway	Transport Planning and Infrastructure	Other	2020	TBC	Environmental Health / National Highways	Council Budget	NO	Not Funded		Planning	NO2 & PM	See Appendix F	Planning	Study into the impact of speed control along the national highway as an emissions reduction tool. This is a future project currently going through project planning phase

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	as an emissions reduction tool.														
AQMA9.1	Free City Bus for Huddersfield Town Centre	Alternatives to private vehicle use	Other	2006	Ongoing	Kirklees Economy and Infrastructure	Council Budget	NO	Funded	< £10k	Implementation	NO2 & PM	See Appendix F	Active	Huddersfield freetownbus
AQMA9.2	Huddersfield Heat Network Scheme	Other	Other	2020	TBC	Kirklees Economy and Infrastructure	Central Transport Fund	NO	Funded	> £10 million	Planned	NO2 & PM	See Appendix F	Active	Currently at Business Case Stage
AQMA9.3	Resource Smart Corridor	Traffic Management	UTC, Congestion management, traffic reduction	2020	TBC	Kirklees Economy and Infrastructure	Central Transport Fund	NO	Not Funded		Planned	NO2 & PM	See Appendix F	Planned	The project is a highways improvement scheme within the AQMA and is currently at Business Case Stage
AQMA9.4	Huddersfield Southern Gateway Transport Scheme	Traffic Management	UTC, Congestion management, traffic reduction	2021	2025	Kirklees Economy and Infrastructure	Central Transport Fund	NO	Funded	£1 million - £10 million	Planned	NO2 & PM	See Appendix F	Planned	The project is a highways improvement scheme within the AQMA and is currently at Business Case Stage. Huddersfield Southern Corridors
AQMA9.5	Huddersfield Ring Road Junction Improvements	Traffic Management	UTC, Congestion management, traffic reduction	2021	2025	Kirklees Economy and Infrastructure	Central Transport Fund	NO	Funded	£1 million - £10 million	Planned	NO2 & PM	See Appendix F	Active	The project is a highways improvement scheme within the AQMA and is currently at Business Case Stage Huddersfield Southern Corridors
AQMA9.6	Feasibility Study in to Pedestrianizing Areas of Town Centre for Cycling Access	Promoting Travel Alternatives	Promotion of cycling	2021	TBC	Kirklees Economy and Infrastructure	Council Budget	NO	Not Funded		Planned	NO2 & PM	See Appendix F	Concept	

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AQMA9.7	Trans-Pennine Express Improvement Scheme	Alternatives to private vehicle use	Other	2022	TBC	Network Rail, West Yorkshire Combined Authority, Kirklees Council	Central Transport Fund	NO	Funded	> £10 million	Implementation	NO2 & PM	See Appendix F	Active	Currently at Business Case Stage Transpennine Route Upgrade/
AQMA9.8	Kirklees "Virtual Emissions Monitoring Project" to rationale SCOOT system	Traffic Management	UTC, Congestion management, traffic reduction	Estimated 2020	2021	Kirklees Highways UTC / 3rd Party Partner	Council Budget	NO	Funded	£500k - £1 million	Implementation	NO2 & PM	See Appendix F	Planned	Stage 2 of a multistage Air Quality UTMC improvement project. Stage 3 contained within P.9 and awaiting funding
AQMA9.9	Input into the development of the Town Centre Master Plan	Policy Guidance and Development Control	Air Quality Planning and Policy Guidance	2020	2021	Kirklees Environmental Health / Development Control	Council Budget	NO	Funded	< £10k	Implementation	NO2 & PM	See Appendix F	Active	The Huddersfield Blueprint Kirklees Council
AQMA9.10	Trial of Smart UTMC Technology systems within relevant AQMAS	Traffic Management	UTC, Congestion management, traffic reduction	2021	2030	Kirklees Environmental Health / UTC	Council Budget	NO	Not Funded		Planning	NO2 & PM	See Appendix F	Planned	The project is a Traffic Light improvement scheme within the AQMA and is a future project currently going through project planning phase
AQMA10.1	Huddersfield Southern Gateway Transport Scheme	Traffic Management	UTC, Congestion management, traffic reduction	2021	2025	Kirklees Economy and Infrastructure	Central Transport Fund	NO	Funded	£1 million - £10 million	Planned	NO2 & PM	See Appendix F	Active	The project is a highways improvement scheme within the AQMA and is currently at Business Case Stage Huddersfield Southern Corridors
AQMA10.2	Install multin-node SCOOT into traffic light system in AQMA	Traffic Management	UTC, Congestion management, traffic reduction	2018	2019	Kirklees Highways UTC	Council Budget	NO	Funded	£500k - £1 million	Completed	NO2 & PM	See Appendix F	Complete	This is stage 1 of a multistage improvement project with the aim to reduce emissions through the use of technology to improve flow at junctions.

Measure no.	Measure title	Category	Classification	Year measure introduced in AQAP	Estimated / actual completion date	Organisations involved	Funding source	Defra AQ Grant funding	Funding status	Estimated cost of measure	Measure status	Reduction in pollutant / emission from measure	Key Performance Indicator	Progress to date	Comments / barriers to implementation
AQMA10.3	Kirklees "Virtual Emissions Monitoring Project" to rationale SCOOT system	Traffic Management	UTC, Congestion management, traffic reduction	Estimated 2020	TBC	Kirklees Highways UTC / 3rd Party Partner	Council Budget	NO	Funded	£500k - £1 million	Implementation	NO2 & PM	See Appendix F	Planning	Stage 2 of a multistage Air Quality UTMC improvement project. Stage 3 contained within P.9 and awaiting funding
AQMA10.4	Trial of Smart UTMC Technology systems within relevant AQMAS	Traffic Management	UTC, Congestion management, traffic reduction	2021	2022	Kirklees Environmental Health / UTC	Council Budget	NO	Funded	£100k - £500k	Planning	NO2 & PM	See Appendix F	Planning	The project is a Traffic Light improvement scheme within the AQMA and is a future project currently going through project planning phase

2.3 $PM_{2.5}$ – Local authority approach to reducing emissions and/or concentrations

As detailed in Policy Guidance LAQM.PG22 (Chapter 8) and the Air Quality Strategy8, local authorities are expected to work towards reducing emissions and/or concentrations of fine particulate matter (PM2.5). There is clear evidence that PM2.5 (particulate matter smaller than 2.5 micrometres) has a significant impact on human health, including premature mortality, allergic reactions, and cardiovascular diseases.

The Public Health Outcomes Frameworks– D1 indicator, Fraction of mortality attributable to particulate air pollution has recently introduced a "new method" of calculation[9]. We will now report these data within this and future ASRs. Mortality in Kirklees is estimated to be 5.3% compared to the England average of 5.8% and a regional average of 5.1% (based on the most recent 2022).

As such, Kirklees Council is taking the following measures to address $PM_{2.5}$:

- Included $PM_{2.5}$ as key indicator for the Health and Wellbeing Board
- The entire Council area is a smoke control area, and we continue to enforce smoke control legislation. Between April 2023 and March 2024:
- we received forty complaints or enquiries about smoke from domestic chimneys. During this period, we did not service any notices or undertake prosecutions. Warning letters were sent to ten premises.
- we received seventeen complaints or / enquiries regarding smoke from industrial chimneys.
- we did not service any notices or undertake prosecutions. Warning letters were sent to five premises.
- Collaborative working between Public Health, Environmental Health, Planning and Highways to conduct a 2015 baseline Air Quality Model for the whole Kirklees District for $PM_{2.5}$ as part of local plan works.
- Our current Air Quality Action Plan contains measures which assist in reducing local sources of $PM_{2.5}$, as well as nitrogen oxides gas emissions.
- A $PM_{2.5}$ monitor was installed at the Dewsbury Ashworth Grange AURN monitoring site in the Kirklees district in 2022. These data are detailed in this report.
- We are involved with two regional projects involving WYCA and West Yorkshire local authorities. One involves investigating the spatial distribution of non-road PM2.5 emissions, along with consideration of appropriate measures to reduce these emissions. The other is to develop a regional low-cost sensor monitoring network. Both of these projects will be discussed in the ASR for 2025.

[8] Defra. Air Quality Strategy – Framework for Local Authority Delivery, August 2023

[9] Public Health Outcomes Framework - Data - OHID (phe.org.uk)

- Kirklees is collaborating with WYCA, West Yorkshire local authorities and regional universities to develop a regional low-cost sensor monitoring network. We are the procuring authority, and the procurement process will be completed by Summer 2024. Data from the network will be used to:
- increase public awareness and understanding of the sources and health impacts of particulate air pollution
- provide single point of public access to regional PM data
- provide advice to reduce PM exposure via a dedicated public facing PM information webpage hosted on the WYCA website. A live link to a dedicated particle information data dashboard will be provided. This project also will be reported in more detail in next years' ASR.

3. Air Quality monitoring data and comparison with Air Quality Objectives and national compliance

This section sets out the monitoring undertaken during 2023 and how it compares with the relevant air quality objectives. Monitoring results are presented for a five-year period between 2019 and 2023 to allow trends to be identified and discussed.

3.1. Summary of monitoring undertaken

Automatic monitoring sites

Kirklees undertook automatic (continuous) monitoring at three sites during 2023. Table A.1 – Details of automatic monitoring site

in Appendix A shows the details of the automatic monitoring sites. NB. Local authorities do not have to report annually on the following pollutants: 1,3 butadiene, benzene, carbon monoxide and lead, unless local circumstances indicate there is a problem. The Council's air quality monitoring webpage presents automatic monitoring results for Kirklees, with automatic monitoring results also available through the UK-Air website.

Maps showing the location of the monitoring sites are provided in Appendix D. Details on how the monitors are calibrated and how the data has been adjusted are included in Appendix C.

Of the three continuous monitoring stations, one is an AURN (Automatic Urban and Rural Network) site (Dewsbury Ashworth Grange), whilst the other two are Council owned.

Data from the Council owned air stations over recent years is limited. The age of the equipment has resulted in major breakdowns and either the loss of or corruption of data. In February 2020 we modernised the data collection system and equipment. In 2022 we procured a service and maintenance contract which overhauled some of the equipment. Unfortunately, in 2023 further issues occurred which meant we would not be able to produce ratified data for annual reporting purposes. As a result, we stopped monitoring at the air stations. Data from the two Council monitoring stations are therefore not reported within this report. Please see the 2023 ASR for the most recent full reporting of these data[10]. This does affect reporting of data from the Dewsbury Ashworth Grange AURN site.

We previously purchased five Zephyr “low-cost” sensors to provide real-time data. Our intention was to begin reporting the data once we had tested and understood the outputs. A new West Yorkshire project funded by Defra (mentioned in Section 2.3 (Local Authority Approach to Reducing Emissions and/or Concentrations) will soon introduce new low cost sensors and it is hoped that the existing sensors and the analyses of their data will be incorporated into this project. In December 2023, the British Standards Institute published their Code of Practice into the selection, deployment and quality control of low-cost sensor

[10] Kirklees Council Annual Status Report 2023

systems in outdoor ambient air[11]. Reporting of the Council's low-cost sensor data will have due regard for this guidance.

Non-automatic monitoring sites

Kirklees undertook non-automatic (i.e. passive) monitoring of NO_2 at 120 sites during 2023. Table A.2 – Details of non-automatic monitoring sites

in Appendix A presents the details of the non-automatic sites.

Maps showing the location of the monitoring sites are provided in Appendix D. Further details on Quality Assurance/Quality Control (QA/QC) for the diffusion tubes, including bias adjustments and any other adjustments applied (e.g. annualisation and/or distance correction), are included in Appendix C.

3.2. Individual pollutants

The air quality monitoring results presented in this section are, where relevant, adjusted for bias, annualised (where the annual mean data capture is below 75% and greater than 25%), and distance corrected. Further details on adjustments are provided in Appendix C.

3.2.1 Nitrogen Dioxide (NO_2)

Table A.3 – Annual mean NO2 monitoring results: automatic monitoring (µg/m3)

and Table A.4 – Annual mean NO2 monitoring results: non-automatic monitoring (µg/m3) in Appendix A compare the ratified and adjusted monitored NO_2 annual mean concentrations for the past five years with the air quality objective of 40µg/m^3. Note that the concentration data presented represents the concentration at the location of the monitoring site, following the application of bias adjustment and annualisation, as required (i.e. the values are exclusive of any consideration to fall-off with distance adjustment).

The full 2023 dataset of monthly mean diffusion tube values is provided in Appendix B. Note that the concentration data presented in **Error! Reference source not found.** includes distance corrected values, only where relevant.

Table A.5 – 1 Hour mean NO2 monitoring results, number of 1hour means greater than 200µg/m3 in Appendix A compares the ratified continuous monitored NO_2 hourly mean concentrations for the past five years with the air quality objective of 200µg/m^3, not to be exceeded more than 18 times per year.

The vast majority of of our 2023 NO_2 data are obtained from our non automatic (diffusion tube) monitoring network. We use an analytical laboratory to analyse our diffusion tubes. A detailed discussion of the laboratory's performance in 2023 and subsequent dialogue with the LAQM Helpdesk is found within Appendix C.

[11] December 2023, BSI on behalf of Defra, PAS 4023:2023 (Selection, deployment and quality control of low-cost air quality sensor systems in outdoor ambient air – Code of Practice)

Figure A.1 in Appendix A shows aggregated concentration trends over the last twelve years for our diffusion tube locations throughout the district. Figure A.2 in Appendix A shows the percentage change in annual mean NO_2 concentrations on a year on year basis, again for our diffusion tube monitoring locations. Figure A1 shows a reduction in aggregated concentrations in 2023 compared to 2021 and 2022. Figure A.1 also shows the ongoing general decline in concentration since 2012. Figure A.2 shows an approximate 7% reduction in concentrations in 2023 compared to 2022.

Further analysis of annual mean NO_2 diffusion tube data (following appropriate bias adjustment, annualisation and distance correction) has now been undertaken for each of our AQMAs, declared due to exceedance of the annual mean objective. Figures A.3 to Figure A.31 in Appendix A detail NO_2 annual mean concentrations for the five-year period from 2019 to 2023 within our nine AQMAs originally declared for exceedance of the annal mean objective.

To aid interpretation of the NO_2 annual mean data within each AQMA, we have created a new table in Appendix A. This is Table A.4a Annual Mean NO_2 Monitoring Results at Receptor Façade: Non-Automatic Monitoring ($\mu g/m^3$). This table also enables comparison against the annual mean air quality objective for NO_2, considering the guidance within LAQM.TG (22), specifically paragraphs 1.62 to 1.65 and Box 1.1 – Examples of Where Air Quality Objectives Should Apply.

In 2023, one diffusion tube monitoring location within the Kirklees district exceeded the annual mean NO_2 objective after bias adjustment, annualisation and distance correction, this being K40 (AQMA 5). All other diffusion tube monitoring locations (both inside and outside of AQMAs) were below the annual mean NO_2 objective after bias adjustment, annualisation and distance correction.

The implications for each AQMA are discussed in turn. In doing so, we are applying paragraph 3.57 of LAQM Technical Guidance (TG) 2022, which states:

"The revocation of an AQMA should be considered following three consecutive years of compliance with the relevant objective as evidenced through monitoring. Where NO_2 monitoring is completed using diffusion tubes, to account for the inherent uncertainty associated with the monitoring method, it is recommended that revocation of an AQMA should be considered following three consecutive years of annual mean NO_2 concentrations being lower than 36 $\mu g/m^3$ (i.e. within 10% of the annual mean NO_2 objective). There should not be any declared AQMAs for which compliance with the relevant objective has been achieved for a consecutive five-year period."

Furthermore, in considering intended revision of our current AQAP (2019-2024) we note the following statement taken Defra' LAQM portal regarding three or more years of compliance with the air quality objectives[12]:

"Unless a likely exceedance has been identified in the area, Defra does not appraise AQAPs for AQMAs that have been in compliance for five years. Local Authorities are instead advised to revoke the AQMA and develop a local Air Quality Strategy".

AQMA 1 - Bradley

[12] FAQ 142 - Three or more years of compliance with air quality objectives | LAQM (defra.gov.uk)

This AQMA was declared in 2008 for exceedance of the annual mean objective for NO_2. Within the five-year reporting period of this of this ASR, there has been continued compliance with this objective.

We note paragraph 4.10 of LAQM Policy Guidance (PG) 2022, which states:

"Authorities wishing to revoke or reduce an AQMA can do so following review. For revocation this should demonstrate that air quality objectives are being met and will continue to do so. In other words, they should have confidence that the improvements will be sustained. Further information is provided in the Technical Guidance, but typically this is after three years or more compliance. It is not advisable for the revocation of an AQMA to be based solely upon compliance in a year not representative of long-term trends. For example, compliance being reached in 2020 may not be representative of long-term trends in pollutant concentrations due to the change in activity observed across the UK as a result of COVID-19. Where 2020 is one of many consecutive years of compliance, this may be considered for revocation. If authorities wish to make any changes to AQMAs, whether declaration, amendment or revocation, based upon 2020 data, please contact the LAQM helpdesk to discuss your approach."

Following our 2023 ASR, we have been in discussion with the LAQM Helpdesk[13] regarding AQMA 1 with regard to potential revocation within an area where a major road scheme is proposed. The Helpdesk then liaised with Defra. This dialogue is detailed further in Appendix C. The Map D1 in Appendix D and the AQMA chart in Appendix A provide further information and context. The conclusions of these discussions were:

*"**AQMA 1 -** With 5 years full compliance and no likely exceedance identified, we recommend that AQMA 1 is revoked. Kirklees should have a local air quality strategy in place to manage the risk of the future road scheme and ensure air quality remains a high-profile issue, thereby enabling a quick response should there be any deterioration in condition. See LAQM Policy Guidance for more information."*

On this basis therefore, we will commence with formal revocation following submission and appraisal of this report. We will continue monitoring to evaluate compliance in future years, with data being reported in future ASRs. Furthermore, in accordance with FAQ 142 of Defra's LAQM portal, we will not be including this AQMA in our forthcoming revised AQAP.

AQMA 2 – Ravensthorpe / Scouthill

This AQMA was declared in 2009 due to exceedance of the annual mean objective for PM_{10}. We therefore discuss this AQMA in more detail in section 3.2.2., Particulate Matter (PM_{10}). Of note however are 2023 NO_2 diffusion tube data within this AQMA. In early 2023, we added another diffusion tube within this AQMA, tube K30. Map D11 in Appendix D and the AQMA chart in Appendix A highlight NO_2 diffusion tube monitoring within this AQMA. Tube K30 is representative of façade exposure and the annual mean after annualisation and bias adjustment was 38.2 µg/m^3. Tube 30 is located on an uphill gradient where road traffic emissions are greater. We will continue to monitor at this location to determine longer term trends.

[13] LAQMHelpdesk@bureauveritas.com

AQMA 3 – Ainley Top

This AQMA was declared in 2017 due to exceedance of the annual mean objective for NO_2. This AQMA is split into two separate areas, as detailed in the Map D2 in Appendix D, these being the areas either side of the Ainley Top roundabout encompassing a section of the A629 Halifax Road to the south-east of the roundabout and the A643 Lindley Moor Road to the west. In 2023 there were two diffusion tubes co-located with our redundant air quality monitoring station adjacent to the Halifax Road section of the AQMA (K16 and K17, in previous years there were triplicate co-located tubes here). One tube, K71, is located within the Lindley Moor Road section of the AQMA, at roadside on the westbound carriageway. Distance corrected data for this tube is considered to be representative of annual mean exposure as this section of the AQMA is confined to those residential properties closest to the A643 on the westbound carriageway only.

Data for the five years 2019-2023, as detailed within Table A4 (Annual Mean NO_2 Monitoring Results: Non-Automatic Monitoring (µg/m^3)) shows **roadside** annual mean concentrations all less than 36 µg/m^3, with the inference that receptor façade concentrations will be even lower due to greater distance from the kerb. It is therefore our intention to start to formally revoke the Lindley Moor Road section of the AQMA following Defra's appraisal of this report. This will involve varying the legal AQMA 3 order.

The A629 Halifax Road section of the AQMA is more complex. Halifax Road leading to the Ainley Top roundabout has a downhill and uphill carriageway. Traffic on the uphill carriageway comes from the direction of Huddersfield town centre.

All residential receptors within this AQMA are located adjacent to the downhill carriageway. Receptors on the uphill carriageway were considered to be sufficiently distant from the roadside for receptor façade concentrations to exceed the annual mean at declaration in 2017. This was determined by an ADMS[14] dispersion modelling exercise in support of the detailed assessment recommending declaration of this AQMA (2016 ASR)[15].

Between 2019 and 2023 there have been no diffusion tubes on the downhill carriageway. Monitoring was previously undertaken at one location adjacent to the downhill carriageway and within the AQMA for the period 2004 to 2013. During this period, roadside concentrations were greater than 40 µg/m^3 for every year except 2013, when concentrations were 37.4 µg/m^3.

We have routinely reported diffusion tube data from our co-located (now redundant), roadside air quality monitoring station adjacent to (but just outside, see Map D2 in Appendix D) the AQMA as an indicator of roadside NO_2 on the uphill carriageway. These are tubes K16 and K17 and data within table A.4 confirms roadside concentrations below the objective for the period 2019-2023.

We therefore conclude that we cannot revoke the Halifax Road section of the AQMA until we have undertaken further monitoring using diffusion tubes along the downhill carriageway of Halifax Road. Monitoring commenced at two roadside locations in 2024, and we will subsequently report on 2024 from these locations in our 2025 ASR.

[14] Atmospheric Dispersion Modelling System

[15] Ainley Top Detailed Assessment as part of the Kirklees Council 2016 Air Quality Annual Status Report

We therefore conclude that there is currently insufficient evidence to revoke this section of the AQMA until further monitoring data are available. We are happy to be guided by Defra / LAQM Helpdesk on the length of monitoring data that would be required in these circumstances to then determine revocation. Map D2 in Appendix D shows the area of the AQMA we will revoke and the area we will retain.

To summarise, we intend to revoke the Lindley Moor section of the AQMA following appraisal of this ASR, by amending the AQMA order but retaining the Halifax Road section until sufficient monitoring data have been obtained. Furthermore, in accordance with FAQ 142 of Defra's LAQM portal, we will not be including the Lindley Moor section of the AQMA in our forthcoming revised AQAP. We will continue monitoring to evaluate compliance in future years, with data being reported in future ASRs.

AQMA 4 - Birkenshaw

This AQMA was declared in 2017 due to exceedance of the annual mean objective for NO_2. As with AQMA 3, AQMA 4 is split into two separate areas, as detailed in the Map D3 in Appendix D, these being the area adjacent to the A651 Bradford Road / A58 Whitehall Road East roundabout, with the second area being adjacent to the M62 motorway and either side of the A651 Bradford Road carriageways. Roadside concentrations for the five year period 2019-2023 all show compliance with the objective and all below 36 µg/m^3 (see tables A.2 and A.4 in Appendix A, along with the chart in figure A.1 entitled "AQMA 4 – Birkenshaw – Roadside annual mean NO_2 concentrations". All monitoring locations are considered representative of the highest concentrations within both areas of the AQMA.

On this basis therefore, we recommend revocation of this AQMA following submission and approval by Defra of this ASR. We will continue monitoring to evaluate compliance in future years, with data being reported in future ASRs. Furthermore, in accordance with FAQ 142 of Defra's LAQM portal, we will not be including this AQMA in our forthcoming revised AQAP.

AQMA 5 - Eastborough

This AQMA was declared in 2017 due to exceedance of the annual mean objective for NO_2. There was continued exceedance of the annual mean objective for NO_2 at residential facade receptor within this AQMA during 2023. Four out of the last five years have exhibited exceedance at receptor facade (concentrations in the pandemic year of 2020 were 39.6 µg/m^3 at façade). We do note a welcome reduction in annual mean concentrations at façade from 50.8 µg/m^3 in 2019 to marginal exceedance of 40.1 µg/m^3 in 2024. Map D4 in Appendix D shows the spatial extent of this AQMA. **On this basis therefore, we will retain this AQMA, and actions to reduce emissions and concentrations within this AQMA will be proposed in our forthcoming revision of our AQAP. Monitoring will continue in this AQMA.**

AQMA 6 - Edgerton

This AQMA was declared in 2017 due to exceedance of the annual mean objective for NO_2. This small AQMA encompasses seven residential properties at the junction of A629 Halifax Road and Blacker within Edgerton, Huddersfield. Whilst roadside concentrations within this AQMA have been greater than 40 µg/m^3 for three of the last five years, receptor façade concentrations for the period 2019 – 2024 have all been below the annual mean objective of 40 µg/m^3. There is one diffusion tube (tube number K3) located in this AQMA (see map D5 in Appendix D), however this is considered to be representative of worst case exposure, and whilst distance corrected concentrations are below the annual mean

objective, these distance corrected concentrations were above 36 µg/m^3 in 2019, 2021 and 2022 respectively (see table A.4a within Appendix A). The chart entitled "AQMA 6 - Edgerton- Roadside annual mean NO_2 concentrations µg/m^3**"** in figure A.1 (Appendix A) details the data from the one diffusion tube within the AQMA, whilst the chart entitled in figure A.1 entitled "Edgerton area- Roadside annual mean NO_2 concentrations µg/m^3" details data from diffusion tube monitoring adjacent to this AQMA.

The above is taken in context of the paragraphs 3.54 and 3.57 of LAQM.TG (22), which state:

Paragraph 3.54 - "It is not advisable for the revocation of an AQMA to be based solely upon compliance in a year not representative of long-term trends. For example, compliance being reached in 2020 may not be representative of long-term trends in pollutant concentrations due to the change in activity observed across the UK as a result of COVID-19 and associated lock down measures. Where 2020 is one of many consecutive years of compliance, this may be considered for revocation."

Paragraph 3.57 - "The revocation of an AQMA should be considered following three consecutive years of compliance with the relevant objective as evidenced through monitoring. Where NO_2 monitoring is completed using diffusion tubes, to account for the inherent uncertainty associated with the monitoring method, it is recommended that revocation of an AQMA should be considered following three consecutive years of annual mean NO_2 concentrations being lower than 36 µg/m^3 (i.e. within 10% of the annual mean NO_2 objective). There should not be any declared AQMAs for which compliance with the relevant objective has been achieved for a consecutive five-year period."

We therefore interpret the above guidance as meaning that revocation should not yet be undertaken, as only 2020 (pandemic year) and 2023 diffusion tube data (bias adjusted, followed by annualisation and distance correction where appropriate) was below 36 µg/m^3, although concentrations have been below the objective for a consecutive five-year period, in this case the period 2019 – 2024. On this basis therefore, **it is our intention not to revoke this AQMA following submission and approval by Defra of this ASR**. We will continue to monitor within and surrounding this AQMA and in 2024 located an additional two diffusion tubes adjacent to the AQMA.

On this basis therefore, we will retain this AQMA, and actions to reduce emissions and concentrations within this AQMA will be proposed in our forthcoming revision of our AQAP. Monitoring will continue in this AQMA.

These data, along with data from our existing diffusion tubes here will be reported in next years' ASR.

Of importance to this AQMA is the is the approval of planning permission[16] for a major road scheme for the A629 Halifax Road corridor within 2023. This arterial route is the main link between junction 24 of the M62 motorway and Huddersfield town centre, with infrastructure improvements proposed for sections of this link away from the vicinity of this AQMA. The air quality impact assessment in support of the application did highlight a "slight adverse" impact on receptors within this AQMA (annual mean objective for NO_2 – the sensitivity test within the assessment suggested a "moderate adverse" impact).

[16] Decision Note (December 2023) for planning application 2021/92734

The assessment predicted an increase of 1.2 µg/m^3 in annual mean NO_2 concentrations, due to an increase in queuing traffic at the Halifax Road / Blacker Road junction in the AQMA post scheme implementation (thought to be due to the overall attractiveness to road users of the link between Huddersfield town centre and junction 24 of the M62 motorway post scheme implementation causing the additional queuing). Discussions are now ongoing on how to mitigate the impact of the scheme on concentrations within the AQMA, possibly involving enhancement of the adaptive traffic control system used for signalisation within the AQMA, in order to reduce congestion and "smooth out" traffic flow to facilitate emission reduction.

AQMA 7 - Liversedge

Map D6 in Appendix D details the geographical extent of this AQMA in Liversedge. This AQMA was declared in 2017 due to exceedance of the annual mean objective for NO_2. This AQMA is split into three separate areas, as detailed in the Map D6. Each of the three areas has a diffusion tube located within it. These being the areas:

- A638 Wakefield Road at Flush, Liversedge, at the junction of Wormald Street and Wakefield Road (diffusion tube K48).
- A638 Wakefield Road at Frost Hill, Liversedge, approaching the junction with the A62 Leeds Road (diffusion tube K34)
- Junction of A649 Halifax Road and A62 Leeds Road, Mill Bridge, Liversedge (diffusion tube K33)

All above three diffusion tube locations are considered to be representative in worse case locations. Tube K48 is at receptor façade, whilst tubes K33 and K34 are at roadside.

K33 roadside concentrations have been below both the annual mean objective of 40 µg/m^3 and the 36 µg/m^3 annual mean value (within 10% of the objective) for the past five years. Considering paragraphs 3.54 and 3.57 of LAQM.TG (22**), it is therefore our intention to amend the AQMA order to revoke this section of the AQMA following submission and approval by Defra of this ASR.** We will continue monitoring to evaluate compliance in future years, with data being reported in future ASRs. Furthermore, in accordance with FAQ 142 of Defra's LAQM portal, we will not be including the Halifax Road / Leeds Road junction area of the AQMA in our forthcoming revised AQAP.

K34 roadside concentrations have been below both the annual mean objective of 40 µg/m^3 and the 36 µg/m^3 annual mean value (within 10% of the objective) for the past five years. Considering paragraphs 3.54 and 3.57 of LAQM.TG (22), **it is therefore our intention to amend the AQMA order to revoke this section of the AQMA following submission and approval by Defra of this ASR.** Furthermore, in accordance with FAQ 142 of Defra's LAQM portal, we will not be including the Wakefield Road, Frost Hill section of the AQMA in our forthcoming revised AQAP.

There has been exceedance at receptor façade within the area of the AQMA at the junction of Wormald Street and Wakefield Road (Flush) in 2021 and 2022 (diffusion tube K48 – see table A.4a in Appendix A). In order to understand this small area of exceedance, we located an additional five diffusion tubes in 2024 to better determine the localised impact of traffic emissions within this section of the AQMA. These data, along with data from our existing diffusion tube locations will therefore be reported within our 2025 ASR. **On this basis therefore we will not be revoking this section of the AQMA, and actions to reduce emissions and concentrations within this section of the AQMA will be proposed in our forthcoming revision of our Air Quality Action Plan (AQAP).**

Map D6 in Appendix D shows the areas of the AQMA we will revoke and the area we will retain.

AQMA 8 - Outlane

Map D7 in Appendix D details this small AQMA which straddles the eastbound and westbound carriageways of the M62 motorway to the west of Huddersfield. This AQMA was declared in 2017 due to exceedance of the annual mean objective for NO_2. Eleven properties are contained within this AQMA, of which five properties are located to the north-east of the motorway adjacent to the eastbound carriageway, with the remaining six to the south-west of the motorway adjacent to the westbound carriageway of the motorway. Historically, monitoring has been undertaken adjacent to the westbound carriageway only – diffusion tube K47. This tube is representative of exposure at the residential property nearest to the motorway. In 2019 this tube showed marginal exceedance of the annual mean objective (40.5 µg/m^3). For the following four years 2020-2023, receptor façade annual mean concentrations have been meeting the objective and also below the 36 µg/m^3 annual mean value (within 10% of the objective).

There is a lack of monitoring data, representative of exposure with regards to the annual mean objective adjacent to the eastbound carriageway. Consequently, in 2024 we located a diffusion tube on the boundary fence of the motorway, closer to the road than the nearby properties within the AQMA. We consider this new tube to be representative of exposure for those properties adjacent to the eastbound carriageway.

We therefore conclude that there is currently insufficient evidence to revoke this section of the AQMA until further monitoring data are available from the tube located adjacent to the eastbound carriageway. We are happy to be guided by Defra / LAQM Helpdesk on the length of monitoring data that would be required in these circumstances to then determine revocation.

To summarise, we intend to retain this AQMA until sufficient monitoring data has been collected. We will liaise with Defra / LAQM Helpdesk on the length of monitoring data that would be required in these circumstances to then determine revocation, and on the approach to be taken for inclusion or otherwise within our revised AQMA.

AQMA 9 – Huddersfield Town Centre

Map D8 in Appendix D details this AQMA which encompasses Huddersfield town centre within the ring road due to exceedance of the annual mean objective for NO_2.

There are several diffusion tubes within this AQMA, the most important of these in terms of compliance with the annual mean objective is K28, located adjacent to the ring road at Southgate, and close to residential receptors. Distance corrected data shows exceedance of the annual mean objective for the three of the last five years, the latest being 2022.

Data from diffusion tube K7 within this AQMA is also of interest. This tube is located on Westgate, a street in the middle of the Huddersfield town centre, (see Map D8 in Appendix 9) characterised by street canyons, and bus routes. Roadside concentrations have been increasing over the past three years, with concentrations in 2022 and 2023 in excess of 40 µg/m^3 (see table A.4a within Appendix A). This location is not representative of exposure with regard to the annual mean objective.

Residential receptors are located elsewhere on Westgate and along neighbouring Trinity Street, which is close to Huddersfield Bus Station and subject to emissions from the bus fleet. In 2024, we have located further diffusion tubes along Westgate and Trinity Street to

investigate NO_2 concentrations further, given the local circumstances of these roads. We will report these data within our 2025 ASR.

Due to recent exceedance of the objective (2022) and the emerging situation along Westgate and Trinity Street in this AQMA, we will therefore retain this AQMA. Actions to reduce emissions and concentrations within this AQMA will be proposed in our forthcoming revision of our AQAP.

AQMA 10 – Thornton Lodge

This AQMA was declared in 2019 due to exceedance of the annual mean objective for NO_2. This AQMA is split into two separate areas, as detailed in the Map D9 in Appendix D, these being the areas:

In the area, there are an estimated:

- thirteen residential properties adjacent to the A62 Manchester Road, north-east of the signalised junction with Longroyd Lane (diffusion tube K49).
- eighteen residential properties adjacent to the A62 Manchester Road, south-west of the signalised junction with the B6432 St Thomas Road (diffusion tubes K50, K76 and K77)

K49 roadside concentrations for the five-year period 2019 – 2024 are below annual mean objective, with highest annual mean concentration being 36.4 µg/m^3 in 2021. This tube is located 3.5 metres from receptor façade, so concentrations will be lower at nearby residential properties within this section of the AQMA**. We therefore conclude that there is sufficient evidence to the amend the AQMA order to revoke the section of the AQMA located adjacent to the A62 Manchester Road, north-east of the signalised junction with Longroyd Lane.**

Concentrations within the section of the AQMA adjacent to the A62 Manchester Road, south-west of the signalised junction with the B6432 St Thomas Road are nearer the objective. Annual mean concentrations at receptor façade are detailed in table A.4a within Appendix A. Whilst these show compliance with the annual mean objective for the five-year period 2019 – 2024, concentrations in 2021 and 2022 were very close to the objective (39.8 µg/m3 and 39.4 µg/m3 in 2021 and 2022 respectively). **Whilst we note paragraph 3.57 of LAQM TG (22) quoted earlier in this section, due to the marginal compliance in 2021 and 2023 we formally seek advice from Defra / LAQM Helpdesk on the future of this AQMA. In particular, we ask Defra / LAQM Helpdesk whether this section of the AQMA should also be revoked or continue monitoring and include within our forthcoming revision the AQAP.**

To summarise, we intend to amend the AQMA order to revoke the section of the AQMA located adjacent to the A62 Manchester Road, north-east of the signalised junction with Longroyd Lane, whilst seeking Defra / LAQM Helpdesk advice on the way forward with the section of the AQMA adjacent to the A62 Manchester Road, south-west of the signalised junction with the B6432 St Thomas Road.

Map D9 in Appendix D shows the area of the AQMA we will revoke and the area we will retain.

Recommendations

Our recommendations for each AQMA are summarised below.

AQMA 1: We will commence with formal revocation following submission and appraisal of this report. We will continue monitoring to evaluate compliance in future years, with

data being reported in future ASRs. Furthermore, in accordance with FAQ 142 of Defra's LAQM portal, we will not be including this AQMA in our forthcoming revised AQAP.

AQMA 3: We intend to revoke the Lindley Moor section of the AQMA following appraisal of this ASR, by amending the AQMA order but retain the Halifax Road section until sufficient monitoring data have been obtained. Furthermore, in accordance with FAQ 142 of Defra's LAQM portal, we will not be including the Lindley Moor section of the AQMA in our forthcoming revised AQAP. We will continue monitoring to evaluate compliance in future years, with data being reported in future ASRs.

AQMA 4: We recommend revocation of this AQMA following submission and approval by Defra of this ASR. We will continue monitoring to evaluate compliance in future years, with data being reported in future ASRs. Furthermore, in accordance with FAQ 142 of Defra's LAQM portal, we will not be including this AQMA in our forthcoming revised AQAP.

AQMA 5: We will not be revoking this AQMA, and actions to reduce emissions and concentrations within this AQMA will be proposed in our forthcoming revision of our Air Quality Action Plan (AQAP). Monitoring will continue in this AQMA. In 2023 we submitted a Defra air quality grant bid for the installation and operation of the Roadvent system[17]. Unfortunately, this bid was unsuccessful. This AQMA, located along the A653 Leeds Road, the main arterial route between Dewsbury to Leeds and the M62 motorway, is subject to increased emissions due to uphill traffic on a gradient moving away from a signalised junction with stop lines. Any future actions required to achieve compliance will have to consider these specific local circumstances.

AQMA 6: We will retain this AQMA following submission and approval by Defra of this ASR. We will continue monitoring to evaluate compliance in future years, with data being reported in future ASRs.

AQMA 7: We intend to amend the AQMA order to revoke the Halifax Road / Leeds Road junction area of the AQMA following submission and approval by Defra of this ASR. We will continue monitoring to evaluate compliance in future years, with data being reported in future ASRs. Furthermore, in accordance with FAQ 142 of Defra's LAQM portal, we will not be including the Halifax Road / Leeds junction area of the AQMA in our forthcoming revised AQAP.

We intend to amend the AQMA order to revoke the Wakefield Road, Frost Hill area of the AQMA following submission and approval by Defra of this ASR. We will continue monitoring to evaluate compliance in future years, with data being reported in future ASRs. Furthermore, in accordance with FAQ 142 of Defra's LAQM portal, we will not be including the Wakefield Road, Frost Hill area of the AQMA in our forthcoming revised AQAP.

We will retain the Wormald Street / Wakefield Road junction section of this AQMA, and actions to reduce emissions and concentrations within this section of the AQMA will be proposed in our forthcoming revision of our Air Quality Action Plan (AQAP). We will continue monitoring in future years, with data being reported in future ASRs.

AQMA 8: We intend to not revoke this AQMA until sufficient monitoring data has been collected. We will liaise with Defra / LAQM Helpdesk on the length of monitoring data that

[17] https://www.roadvent.com/roadvent/

would be required in these circumstances to then determine revocation, and on the approach to be taken for inclusion or otherwise within our revised AQMA.

AQMA 9: We will retain this AQMA, and actions to reduce emissions and concentrations within this AQMA will be proposed in our forthcoming revision of our AQAP. We will continue monitoring in future years, with data being reported in future ASRs.

AQMA 10: We intend to amend the AQMA order to revoke the section of the AQMA located adjacent to the A62 Manchester Road, north-east of the signalised junction with Longroyd Lane. We will continue monitoring to evaluate compliance in future years, with data being reported in future ASRs. Furthermore, in accordance with FAQ 142 of Defra's LAQM portal, we will not be including this area of the AQMA in our forthcoming revised AQAP.

We seek Defra / LAQM Helpdesk advice on the way forward with the section of the AQMA adjacent to the A62 Manchester Road, south-west of the signalised junction with the B6432 St Thomas Road. We will continue monitoring in future years.

3.2.2 Particulate Matter (PM_{10})

Table A.6 – Annual mean PM10 monitoring results (µg/m3) in Appendix A: Monitoring results compares the ratified and adjusted monitored PM_{10} annual mean concentrations for the past five years with the air quality objective of 40µg/m^3.

Table A.2 – 24 hour mean PM10 monitoring results, number of PM10 24 hour means greater than 50µg/m3 in Appendix A compares the ratified continuous monitored PM_{10} daily mean concentrations for the past five years with the air quality objective of 50µg/m^3, not to be exceeded more than 35 times per year.

Annualised continuous monitoring data from 2023 indicated no exceedances of the PM_{10} annual mean and PM_{10} daily mean objectives.

In 2009, we declared the A644 Huddersfield Road in Scouthill an AQMA due to exceedance of the PM10 24-hour mean objective. Map D11 in Appendix D details the spatial extent of this AQMA. As with AQMA 1 reported earlier, we have been in dialogue with LAQM Helpdesk with regard to potential revocation, despite the lack of recent PM_{10} monitoring data within this AQMA. The Helpdesk then liaised with Defra. The conclusions of these discussions are:

***"AQMA 2 -** Based on the information provided, we recommend that Kirklees Council proceed with revocation as originally planned in 2016. While passive monitors cannot be used to assess compliance with PM_{10} objectives, they can be a useful tool to continue to keep the area under review and enable further investigation if concentrations increase. Kirklees Council could also look to include the area as an item in a local air quality strategy or annual status reports, to facilitate a quick response should there be a deterioration in conditions."*

On this basis therefore, we will commence with formal revocation following submission and appraisal of this report. Furthermore, in accordance with FAQ 142 of Defra's LAQM portal, we will not be including this AQMA in our forthcoming revised AQAP.

Should opportunity arise, we will seek to monitor to evaluate compliance in future years, with data being reported in future ASRs. This will either be by the use of "low-cost sensor" technology, with appropriate iMCERTS certification for the monitoring of particulate

matter[18], and used in operation in accordance with latest British Standards Institute Guidance[19]. Alternatively, should significant funding opportunity arise, we will consider the use of reference methods for monitoring.

We continue to monitor NO_2 concentrations within this AQMA using diffusion tubes. Map D.11 in Appendix D shows the locations of the 3 diffusion tubes in this AQMA, and the data are discussed earlier in this section.

3.2.3 Particulate Matter ($PM_{2.5}$)

Table A.8 in Appendix A presents the ratified and adjusted monitored $PM_{2.5}$ annual mean concentrations for the past five years.

Data are only available for the 2022 and 2023, following installation of the $PM_{2.5}$ monitor in 2022. In both years, concentrations were below the revised annual mean air quality objective for $PM_{2.5}$ of 10 µg/m^3. Concentrations at this AURN urban background site in 2022 and 2023 were 8.3 µg/m^3 and 7 µg/m^3 respectively.

3.2.4 Sulphur Dioxide (SO_2)

We do not monitor SO_2 in Kirklees.

[18] MCERTS Certified Products: Indicative Ambient Particulate Monitors Archives - CSA Group

[19] PAS 4023:2024 Low-Cost Air Quality Sensor Systems | BSI (bsigroup.com)

Appendix A: Monitoring results

Table A.1 – Details of automatic monitoring site

Site ID	Site name	Site type	X OS grid ref (easting)	Y OS grid ref (northing)	Pollutants monitored	In AQMA? Which AQMA?	Monitoring technique	Distance to relevant exposure (m) (1)	Distance to kerb of nearest road (m) (2)	Inlet height (m)
CM1	Dewsbury Ashworth Grange	Urban background	424060	421912	NO_2, PM_{10}, $PM_{2.5}$, O_3	No	Chemiluminescent, FIDAS, UV absorption	13	0	2

Notes:

(1) 0m if the monitoring site is at a location of exposure (e.g. installed on the façade of a residential property).

(2) N/A if not applicable

Table A.2 – Details of non-automatic monitoring sites

Diffusion tube ID	Site name	Site type	X OS grid ref (easting)	Y OS grid ref (northing)	Pollutants monitored	In AQMA? Which AQMA?	Distance to relevant exposure (m) (1)	Distance to kerb of nearest road (m) (2)	Tube co-located with a continuous analyser?	Tube height (m)
K1	Dewsbury Bus Station	Other	424506	421535	NO2	No		0.8	No	2.0
K2	Bus Station - Huddersfield	Other	414214	416504	NO2	AQMA 9		4.1	No	2.0
K3	Edgerton Road	Roadside	413504	417439	NO2	AQMA 6	2.0	2.4	No	2.0
K4	Princess Street, Batley	Roadside	424464	424395	NO2	No	4.3	1.8	No	2.0
K5	Outside number 603 Huddersfield Road, Ravensthorpe - Lamp Post 167	Roadside	422442	420380	NO2	No	1.7	1.6	No	2.6
K6	Leeds Road - Cooper Bridge	Roadside	417878	421054	NO2	AQMA 1	7.6	4.0	No	2.0
K7	Westgate Huddersfield	Urban Centre	414434	416744	NO2	AQMA 9		0.5	No	2.5

Diffusion tube ID	Site name	Site type	X OS grid ref (easting)	Y OS grid ref (northing)	Pollutants monitored	In AQMA? Which AQMA?	Distance to relevant exposure (m) [1]	Distance to kerb of nearest road (m) [2]	Tube co-located with a continuous analyser?	Tube height (m)
K8	Bradford Road Fartown 1-Charmaines	Roadside	414483	417726	NO2	No	13.7	2.0	No	2.0
K9	Bradley Road	Kerbside	417280	420482	NO2	AQMA 1	13.4	0.7	No	2.0
K10	George Street Lindley	Roadside	411861	418270	NO2	No	6.8	1.4	No	2.0
K11	Chapel Hill Huddersfield	Roadside	414359	416277	NO2	AQMA 9	3.5	5.0	No	2.0
K12	Whitechapel Road Cleckheaton	Kerbside	417302	425961	NO2	No		1.0	No	2.5
K13	Whitehall Road East	Roadside	420377	427871	NO2	AQMA 4	2.1	2.6	No	2.0
K14	Oastler Avenue	Urban Background	413667	416467	NO2	No		1.7	No	2.0
K15	LC006 Manor Road, Golcar	Roadside	409752	415893	NO2	No	2.0	1.7	No	2.0
K16	Ainley Top 2	Other	411715	419032	NO2	AQMA 3	8.0	6.0	No	1.5
K17	Ainley Top 3	Other	411715	419032	NO2	AQMA 3	8.0	6.0	No	1.5

Diffusion tube ID	Site name	Site type	X OS grid ref (easting)	Y OS grid ref (northing)	Pollutants monitored	In AQMA? Which AQMA?	Distance to relevant exposure (m) [1]	Distance to kerb of nearest road (m) [2]	Tube co-located with a continuous analyser?	Tube height (m)
K18	Huddersfield Road Birstall - lamppost 246	Roadside	422686	426229	NO2	No	4.2	1.9	No	2.0
K19	Opposite Shepherds Boy PH, Huddersfield Road, Scouthill on Telegraph pole 2	Roadside	423563	421014	NO2	AQMA 2	6.5	2.7	No	2.0
K20	Rockley Street Dewsbury	Roadside	424858	421904	NO2	AQMA 5	12.0	2.0	No	2.0
K21	Castlegate Huddersfield	Roadside	414149	416686	NO2	AQMA 9	6.9	2.1	No	2.0
K22	1257 Leeds Road, Bradley, LC183	Roadside	417394	420458	NO2	AQMA 1		1.3	No	2.6
K23	Huddersfield Road, Ravensthorpe, LC159 Milco Supersaver	Roadside	422300	420337	NO2	No	0.7	2.1	No	

Diffusion tube ID	Site name	Site type	X OS grid ref (easting)	Y OS grid ref (northing)	Pollutants monitored	In AQMA? Which AQMA?	Distance to relevant exposure (m) [1]	Distance to kerb of nearest road (m) [2]	Tube co-located with a continuous analyser?	Tube height (m)
K24	Lindley Moor Road	Roadside	409775	418397	NO2	No	6.7	2.2	No	2.0
K25	Leeds Road - RS3 - 1	Other	417255	420360	NO2	AQMA 1	1.5	7.0	No	1.8
K26	Leeds Road - RS3 - 2	Other	417255	420360	NO2	AQMA 1	1.5	7.0	No	1.8
K27	Leeds Road - RS3 - 3	Other	417255	420360	NO2	AQMA 1	1.5	7.0	No	1.8
K28	Ring Road Huddersfield-Southgate	Roadside	414747	416708	NO2	AQMA 9	0.1	3.1	No	2.0
K29	LC255 Gelderd Road Birstall, by 62a Gelderd Road, opposite Britannia Mills	Roadside	422710	426487	NO2	No	façade	2.5	No	2.0
K30	Huddersfield Road, Scouthill, LC 195 at Ravensfield Road	Roadside	423154	420658	NO2	AQMA 2	façade	2.1	No	2.8

Diffusion tube ID	Site name	Site type	X OS grid ref (easting)	Y OS grid ref (northing)	Pollutants monitored	In AQMA? Which AQMA?	Distance to relevant exposure (m) (1)	Distance to kerb of nearest road (m) (2)	Tube co-located with a continuous analyser?	Tube height (m)
K31	Blacker Road 1	Roadside	413400	417495	NO2	No	8.3	2.7	No	2.0
K32	Blacker Road 2	Roadside	413513	417481	NO2	No	5.0	2.6	No	2.0
K33	Wakefield Rd / Huddersfield Road - Liversedge outside Fastrack solutions	Roadside	420727	423668	NO2	AQMA 7	4.3	2.4	No	2.0
K34	Frost Hill Liversedge	Roadside	420845	423770	NO2	AQMA 7	0.3	1.9	No	2.0
K35	Outside 45 Leeds Road Liversedge	Roadside	420853	423866	NO2	No	9.4	1.9	No	2.0
K36	CCTV post next to LC85 Huddersfield Road, Mirfield – outside Tesco	Roadside	420398	419777	NO2	No	façade	2.3	No	2.0

Diffusion tube ID	Site name	Site type	X OS grid ref (easting)	Y OS grid ref (northing)	Pollutants monitored	In AQMA? Which AQMA?	Distance to relevant exposure (m) (1)	Distance to kerb of nearest road (m) (2)	Tube co-located with a continuous analyser?	Tube height (m)
K37	Bradford Road, Birkenshaw-lamppost 100	Roadside	420356	427810	NO2	AQMA 4	2.5	2.2	No	2.0
K38	Whitehall Road West-lamppost 46	Roadside	420222	427764	NO2	No	18.3	1.0	No	2.0
K39	Bradford Road, Batley	Roadside	424526	424326	NO2	No	1.7	2.1	No	2.0
K40	Leeds Road Dewsbury-outside 35	Roadside	424922	421972	NO2	AQMA 5	1.2	1.6	No	2.0
K41	LC002, Newsome Road below Elm Street, by Kings Mill Court	Roadside	414714	415768	NO2	No	7.7	2.0	No	2.0
K42	Leeds Road Dewsbury - 2-outside 39	Roadside	424969	422002	NO2	No	5.6	1.9	No	2.0
K43	John Street Dewsbury	Roadside	425093	422024	NO2	No	6.0	1.9	No	2.0

Diffusion tube ID	Site name	Site type	X OS grid ref (easting)	Y OS grid ref (northing)	Pollutants monitored	In AQMA? Which AQMA?	Distance to relevant exposure (m) [1]	Distance to kerb of nearest road (m) [2]	Tube co-located with a continuous analyser?	Tube height (m)
K44	Caulmswood Road Eastborough	Roadside	425179	422116	NO2	No	façade	façade	No	2.0
K45	LC 008 Trinity Street outside Chiiwala	Roadside	414041	416754	NO2	No	façade	4.8	No	2.0
K46	1 Willow Lane East, Fartown (LC002)	Roadside	414542	417759	NO2	No	façade	2.3	No	2.0
K47	Roundings Road Outlane	Other	407942	417261	NO2	AQMA 8	0.0	14.4	No	2.0
K48	Flush Liversedge	Roadside	421039	423673	NO2	AQMA 7	0.0	2.6	No	2.0
K49	Manchester Road Thornton Lodge 2	Roadside	413659	416182	NO2	AQMA 10	3.5	3.7	No	2.0
K50	Manchester Road Thornton Lodge 1	Roadside	413433	415989	NO2	AQMA 10	1.6	2.5	No	2.0
K51	High Street Heckmondwike	kerbside	421898	423576	NO2	No	4.9	0.5	No	2.0

Diffusion tube ID	Site name	Site type	X OS grid ref (easting)	Y OS grid ref (northing)	Pollutants monitored	In AQMA? Which AQMA?	Distance to relevant exposure (m) (1)	Distance to kerb of nearest road (m) (2)	Tube co-located with a continuous analyser?	Tube height (m)
K52	Penistone Road Waterloo	Roadside	417627	416472	NO2	No	7.8	2.4	No	2.0
K53	Yates Lane Milnsbridge	Roadside	411564	415902	NO2	No	1.6	1.7	No	2.0
K54	Wakefield Road, Dewsbury - in sign in Layby at bus stop on way to Dewsbury Town Centre from Earlsheaton	Roadside	425186	421568	NO2	No	2.9	5,8	No	1.8
K55	Huddersfield Road Holmfirth	Roadside	414187	408264	NO2	No	3.2	1.7	No	2.0
K56	Wakefield Road Huddersfield	Roadside	415009	416420	NO2	AQMA 9		2.8	No	2.0
K57	Cambridge Road 1	Roadside	414291	417281	NO2	No		2.2	No	2.0
K58	St John's Road	Roadside	414350	417270	NO2	No		2.6	No	2.0

Diffusion tube ID	Site name	Site type	X OS grid ref (easting)	Y OS grid ref (northing)	Pollutants monitored	In AQMA? Which AQMA?	Distance to relevant exposure (m) [1]	Distance to kerb of nearest road (m) [2]	Tube co-located with a continuous analyser?	Tube height (m)
K59	Westbourne Road, Marsh - Outside Marsh DIY	Roadside	412944	417244	NO2	No	3.7	2.5	No	2.0
K60	Towngate Holmfirth at pillar by bike shed, next to LC 005	Roadside	414269	408218	NO2	No		1.6	No	2.0
K61	LC 33, New Hey Road Marsh, outside Portland House nursery, junction with Reinwood Road	Roadside	412247	417354	NO2	No	10.0	2.5	No	2.0
K62	Manor Park Gardens - Birkenshaw-lamppost001	Roadside	420472	427360	NO2	AQMA 4	9.2	1.2	No	2.0
K63	White Hall Road West 1- Birkenshaw-lamppost 61	Roadside	419866	427561	NO2	No	7.0	2.9	No	2.0

Diffusion tube ID	Site name	Site type	X OS grid ref (easting)	Y OS grid ref (northing)	Pollutants monitored	In AQMA? Which AQMA?	Distance to relevant exposure (m) [1]	Distance to kerb of nearest road (m) [2]	Tube co-located with a continuous analyser?	Tube height (m)
K64	Whitehall Road West 2 - Birkenshaw-lamppost 059	Roadside	419937	427614	NO2	No		1.1	No	2.0
K65	Whitehall Road West 3 - Birkenshaw - lamppost 056	Roadside	419981	427623	NO2	No		3.0	No	2.0
K66	Milford Grove - Birkenshaw-lamppost 004	Other	420349	427434	NO2	No		1.3	No	2.0
K67	Longroyd bridge, lamppost 007, outside 5 market st, Triangle	Roadside	413390	416229	NO2	No	façade	3.3	No	2.0
K68	Grange Road Batley lamp post 10	Roadside	425185	423684	NO2	No	5.0	4.5	No	2.0
K69	Bradford Road - Cleckheaton - Airstation, LC003	Roadside	418223	426556	NO2	No		1.0	No	2.0

Diffusion tube ID	Site name	Site type	X OS grid ref (easting)	Y OS grid ref (northing)	Pollutants monitored	In AQMA? Which AQMA?	Distance to relevant exposure (m) [1]	Distance to kerb of nearest road (m) [2]	Tube co-located with a continuous analyser?	Tube height (m)
K70	Huddersfield Road - Scouthill - Airstation	Roadside	423247	420761	NO2	AQMA 2	6.6	3.2	No	2.0
K71	Lindley Moor Road 2	Roadside	411007	419190	NO2	AQMA 3	11.6	2.7	No	2.0
K72	Lindley Moor Road 3	Roadside	410227	418653	NO2	No	6.6	2.4	No	2.0
K73	Lindley Moor Road 4	Roadside	410080	418568	NO2	No		1.8	No	2.0
K74	Lindley Moor Road 5	Roadside	410095	418559	NO2	No	1.7	3.4	No	2.0
K75	Blackmoorfoot Road - Thornton Lodge	Roadside	413153	415894	NO2	No	2.7	1.5	No	2.0
K76	Manchester Road - Thornton Lodge 3	Roadside	413198	415957	NO2	AQMA 10	5.0	1.3	No	2.0
K77	Manchester Road -	Roadside	413455	416013	NO2	AQMA 10	1.2	2.2	No	2.0

Diffusion tube ID	Site name	Site type	X OS grid ref (easting)	Y OS grid ref (northing)	Pollutants monitored	In AQMA? Which AQMA?	Distance to relevant exposure (m) [1]	Distance to kerb of nearest road (m) [2]	Tube co-located with a continuous analyser?	Tube height (m)
	Thornton Lodge 4									
K78	Thornton Lodge Road - Thornton Lodge	Roadside	413478	415953	NO2	No		2.0	No	2.0
K79	Gelderd Road, Birstall, lamppost 001	Roadside	423903	427756	NO2	No		3.0	No	2.0
K80	Grange Road Batley lamp post 22	Roadside	425566	423696	NO2	No	5.8	4.0	No	2.0
K81	Gelderd Road, Hawthorne House, lamppost 276	Roadside	422991	426992	NO2	No		1.8	No	2.0
K82	1282 Leeds Road, Bradley, LC189	Roadside	417508	420570	NO2	AQMA 1		1.5	No	2.0
K83	13 Bradley Road, Bradley, LC 81	Roadside	417364	420482	NO2	AQMA 1		4.5	No	2.8

Diffusion tube ID	Site name	Site type	X OS grid ref (easting)	Y OS grid ref (northing)	Pollutants monitored	In AQMA? Which AQMA?	Distance to relevant exposure (m) (1)	Distance to kerb of nearest road (m) (2)	Tube co-located with a continuous analyser?	Tube height (m)
K84	5 Oak Road, LC1, Bradley	Roadside	417160	420296	NO2	No		1.4	No	2.6
K85	866 Leeds Road, Bradley, LC174	Roadside	417170	420267	NO2	No		1.5	No	2.7
K86	Kings Mill Lane	Roadside	415164	416323	NO2	No	4.7	4.7	No	2.0
K87	Mill St West Dewsbury lamp post 9	Roadside	424409	421271	NO2	No	2.4	2.9	No	2.0
K88	Huddersfield Road, Birstall Smithies - the greyhound public house - lamppost 231	Roadside	422435	425889	NO2	No	7.5	2.3	No	2.0
K89	Whitehall Road West, Hunsworth. Lamppost 76	Roadside	419362	427203	NO2	No		1.7	No	2.0
K90	Whitehall Road West, Hunsworth. Lamppost 80	Roadside	419262	427060	NO2	No		1.8	No	2.0

Diffusion tube ID	Site name	Site type	X OS grid ref (easting)	Y OS grid ref (northing)	Pollutants monitored	In AQMA? Which AQMA?	Distance to relevant exposure (m) [1]	Distance to kerb of nearest road (m) [2]	Tube co-located with a continuous analyser?	Tube height (m)
K91	Halifax Rd, Edgerton, outside Harlequins nursery-lamppost 58	Roadside	412647	418008	NO2	No	14.0	1.9	No	2.0
K92	Bradford Road, Cleckheaton	Roadside	418656	426078	NO2	No	3.9	1.8	No	2.0
K93	Wyke Lane, Oakenshaw	Roadside	417501	427802	NO2	No	façade	25.0	No	2.0
K94	Leeds Road, Shawcross	Roadside	426242	423106	NO2	No	2.1	4.1	No	2.0
K95	Hollowgate, Holmfirth	Roadside	414170	408118	NO2	No	1.0	1.0	No	2.0
K96	Victoria Street, Holmfirth	Roadside	414163	408195	NO2	No	1.6	0.7	No	2.6
K97	New Hey Road, Mount	Roadside	409762	418019	NO2	No		11.5	No	2.0
K98	Huddersfield Road, Holmfirth	Roadside	414092	408133	NO2	No	0.8	2.3	No	2.0

Diffusion tube ID	Site name	Site type	X OS grid ref (easting)	Y OS grid ref (northing)	Pollutants monitored	In AQMA? Which AQMA?	Distance to relevant exposure (m) (1)	Distance to kerb of nearest road (m) (2)	Tube co-located with a continuous analyser?	Tube height (m)
K99	Owl Lane, Shawcross	Roadside	426312	422830	NO2	No		1.9	No	2.0
K100	Westbourne Road, Marsh	Roadside	412477	417290	NO2	No	5.5	1.9	No	2.0
K101	LC30 outside 159 Trinity Street	Roadside	413495	417139	NO2	No	3.0	4.0	No	2.0
K102	Stocks Bank Road, Mirfield	Roadside	418540	421188	NO2	No		5.0	No	2.0
K103	Stocks Bank Road, Mirfield	Roadside	419426	420293	NO2	No	1.0	2.8	No	2.0
K104	Bradley Road, Bradley	Roadside	415810	420554	NO2	No	12.3	6.8	No	2.0
K101a	Trinity Street, Huddersfield	Roadside	413531	417137	NO2	No	4.9	2.5	No	2.0
K15a	Ainley Top 1	Other	411715	419032	NO2	AQMA 3	8.0	6.0	No	1.5
K23a	Leeds Road Mirfield 2	Roadside	418483	420978	NO2	No	14.1	1.6	No	2.0
K29a	Dewsbury Bus Station 2	Other	424425	421499	NO2	No		2.5	No	2.0

Diffusion tube ID	Site name	Site type	X OS grid ref (easting)	Y OS grid ref (northing)	Pollutants monitored	In AQMA? Which AQMA?	Distance to relevant exposure (m) [1]	Distance to kerb of nearest road (m) [2]	Tube co-located with a continuous analyser?	Tube height (m)
K30a	Dewsbury Bus Station 3	Other	424457	421510	NO2	No		2.5	No	2.0
K36a	Huddersfield Road Mirfield 1	Kerbside	420304	419766	NO2	No	2.9	0.9	No	2.0
K41a	Chain Bar Roundabout	Roadside	418285	426630	NO2	No	12.5	3.4	No	2.0
K45a	Bradford Road Fartown 2 - opposite Khan Mather	Roadside	414498	417798	NO2	No	5.7	5.0	No	2.0
K46a	Willow Lane Fartown- lamppost 03 opposite Perrys	Roadside	414402	417806	NO2	No	9.7	2.5	No	2.0
K54a	Wakefield Road Dewsbury	Roadside	425157	421584	NO2	No		5.0	No	2.0
K5a	Huddersfield Road Ravensthorpe	Roadside	422350	420391	NO2	No	1.6	1.9	No	2.0

Diffusion tube ID	Site name	Site type	X OS grid ref (easting)	Y OS grid ref (northing)	Pollutants monitored	In AQMA? Which AQMA?	Distance to relevant exposure (m) (1)	Distance to kerb of nearest road (m) (2)	Tube co-located with a continuous analyser?	Tube height (m)
K60a	Huddersfield Road, Birstall Smithies - the greyhound public house - lamppost 231	Roadside	422435	425889	NO2	No	7.5	2.3	No	2.0
K61a	Bradford Road - Birkenshaw . Lamppost 85- BD19 4AY	Roadside	420441	427353	NO2	AQMA 4		3.3	No	2.0
K64a	Whitehall Road West 2 - Birkenshaw- lamppost 60	Other	419914	427588	NO2	No		0.1	No	2.0
K67a	Moor Lane 1 - Birkenshaw- lamppost 27	Roadside	421128	427298	NO2	No		0.4	No	2.0
K88a	Huddersfield Road, Birstall. Lamppost 229	Roadside	422403	425845	NO2	No		2.5	No	2.0

Notes:

(1) 0m if the monitoring site is at a location of exposure (e.g. installed on the façade of a residential property).

(2) N/A if not applicable.

Table A.3 – Annual mean NO_2 monitoring results: automatic monitoring ($\mu g/m^3$)

Site ID	X OS grid ref (easting)	Y OS grid ref (northing)	Site type	Valid data capture for monitoring period (%) (1)	Valid data capture 2023 (%) (2)	2019	2020	2021	2022	2023
CM1	424060	421912	Urban background	89.6	89.6	n/a	16	17	18	16

☐ Annualisation has been conducted where data capture is <75% and >25% in line with LAQM.TG22.

☒ Reported concentrations are those at the location of the monitoring site (annualised, as required), i.e. prior to any fall-off with distance correction.

☐ Where exceedances of the NO_2 annual mean objective occur at locations not representative of relevant exposure, the fall-off with distance concentration has been calculated and reported concentration provided in brackets for 2023.

Notes:

The annual mean concentrations are presented as $\mu g/m^3$.

Exceedances of the NO_2 annual mean objective of $40\mu g/m^3$ are shown in **bold**.

All means have been “annualised” as per LAQM.TG22 if valid data capture for the full calendar year is less than 75%. See Appendix C for details.

Concentrations are those at the location of monitoring and not those following any fall-off with distance adjustment.

(1) Data capture for the monitoring period, in cases where monitoring was only carried out for part of the year.

(2) Data capture for the full calendar year (e.g. if monitoring was carried out for 6 months, the maximum data capture for the full calendar year is 50%).

Table A.4 – Annual mean NO_2 monitoring results: non-automatic monitoring ($\mu g/m^3$)

Diffusion tube ID	X OS grid ref (easting)	Y OS grid ref (northing)	Site type	Valid data capture for monitoring period (%) (1)	Valid data capture 2023 (%) (2)	2019	2020	2021	2022	2023
K1	424506	421535	Other	100	99.7	41.0	46.0	45.1	45.5	39.3
K2	414214	416504	Other	100	99.7	38.5	34.2	42.4	36.9	36.7
K3	413504	417439	Roadside	91.7	90.4	42.7	36.3	40.3	41.5	37.2
K4	424464	424395	Roadside	100	99.7	27.0	24.2	27.9	25.9	23.8
K5	422442	420380	Roadside	100	84.7	0.0	0.0	0.0	0.0	30.3
K6	417878	421054	Roadside	83.3	82.7	0.0	0.0	0.0	36.8	34.6
K7	414434	416744	Urban Centre	83.3	80.9	40.8	28.9	36.7	40.0	44.9
K8	414483	417726	Roadside	91.7	92.3	36.0	30.5	33.4	32.7	30.7
K9	417280	420482	Kerbside	91.7	92.3	34.4	28.3	21.7	24.6	20.7
K10	411861	418270	Roadside	100	100.0	0.0	0.0	0.0	12.3	10.5
K11	414359	416277	Roadside	100	99.7	35.0	27.7	31.3	32.0	27.9
K12	417302	425961	Kerbside	100	99.7	0.0	0.0	0.0	16.4	14.6
K13	420377	427871	Roadside	100	99.7	31.4	23.0	28.2	28.5	24.6

Diffusion tube ID	X OS grid ref (easting)	Y OS grid ref (northing)	Site type	Valid data capture for monitoring period (%) [1]	Valid data capture 2023 (%) [2]	2019	2020	2021	2022	2023
K14	413667	416467	Urban Background	100	100.0	17.7	13.9	14.5	13.0	12.1
K15	409752	415893	Roadside	100	25.0	0.0	0.0	0.0	0.0	9.9
K16	411715	419032	Other	100	90.4	36.5	29.4	33.8	30.7	23.6
K17	411715	419032	Other	100	100.0	36.5	29.4	33.8	30.7	22.7
K18	422686	426229	Roadside	100	99.7	36.8	32.2	35.8	34.4	30.2
K19	423563	421014	Roadside	91.7	92.2	31.6	29.6	35.7	35.4	33.0
K20	424858	421904	Roadside	100	99.7	28.4	29.5	33.1	32.3	28.6
K21	414149	416686	Roadside	100	99.7	34.7	33.4	39.3	37.8	35.7
K22	417394	420458	Roadside	100	92.3	0.0	0.0	0.0	0.0	28.7
K23	422300	420337	Roadside	100	84.7	0.0	0.0	0.0	0.0	32.5
K24	409775	418397	Roadside	100	100.0	34.1	27.5	32.3	28.7	25.6
K25	417255	420360	Other	100	100.0	27.4	22.6	24.5	23.8	21.0
K26	417255	420360	Other	100	100.0	27.4	22.6	24.5	23.8	18.9
K27	417255	420360	Other	100	100.0	27.4	22.6	24.5	23.8	21.2
K28	414747	416708	Roadside	91.7	92.2	46.4	37.6	41.4	41.0	38.1

Diffusion tube ID	X OS grid ref (easting)	Y OS grid ref (northing)	Site type	Valid data capture for monitoring period (%) [1]	Valid data capture 2023 (%) [2]	2019	2020	2021	2022	2023
K29	422710	426487	Roadside	100	26.3	0.0	0.0	0.0	0.0	29.6
K30	423154	420658	Roadside	80	65.9	0.0	0.0	0.0	0.0	38.2
K31	413400	417495	Roadside	100	100.0	30.5	17.1	25.0	24.6	21.6
K32	413513	417481	Roadside	91.7	90.4	35.5	0.0	36.1	38.1	35.2
K33	420727	423668	Roadside	91.7	92.2	31.1	26.8	31.4	30.2	27.7
K34	420845	423770	Roadside	91.7	92.2	33.6	29.9	30.5	33.6	30.3
K35	420853	423866	Roadside	100	99.7	45.3	34.7	44.3	44.7	38.8
K36	420398	419777	Roadside	100	26.3	0.0	0.0	0.0	0.0	24.7
K37	420356	427810	Roadside	100	84.7	31.2	21.3	25.7	26.4	22.3
K38	420222	427764	Roadside	91.7	90.3	37.1	27.3	33.3	36.6	31.0
K39	424526	424326	Roadside	91.7	92.2	31.1	26.7	33.6	32.9	29.6
K40	424922	421972	Roadside	100	99.7	55.8	42.1	50.2	47.5	43.0
K41	414714	415768	Roadside	100	26.3	0.0	0.0	0.0	0.0	24.0
K42	424969	422002	Roadside	91.7	92.2	35.1	34.7	37.9	33.7	30.3
K43	425093	422024	Roadside	91.7	90.3	37.2	33.1	39.0	36.3	31.5

Diffusion tube ID	X OS grid ref (easting)	Y OS grid ref (northing)	Site type	Valid data capture for monitoring period (%) [1]	Valid data capture 2023 (%) [2]	2019	2020	2021	2022	2023
K44	425179	422116	Roadside	91.7	92.2	30.8	24.9	30.1	31.0	27.7
K45	414041	416754	Roadside	66.7	17.3	0.0	0.0	0.0	0.0	-
K46	414542	417759	Roadside	100	92.3	34.8	29.2	22.5	21.3	30.5
K47	407942	417261	Other	100	100.0	40.5	32.0	34.4	32.8	30.2
K48	421039	423673	Roadside	91.7	92.2	36.1	38.1	41.2	43.0	38.0
K49	413659	416182	Roadside	91.7	92.3	33.1	33.1	36.4	33.6	32.4
K50	413433	415989	Roadside	90.9	84.6	38.2	33.1	39.8	40.6	37.4
K51	421898	423576	Kerbside	91.7	90.3	34.5	28.6	30.0	31.2	28.5
K52	417627	416472	Roadside	91.7	92.2	30.7	20.9	27.4	28.1	24.5
K53	411564	415902	Roadside	80	34.6	53.7	24.6	30.6	28.0	23.7
K54	425186	421568	Roadside	100	16.9	0.0	0.0	0.0	0.0	-
K55	414187	408264	Roadside	90.9	82.8	29.9	23.8	25.2	25.7	23.2
K56	415009	416420	Roadside	100	99.7	34.9	30.3	37.4	36.1	34.8
K57	414291	417281	Roadside	66.7	67.3	22.2	18.5	20.1	20.7	21.8
K58	414350	417270	Roadside	100	100.0	39.6	34.9	37.4	35.9	32.5

Diffusion tube ID	X OS grid ref (easting)	Y OS grid ref (northing)	Site type	Valid data capture for monitoring period (%) [1]	Valid data capture 2023 (%) [2]	2019	2020	2021	2022	2023
K59	412944	417244	Roadside	100	100.0	0.0	0.0	0.0	25.5	24.8
K60	414269	408218	Roadside	100	16.9	0.0	0.0	0.0	0.0	-
K61	412247	417354	Roadside	100	25.0	0.0	0.0	0.0	0.0	25.9
K62	420472	427360	Roadside	100	99.7	26.4	22.1	25.5	26.2	22.5
K63	419866	427561	Roadside	100	99.7	27.3	24.3	26.7	24.1	23.1
K64	419937	427614	Roadside	100	26.3	0.0	0.0	0.0	0.0	28.2
K65	419981	427623	Roadside	100	25.0	41.1	28.4	32.6	34.9	30.4
K66	420349	427434	Other	100	99.7	24.8	19.8	18.7	18.0	16.8
K67	413390	416229	Roadside	100	17.3	0.0	0.0	0.0	0.0	-
K68	425185	423684	Roadside	100	99.7	23.6	20.1	23.8	23.8	21.0
K69	418223	426556	Roadside	100	99.7	28.4	21.1	24.6	24.3	20.3
K70	423247	420761	Roadside	100	99.7	31.8	33.4	32.9	31.4	29.9
K71	411007	419190	Roadside	91.7	90.4	30.7	22.6	28.8	24.1	23.3
K72	410227	418653	Roadside	83.3	82.7	32.2	24.3	26.2	26.1	25.5
K73	410080	418568	Roadside	83.3	82.7	34.2	19.4	31.0	28.6	27.6

Diffusion tube ID	X OS grid ref (easting)	Y OS grid ref (northing)	Site type	Valid data capture for monitoring period (%) [1]	Valid data capture 2023 (%) [2]	2019	2020	2021	2022	2023
K74	410095	418559	Roadside	91.7	90.4	23.7	20.1	21.5	20.0	20.0
K75	413153	415894	Roadside	83.3	82.7	0.0	25.5	28.9	27.1	26.1
K76	413198	415957	Roadside	90.9	82.7	28.5	25.4	28.9	27.1	25.9
K77	413455	416013	Roadside	91.7	90.4	38.9	33.2	42.6	41.9	38.2
K78	413478	415953	Roadside	40	32.7	24.1	18.4	21.3	21.1	22.6
K79	423903	427756	Roadside	83.3	82.8	0.0	30.2	33.2	31.5	28.3
K80	425566	423696	Roadside	91.7	90.3	24.4	22.7	25.7	26.5	24.1
K81	422991	426992	Roadside	91.7	90.3	29.8	28.4	29.5	28.2	27.2
K82	417508	420570	Roadside	90	75.0	0.0	0.0	0.0	0.0	31.5
K83	417364	420482	Roadside	100	92.3	0.0	0.0	0.0	0.0	23.2
K84	417160	420296	Roadside	100	92.3	0.0	0.0	0.0	0.0	20.6
K85	417170	420267	Roadside	100	92.3	0.0	0.0	0.0	0.0	26.7
K86	415164	416323	Roadside	100	99.7	29.1	22.8	26.3	24.4	23.8
K87	424409	421271	Roadside	91.7	90.3	31.3	29.4	32.5	31.4	27.5
K88	422435	425889	Roadside	100	26.3	0.0	0.0	0.0	0.0	25.1

Diffusion tube ID	X OS grid ref (easting)	Y OS grid ref (northing)	Site type	Valid data capture for monitoring period (%) [1]	Valid data capture 2023 (%) [2]	2019	2020	2021	2022	2023
K89	419362	427203	Roadside	100	99.7	0.0	23.2	27.5	28.2	25.5
K90	419262	427060	Roadside	91.7	92.2	0.0	21.8	27.1	27.6	24.8
K91	412647	418008	Roadside	90.9	80.8	0.0	0.0	29.0	27.9	25.5
K92	418656	426078	Roadside	100	99.7	0.0	0.0	21.1	24.0	19.3
K93	417501	427802	Roadside	91.7	90.3	0.0	23.5	27.3	26.9	24.7
K94	426242	423106	Roadside	83.3	82.8	0.0	25.5	33.5	32.2	28.9
K95	414170	408118	Roadside	100	99.7	0.0	21.0	24.0	22.6	20.6
K96	414163	408195	Roadside	100	84.7	0.0	0.0	0.0	0.0	27.7
K97	409762	418019	Roadside	100	100.0	0.0	14.0	16.6	15.6	13.8
K98	414092	408133	Roadside	100	99.7	0.0	19.7	22.2	21.3	21.3
K99	426312	422830	Roadside	100	99.7	0.0	18.7	21.4	21.0	22.6
K100	412477	417290	Roadside	100	100.0	0.0	17.0	23.1	21.0	20.3
K101	413495	417139	Roadside	66.7	17.3	0.0	0.0	0.0	0.0	-
K102	418540	421188	Roadside	100	100.0	0.0	18.8	24.4	25.2	22.1
K103	419426	420293	Roadside	100	100.0	0.0	19.4	23.3	21.7	19.0

Diffusion tube ID	X OS grid ref (easting)	Y OS grid ref (northing)	Site type	Valid data capture for monitoring period (%) [1]	Valid data capture 2023 (%) [2]	2019	2020	2021	2022	2023
K104	415810	420554	Roadside	100	100.0	0.0	17.4	19.9	21.2	19.3
K101a	413531	417137	Roadside	100	75.0	0.0	22.8	27.1	25.6	25.7
K15a	411715	419032	Other	88.9	67.3	36.5	29.4	33.8	30.7	25.9
K23a	418483	420978	Roadside	100	15.4	35.3	31.7	36.0	35.5	-
K29a	424425	421499	Other	100	75.0	0.0	24.4	26.5	28.4	26.3
K30a	424457	421510	Other	100	15.4	0.0	25.6	31.4	30.1	-
K36a	420304	419766	Kerbside	100	75.0	49.4	21.1	31.5	28.3	26.4
K41a	418285	426630	Roadside	100	32.7	34.0	26.7	32.0	28.8	21.9
K45a	414498	417798	Roadside	88.9	67.3	36.4	25.1	33.2	34.3	34.3
K46a	414402	417806	Roadside	100	7.7	0.0	0.0	0.0	0.0	-
K54a	425157	421584	Roadside	80	67.3	32.1	29.4	37.2	38.0	33.2
K5a	422350	420391	Roadside	100	15.4	36.1	23.6	27.4	27.5	-
K60a	422435	425889	Roadside	100	75.0	0.0	22.2	29.0	27.9	25.6
K61a	420441	427353	Roadside	100	67.3	29.7	23.2	28.3	27.7	26.1
K64a	419914	427588	Other	100	75.0	45.1	36.5	42.5	43.7	34.5

Diffusion tube ID	X OS grid ref (easting)	Y OS grid ref (northing)	Site type	Valid data capture for monitoring period (%) (1)	Valid data capture 2023 (%) (2)	2019	2020	2021	2022	2023
K67a	421128	427298	Roadside	100	75.0	24.4	18.7	20.0	21.3	17.8
K88a	422403	425845	Roadside	100	75.0	0.0	24.5	31.1	30.1	26.8

☒ Annualisation has been conducted where data capture is <75% and >25% in line with LAQM.TG22.

☒ Diffusion tube data has been bias adjusted.

☒ Reported concentrations are those at the location of the monitoring site (bias adjusted and annualised, as required), i.e. prior to any fall-off with distance correction.

Notes:

The annual mean concentrations are presented as µg/m^3.

Exceedances of the NO_2 annual mean objective of 40µg/m^3 are shown in **bold**.

NO_2 annual means exceeding 60µg/m^3, indicating a potential exceedance of the NO_2 1-hour mean objective are shown in **bold and underlined**.

Means for diffusion tubes have been corrected for bias. All means have been “annualised” as per LAQM.TG22 if valid data capture for the full calendar year is less than 75%. See Appendix C for details.

Concentrations are those at the location of monitoring and not those following any fall-off with distance adjustment.

(1) Data capture for the monitoring period, in cases where monitoring was only carried out for part of the year.

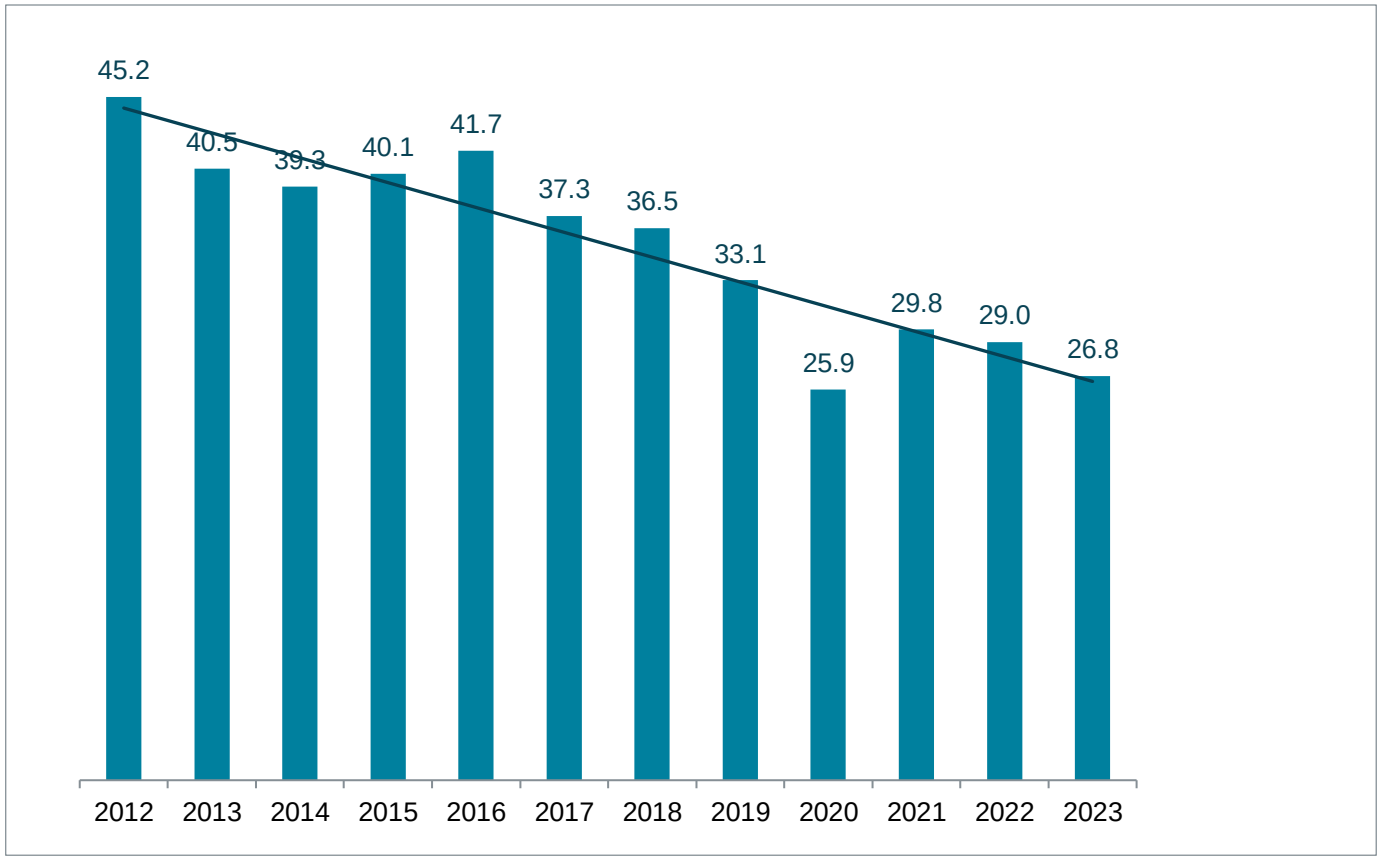
(2) Data capture for the full calendar year (e.g. if monitoring was carried out for 6 months, the maximum data capture for the full calendar year is 50%).

Table A.4a – Annual mean NO2 monitoring results at receptor facade: non-automatic monitoring (µg/m3)

AQMA	Diffusion tube ID	X OS grid ref (easting)	Y OS grid ref (northing)	2019	2020	2021	2022	2023
AQMA 1	K6	417878	421054	33.4	27*	34.9*	31.2	29.1
AQMA 3	K17	411715	419032	36.5*	29.4*	33.8*	27.3	21.6
AQMA 4	K13	420377	427871	31.4*	23*	28.2*	27.1	23.6
AQMA 5	K40	424922	421972	50.8	39.6	46.9	43.8	40.1
AQMA 6	K3	413504	417439	38.5	36.3*	36.6	38	34
AQMA 7	K48	421039	423673	36.1	38.1	41.2	43.0	38.0
AQMA 8	K47	407942	417261	40.5	32.0	34.4	32.8	30.2
AQMA 9	K28	414747	416708	46.2	37.6*	41.2	40.8	37.9
AQMA 10	K77	413455	416013	36.1	33.2*	39.8	39.4	35.9

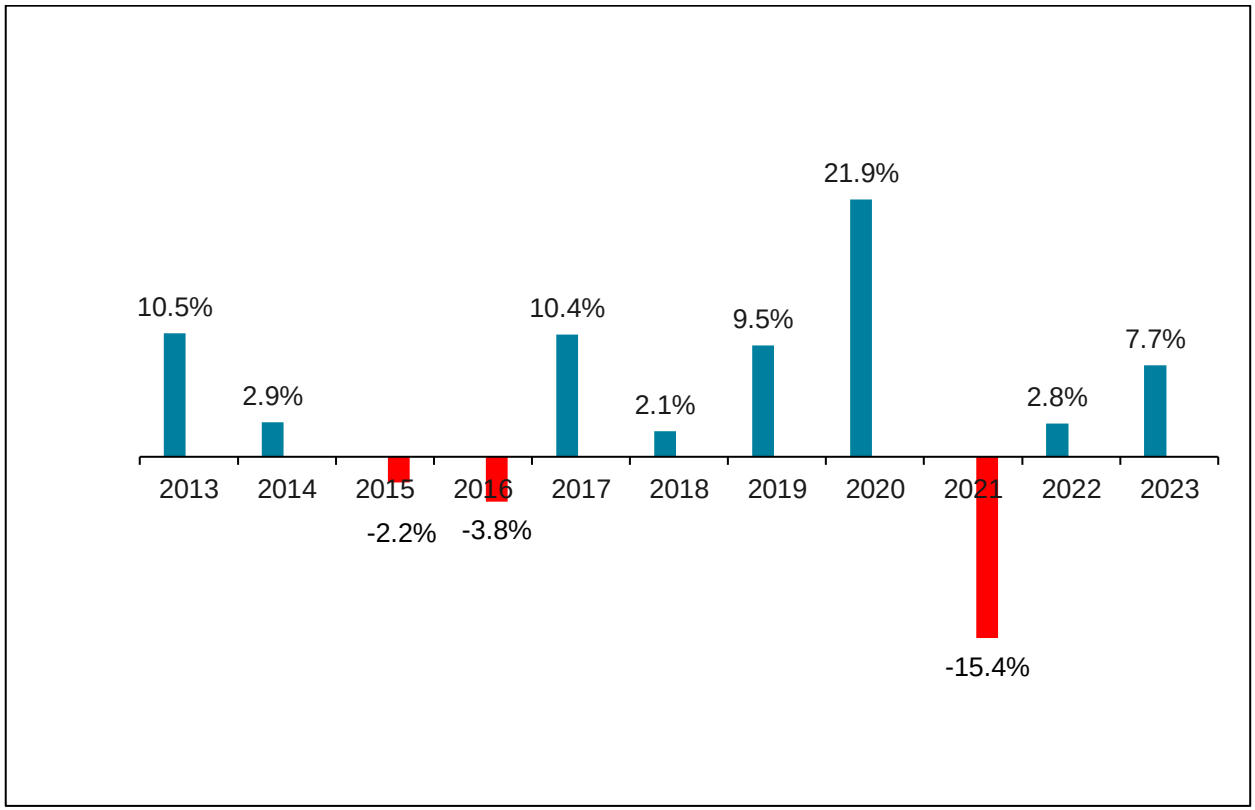
*Not distance corrected so representing roadside concentrations (although within compliance). Receptor façade concentrations will be lower due to greater distance from roadside.

Figure A.1 – Trends in annual mean NO_2 concentrations



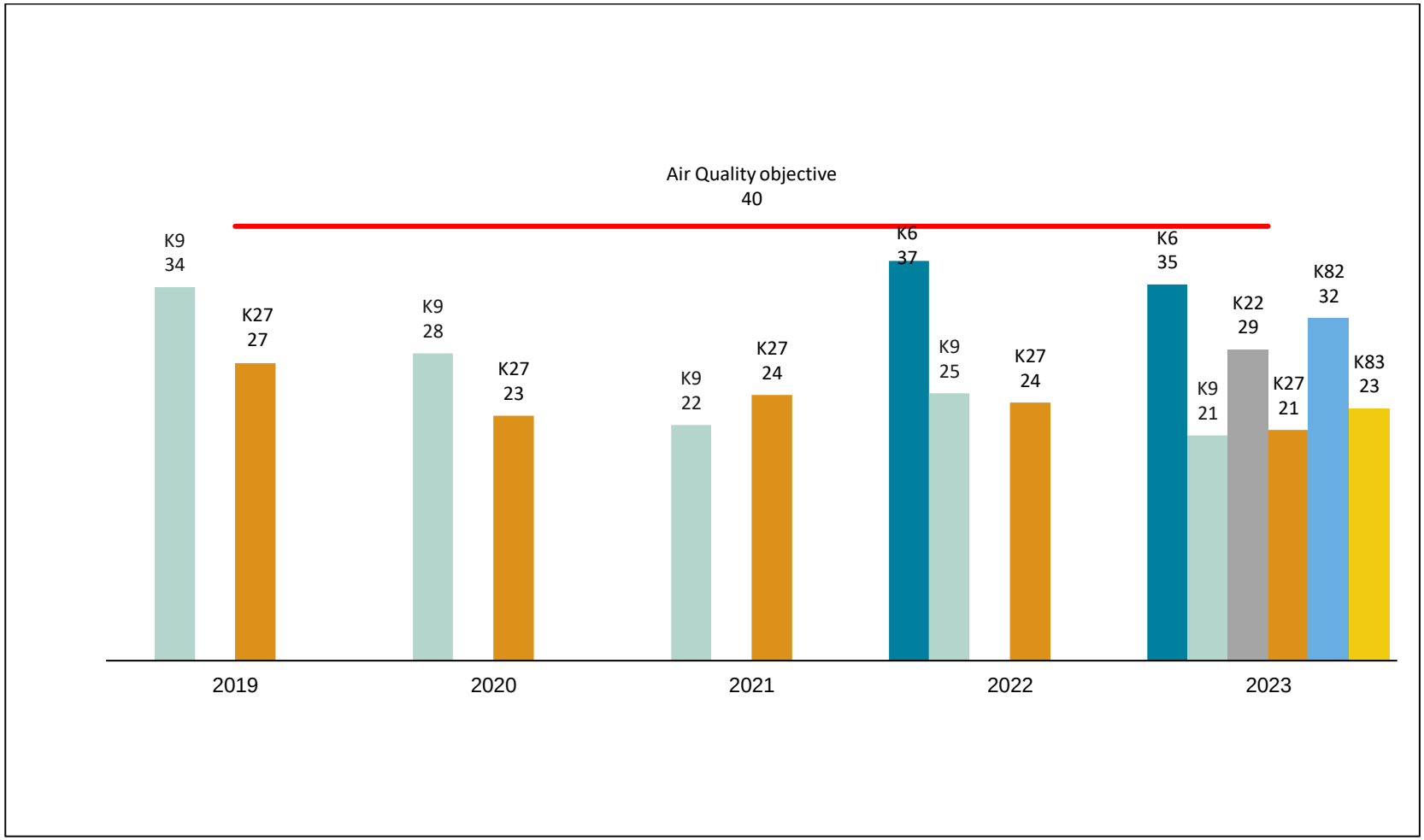
This chart shows trends in annual mean NO_2 concentrations in microgrammes per cubic metre (µg/m3) measured by diffusion tubes. Between 2012 and 2023 average concentrations have reduced. There have been slight fluctuations over time, with a noticeable increase in 2016 and notable decrease in 2020 (due to the covid pandemic).

Figure A.2 – Percentage improvement changes in annual mean NO_2 concentrations



A positive percentage change represents a reduction in annual mean NO_2 concentrations, whilst a negative percentage change represents an increase in annual mean NO_2 concentrations.

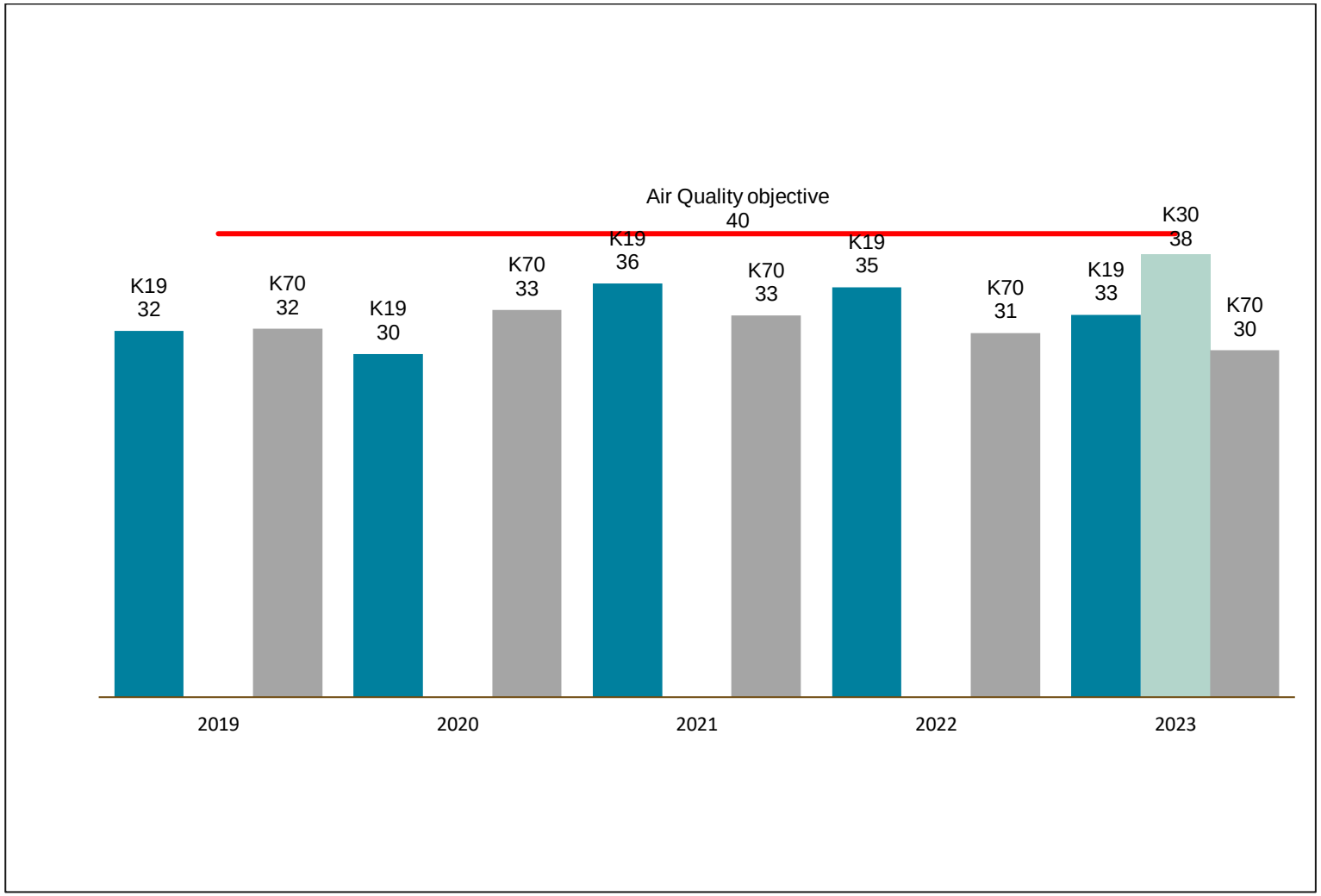
Figure A.3 – Trends in annual mean NO_2 concentrations, AQMA 1



This chart shows current roadside NO_2 annual mean concentrations between years 2019 to 2023 in AQMA 1. There are no exceedances in the period 2019 to 2023.

See Map D.1.

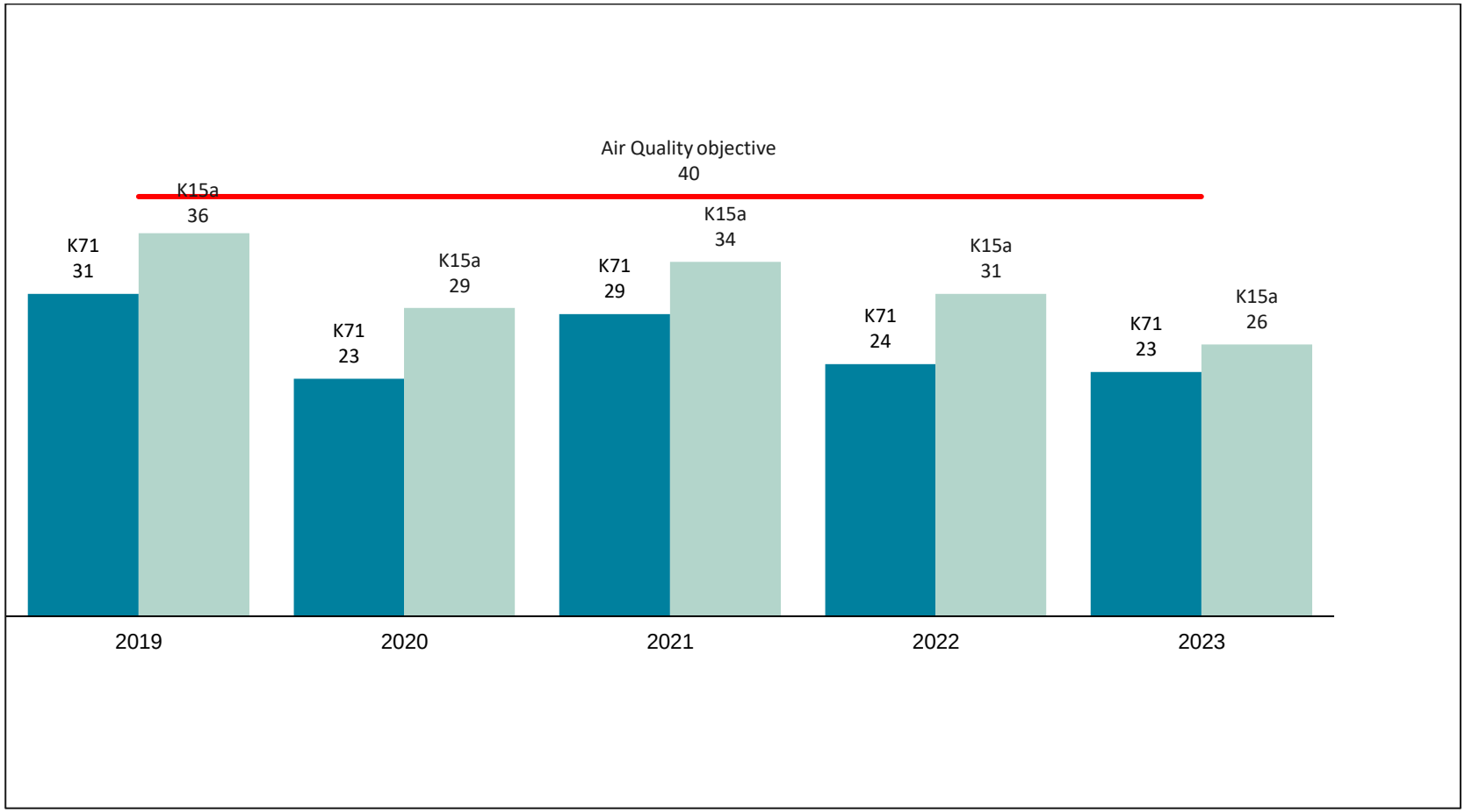
Figure A.4 – Trends in annual mean NO_2 concentrations, AQMA 2



This chart shows current roadside NO_2 annual mean concentrations between years 2019-2023 in AQMA 2 (declared due to exceedance of PM_{10} objectives). There are no exceedances of the NO_2 objective in the period 2019 to 2023.

See Map D.11.

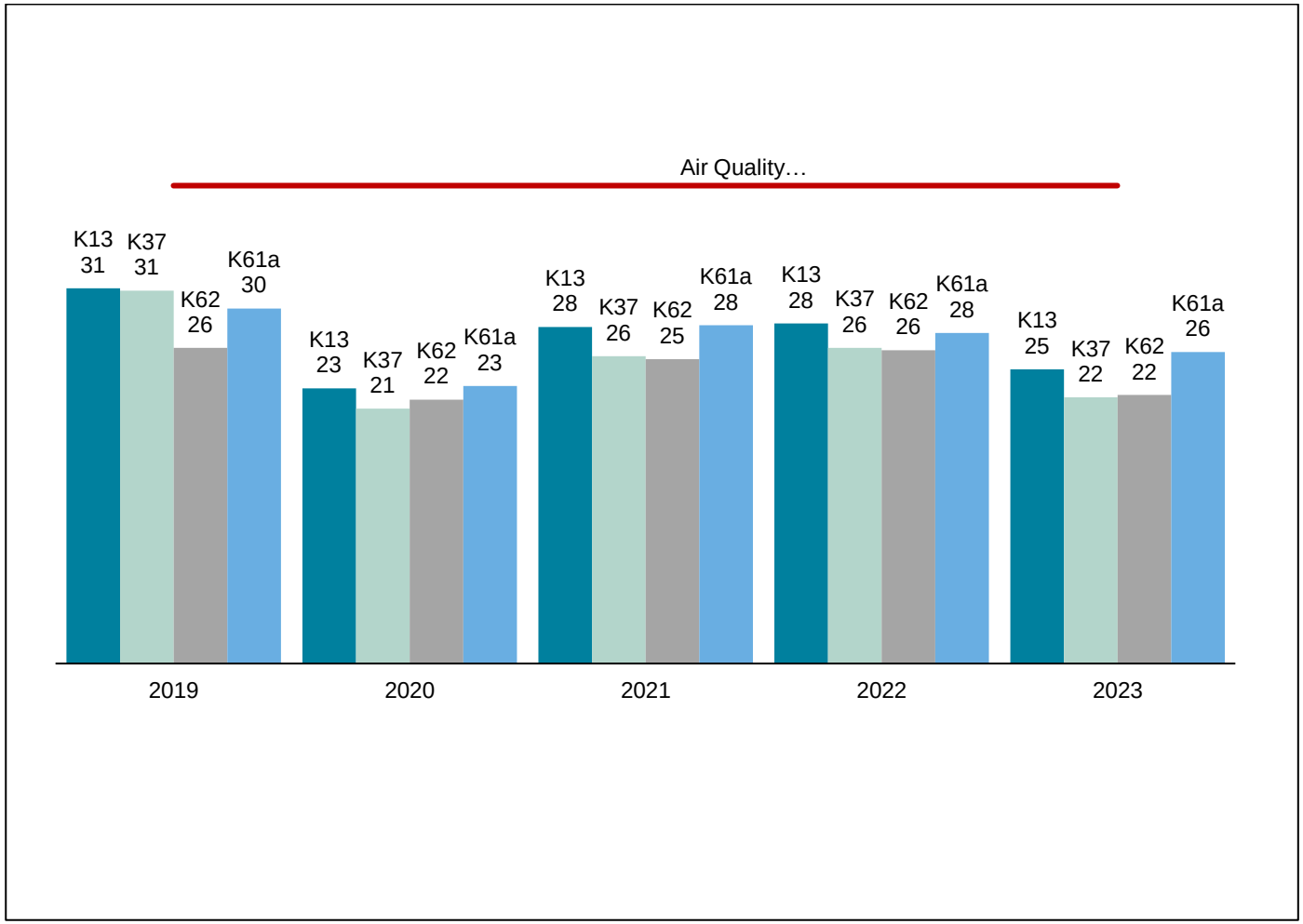
Figure A.5 – Trends in annual mean NO_2 concentrations, AQMA 3



This chart shows current roadside NO_2 annual mean concentrations between years 2019 and 2023 in AQMA 3. There are no exceedances of the NO_2 objective in the period 2019 to 2023.

See Map D.2.

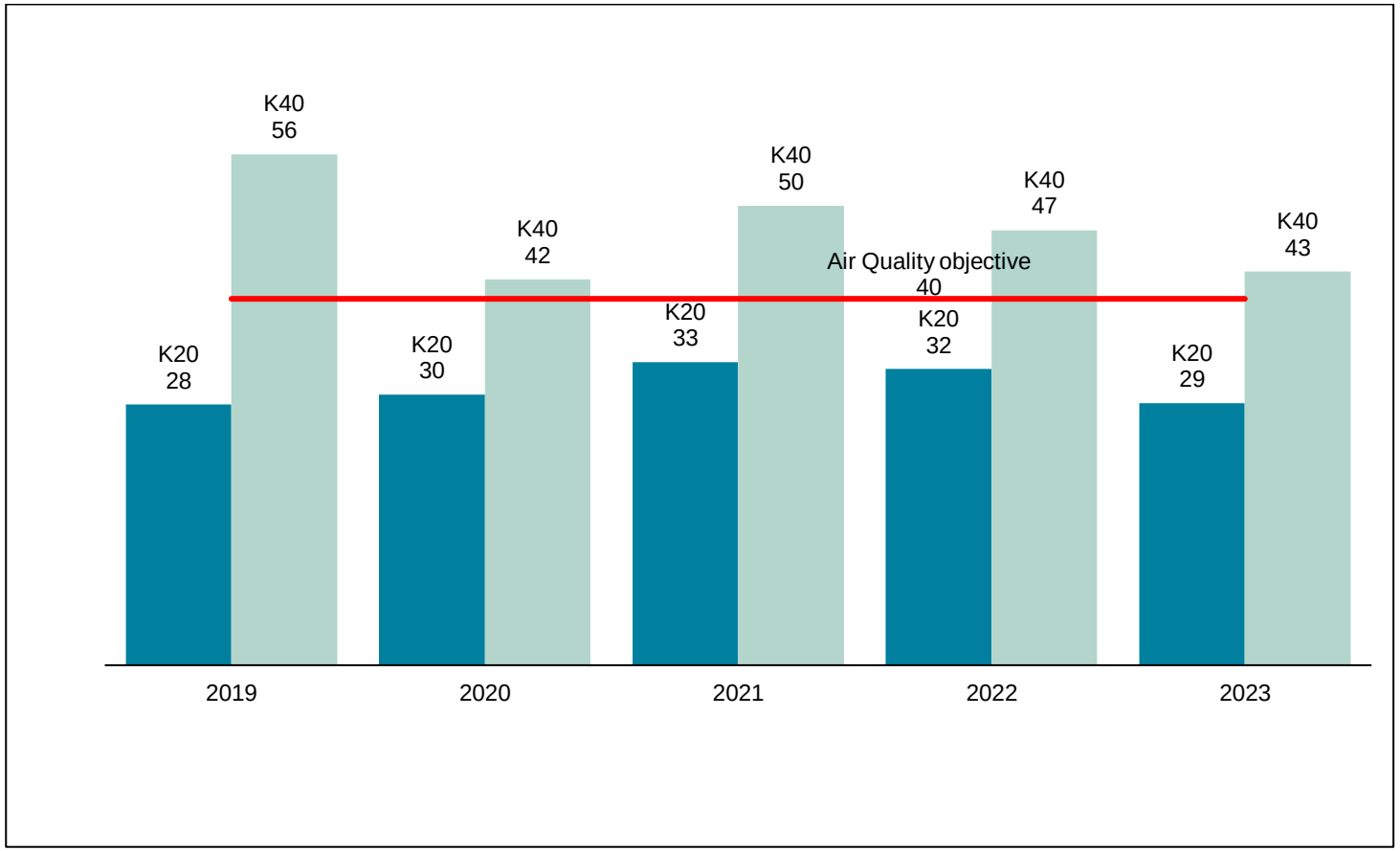
Figure A.6 – Trends in annual mean NO_2 concentrations, AQMA 4



This chart shows current roadside NO_2 annual mean concentrations between years 2019 and 2023 in AQMA 4. There are no exceedances of the NO_2 objective in the period 2019 to 2023.

See Map D.3.

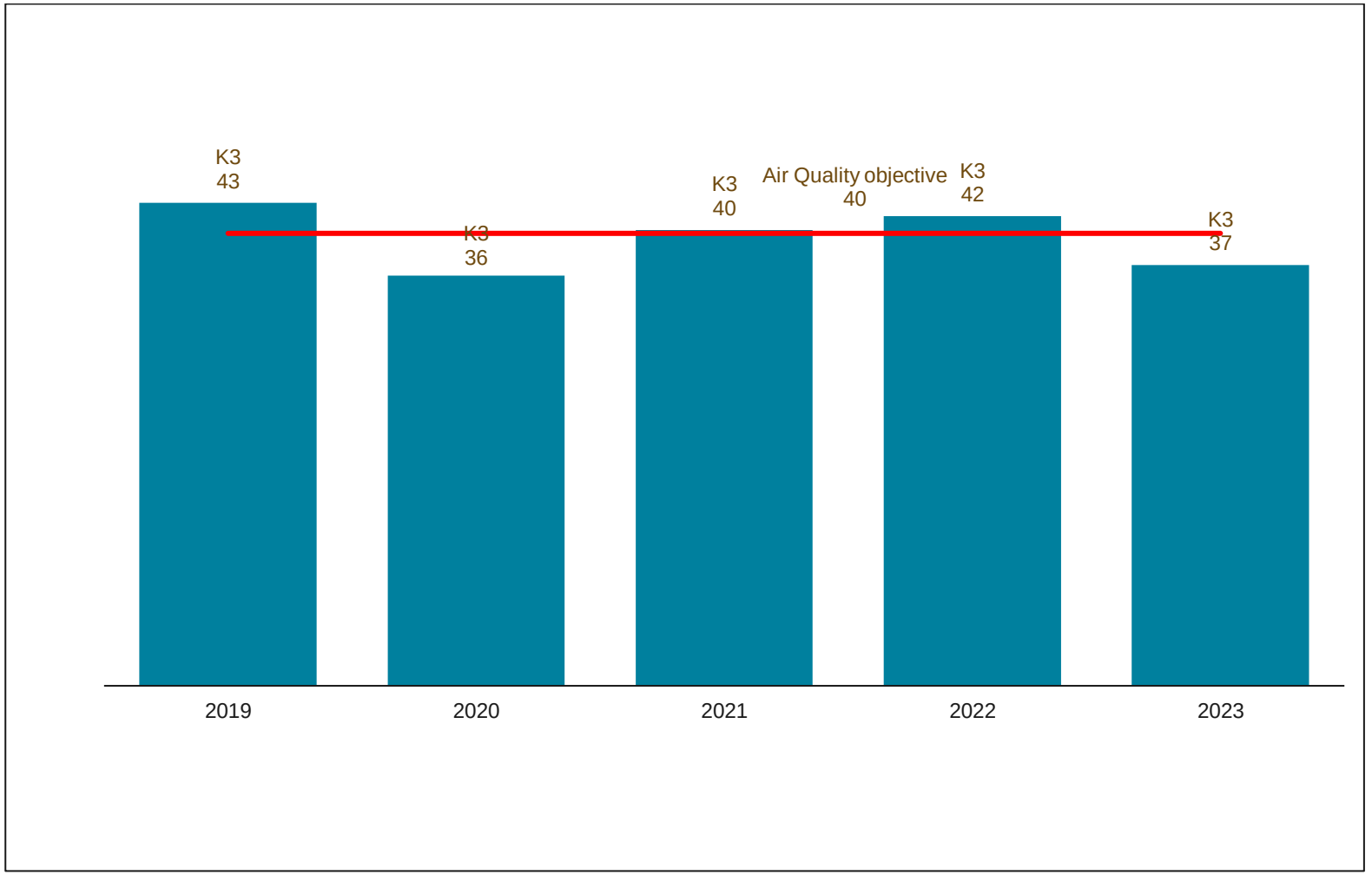
Figure A.7 – Trends in annual mean NO_2 concentrations, AQMA 5



This chart shows current roadside NO_2 annual mean concentrations between years 2019 and 2023 in AQMA 5. Concentrations continue to be exceeded at roadside in 2023. Concentrations were also exceeded at the nearest receptor facade to diffusion tube K40 in 2023.

See Map D.4.

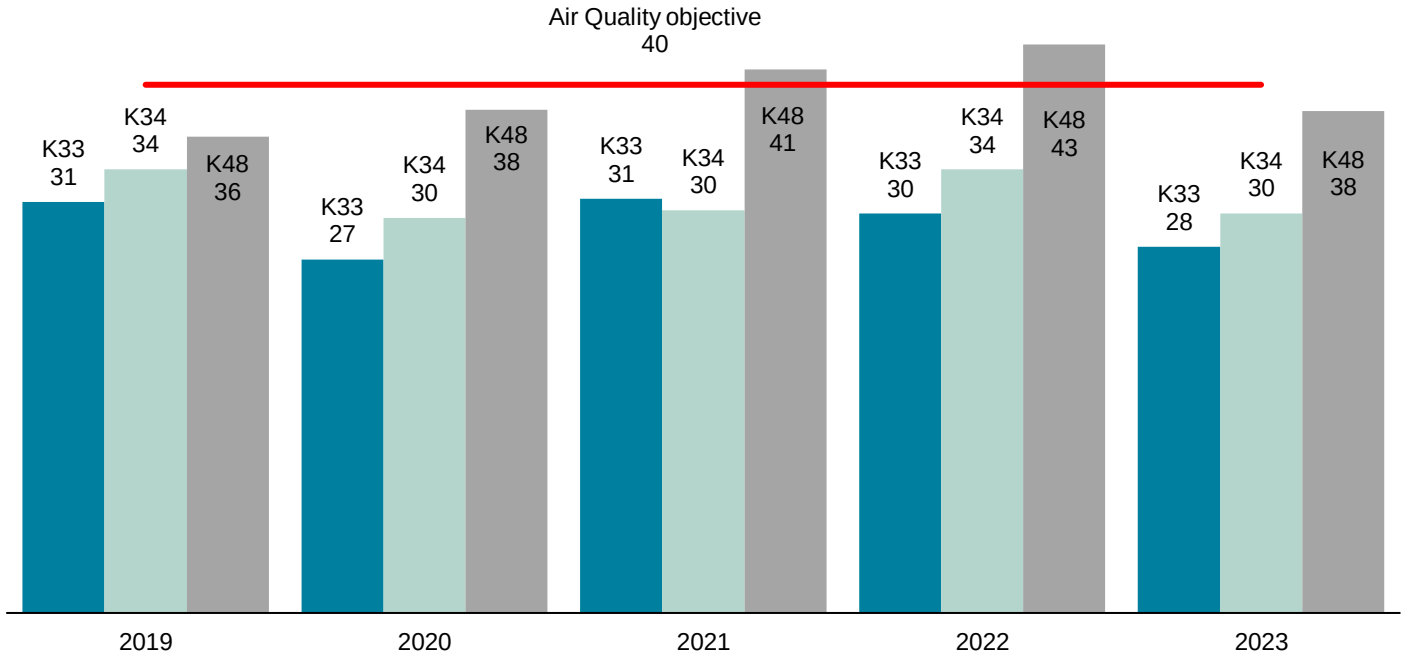
Figure A.8 – Trends in annual mean NO_2 concentrations, AQMA 6



This chart shows current roadside NO_2 annual mean concentrations between years 2019 and 2023 in AQMA 6. Concentrations have exceeded three times between 2019 and 2022 but for 2023 reduced to 37 µg/m^3 at roadside.

See Map D.5.

Figure A.9 – Trends in annual mean NO_2 concentrations, AQMA 7

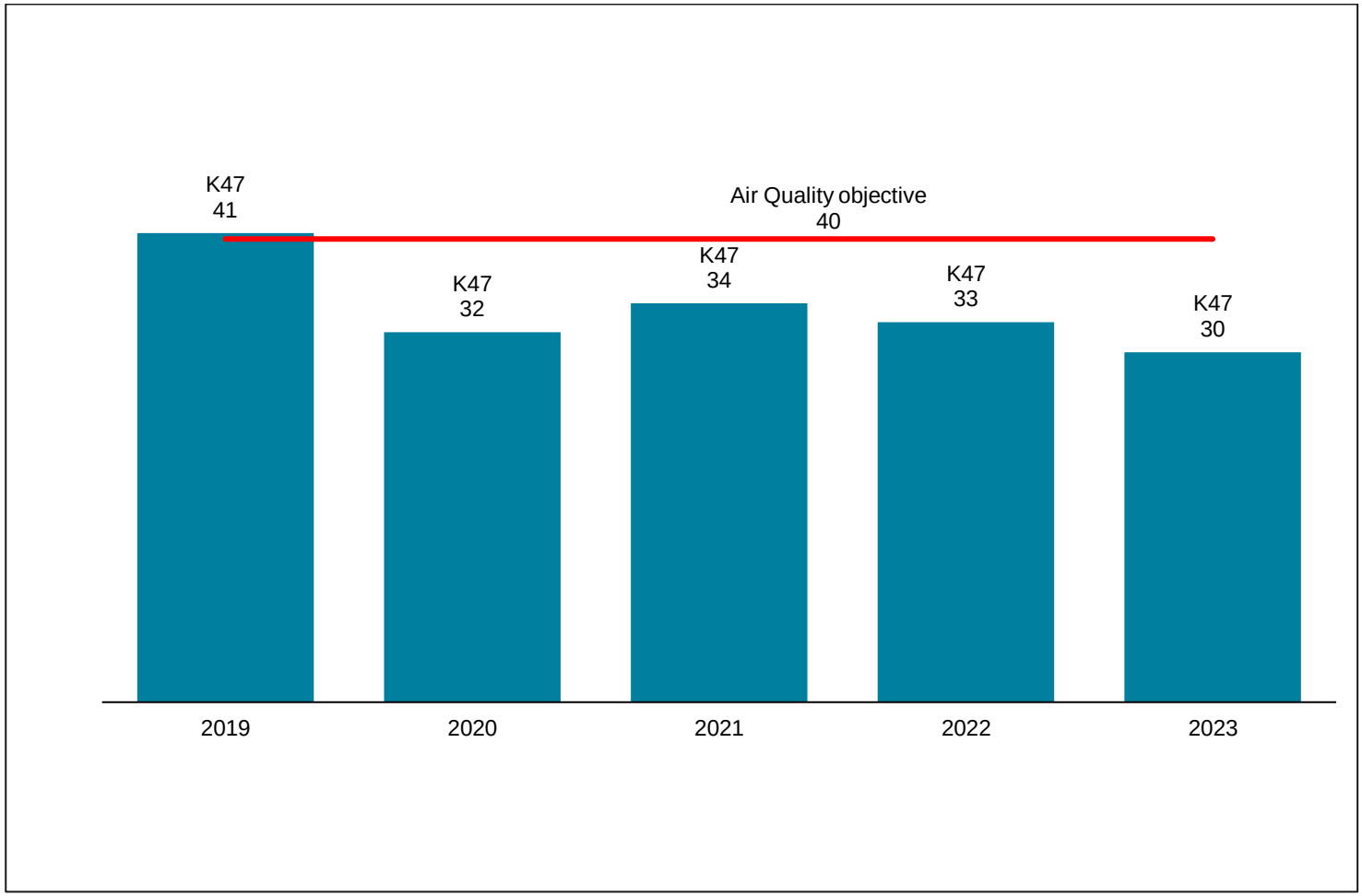


This chart shows current roadside NO_2 annual mean concentrations between years 2019 and 2023 in AQMA 7. Concentrations for site K48 exceeded in 2021 and 2022 but for 2023 reduced to 38 µg/m^3 at roadside (also representative of receptor facade)

This chart shows current roadside NO_2 annual mean concentrations between years 2019 and 2023 in AQMA 7. Concentrations for site K48 exceeded in 2021 and 2022 but for 2023 reduced to 38 µg/m^3 at roadside (also representative of receptor facade).

See Map D.6.

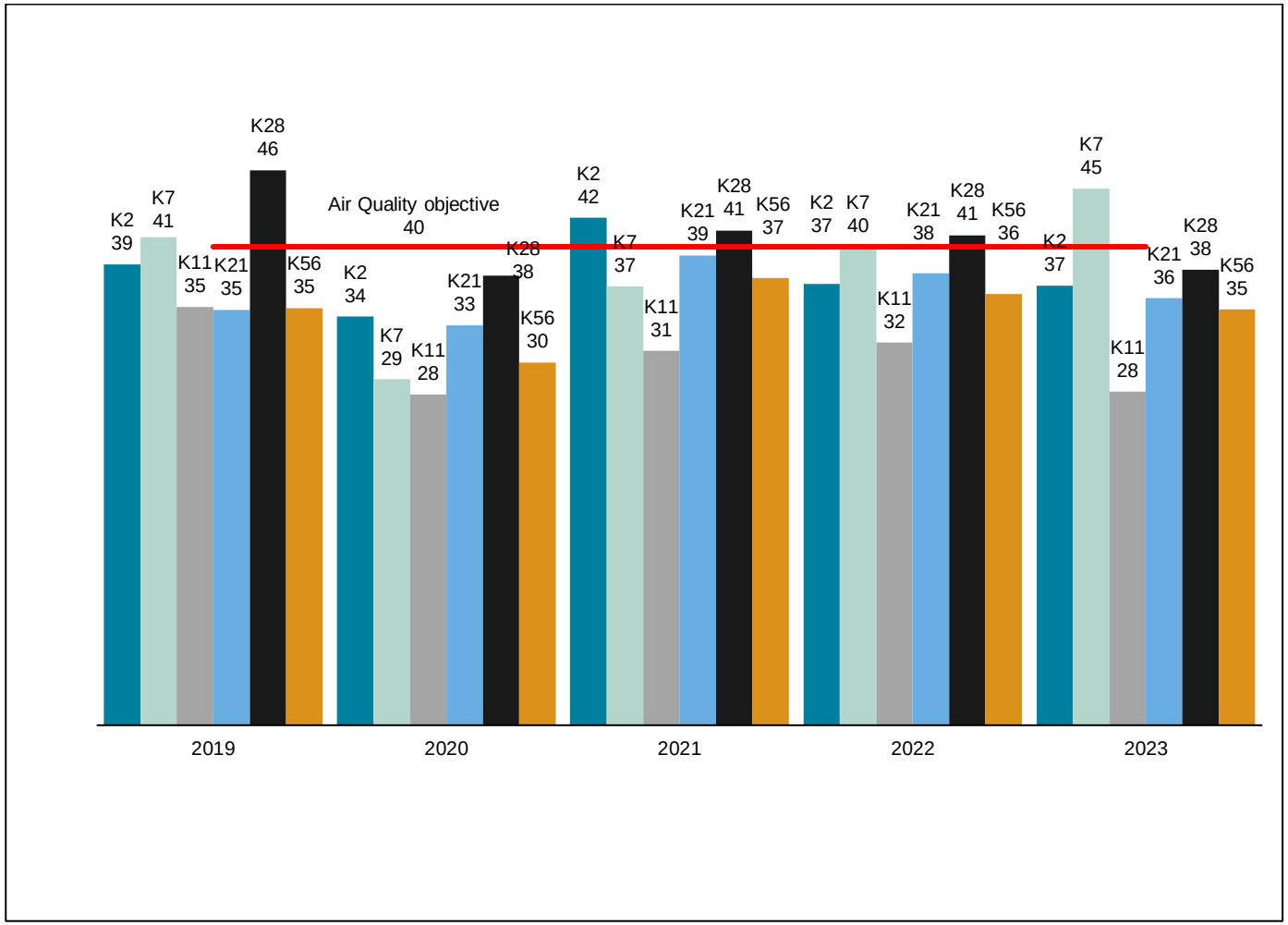
Figure A.10 – Trends in annual mean NO_2 concentrations, AQMA 8



This chart shows current roadside NO_2 annual mean concentrations between years 2019 and 2023 in AQMA 8. There are no exceedances of the NO_2 objective in the period 2019 to 2023.

See Map D.7.

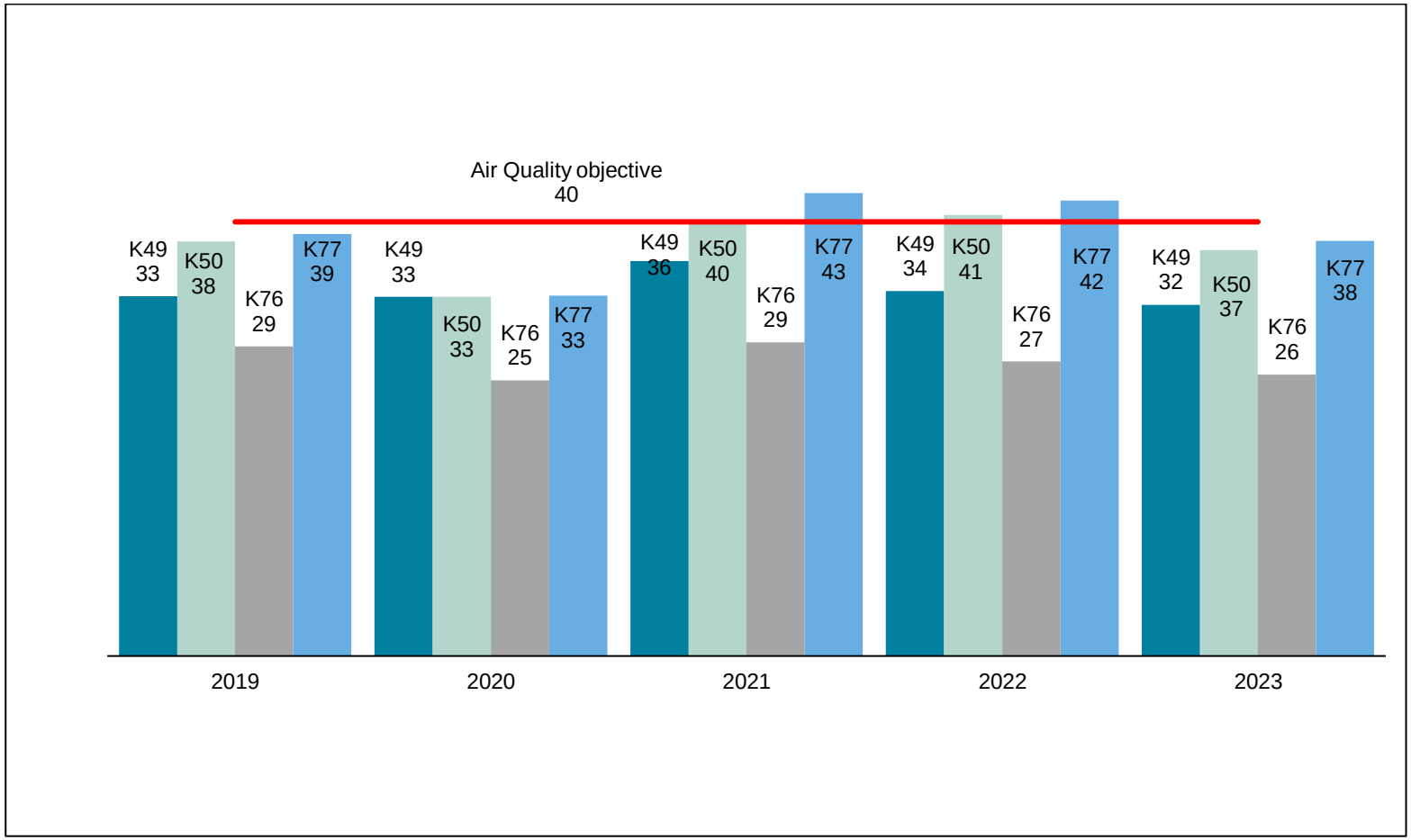
Figure A.11 – Trends in annual mean NO_2 concentrations, AQMA 9



This chart shows current roadside NO_2 annual mean concentrations between years 2019-2023 in AQMA 9. In 2023, there has been an increase in roadside concentrations at location K7, Westgate with concentrations at all other locations staying the same or reducing.

See Map D.8.

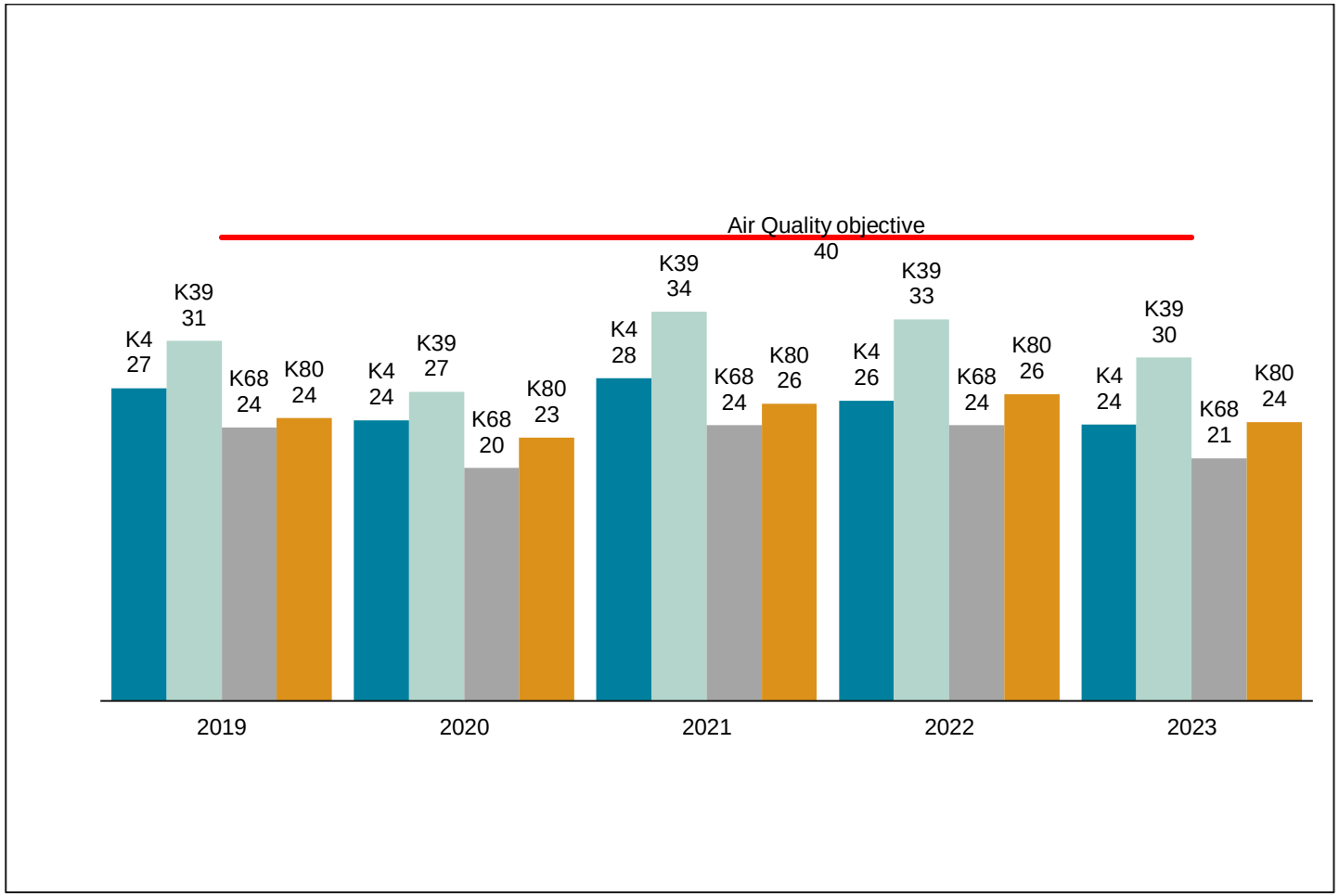
Figure A.12 – Trends in annual mean NO_2 concentrations, AQMA 10



This chart shows current roadside NO_2 annual mean concentrations between years 2019 and 2023 in AQMA 10. In 2023, there has been a reduction in concentrations at all locations.

See Map D.9.

Figure A.13 – Trends in annual mean NO_2 concentrations, Batley



This chart shows current roadside NO_2 annual mean concentrations between years 2019 and 2023 in the Batley area. There were no exceedances between 2019 and 2023.

See Map D.10.

Figure A.14 – Trends in annual mean NO_2 concentrations, Mirfield

This chart shows current roadside NO_2 annual mean concentrations between years 2019 and 2023 in the Mirfield area. There were no exceedances between 2020 and 2023.

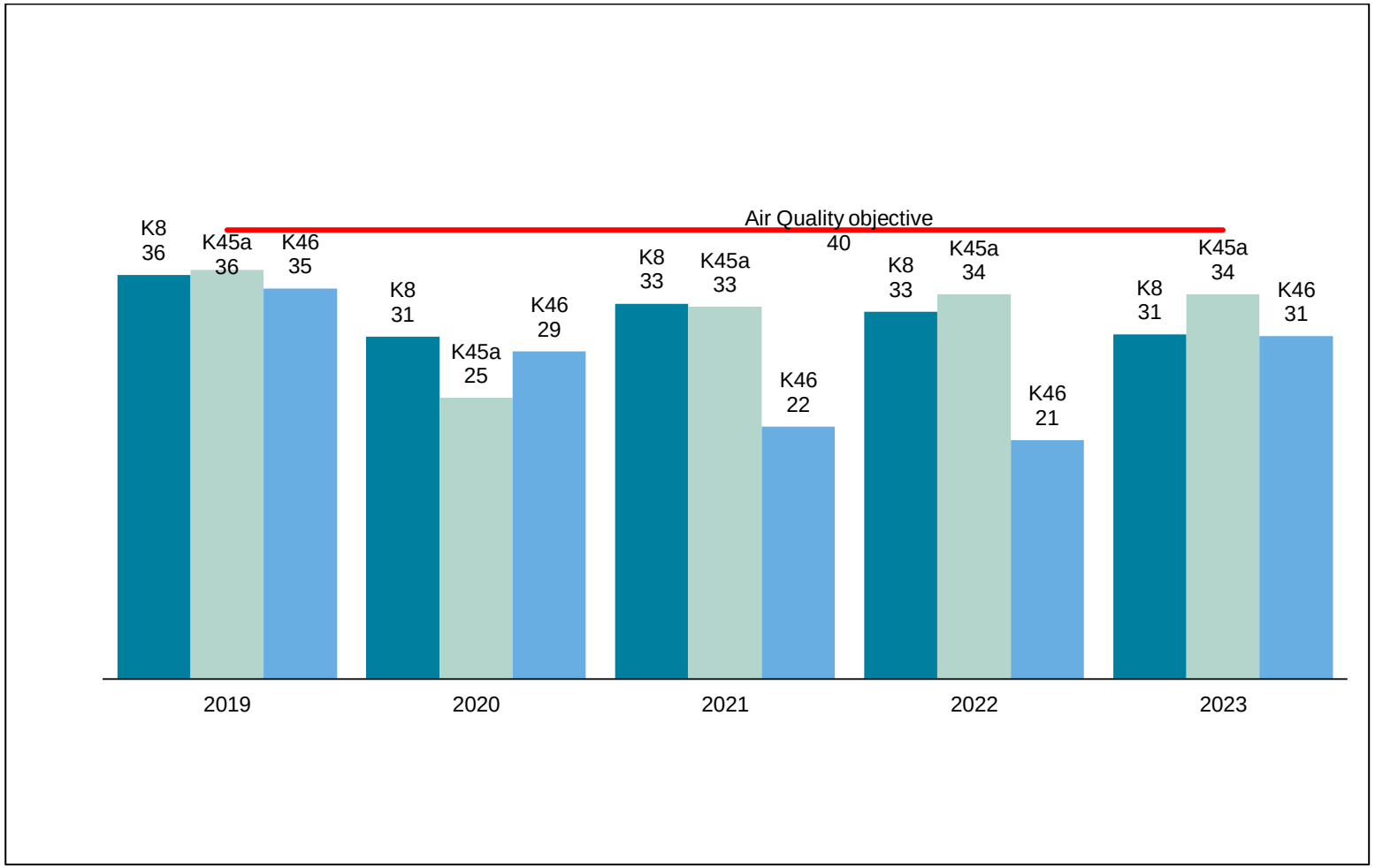
See Map D.12.

Figure A.15 – Trends in annual mean NO_2 concentrations, Cleckheaton, Hunsworth, Oakenshaw

This chart shows current roadside NO_2 annual mean concentrations between years 2019 and 2023 in the Cleckheaton, Hunsworth and Oakenshaw areas. There were no exceedances between 2019 and 2023.

See Map D.14.

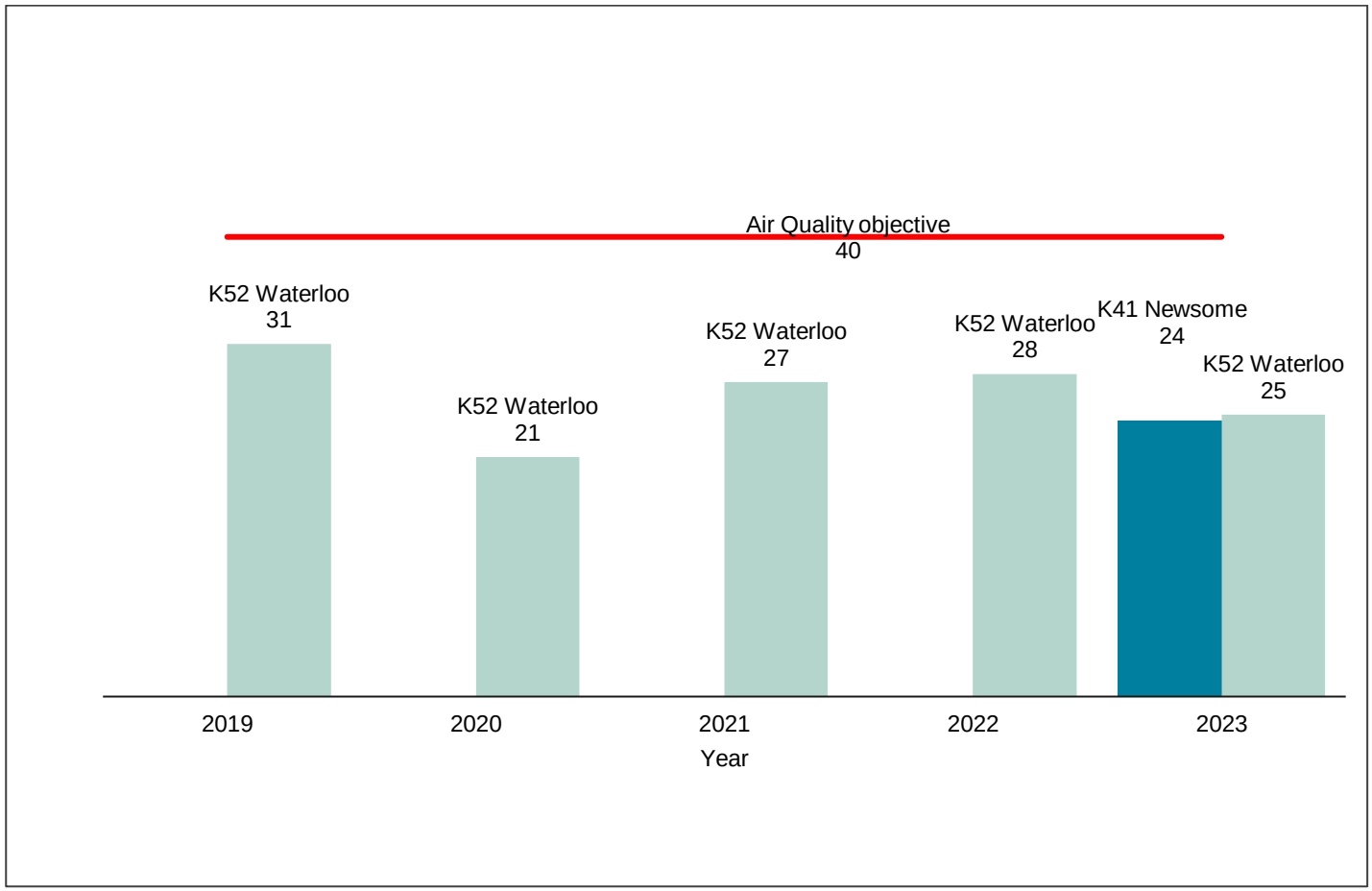
Figure A.16 – Trends in annual mean NO_2 concentrations, Fartown



This chart shows current roadside NO_2 annual mean concentrations between years 2019 and 2023 in the Fartown area. There were no exceedances between 2019 and 2023.

See Map D.15.

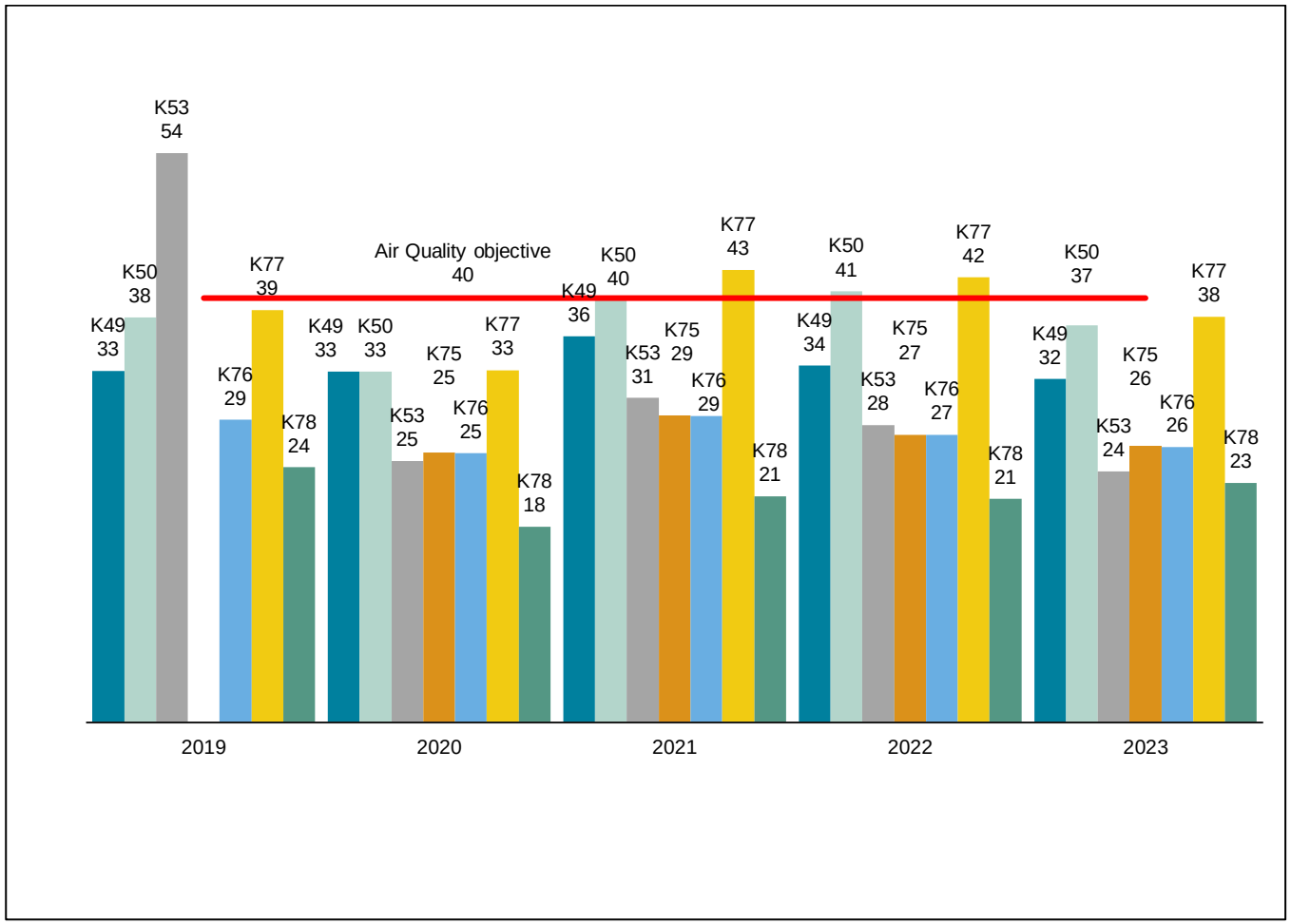
Figure A.17 – Trends in annual mean NO_2 concentrations, Waterloo and Newsome



This chart shows current roadside NO_2 annual mean concentrations between years 2019 and 2023 in the Waterloo and Newsome areas. There were no exceedances between 2019 and 2023.

See Map D.16.

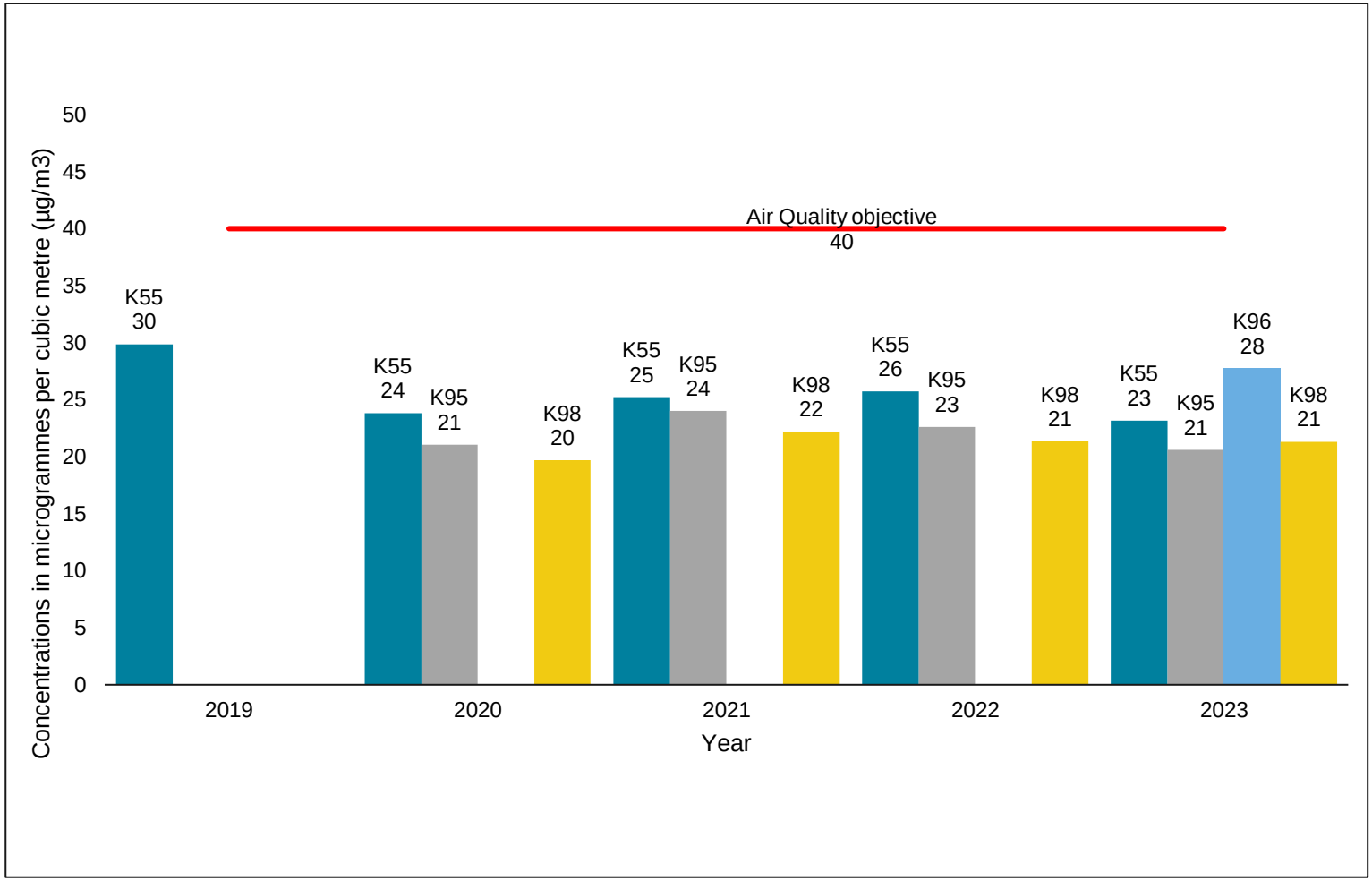
Figure A.18 – Trends in annual mean NO_2 concentrations, Thornton Lodge, Longroyd Bridge, Milnsbridge



This chart shows current roadside NO_2 annual mean concentrations between years 2019 and 2023 in the Thornton Lodge, Longroyd Bridge, Milnsbridge area. There were no exceedances in 2023.

See Maps D.9 and D.17.

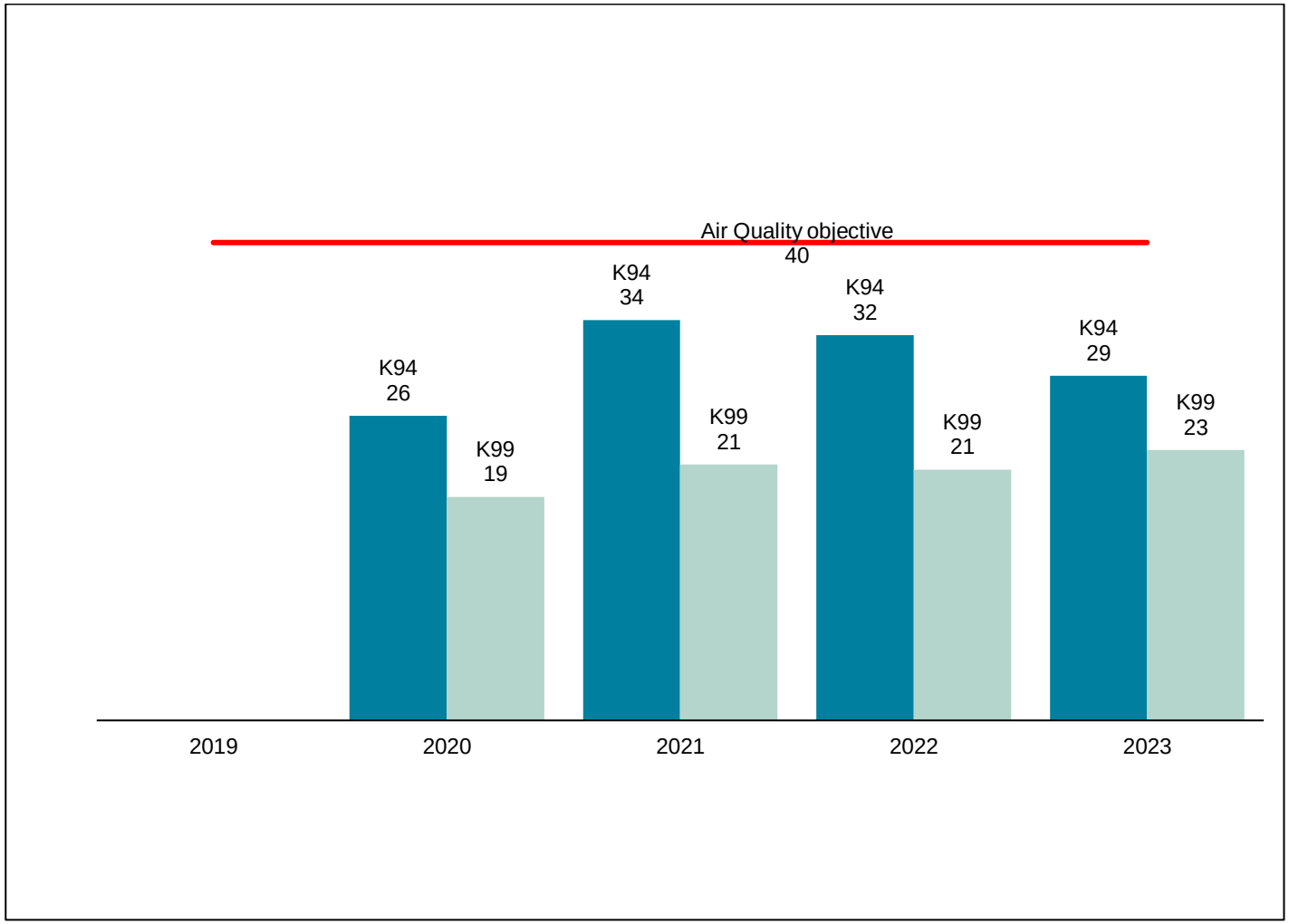
Figure A.19 – Trends in annual mean NO_2 concentrations, Holmfirth



This chart shows current roadside NO_2 annual mean concentrations between years 2019 and 2023 in Holmfirth. There were no exceedances between 2019 and 2023.

See Map D.18.

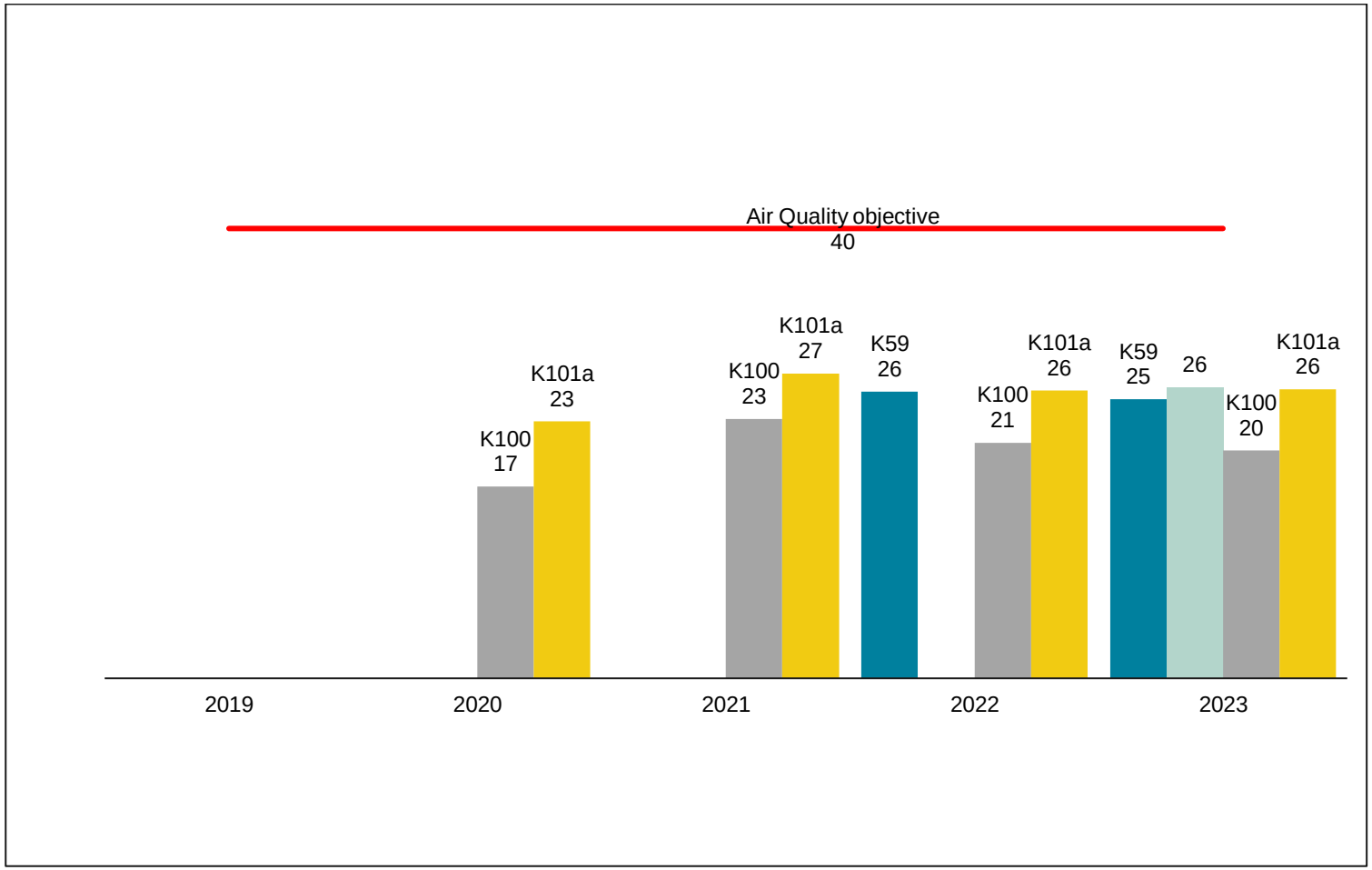
Figure A.20 – Trends in annual mean NO_2 concentrations, Shaw Cross



This chart shows current roadside NO_2 annual mean concentrations between years 2019 and 2023 in Shaw Cross. There were no exceedances between 2019 and 2023.

See Map D.19.

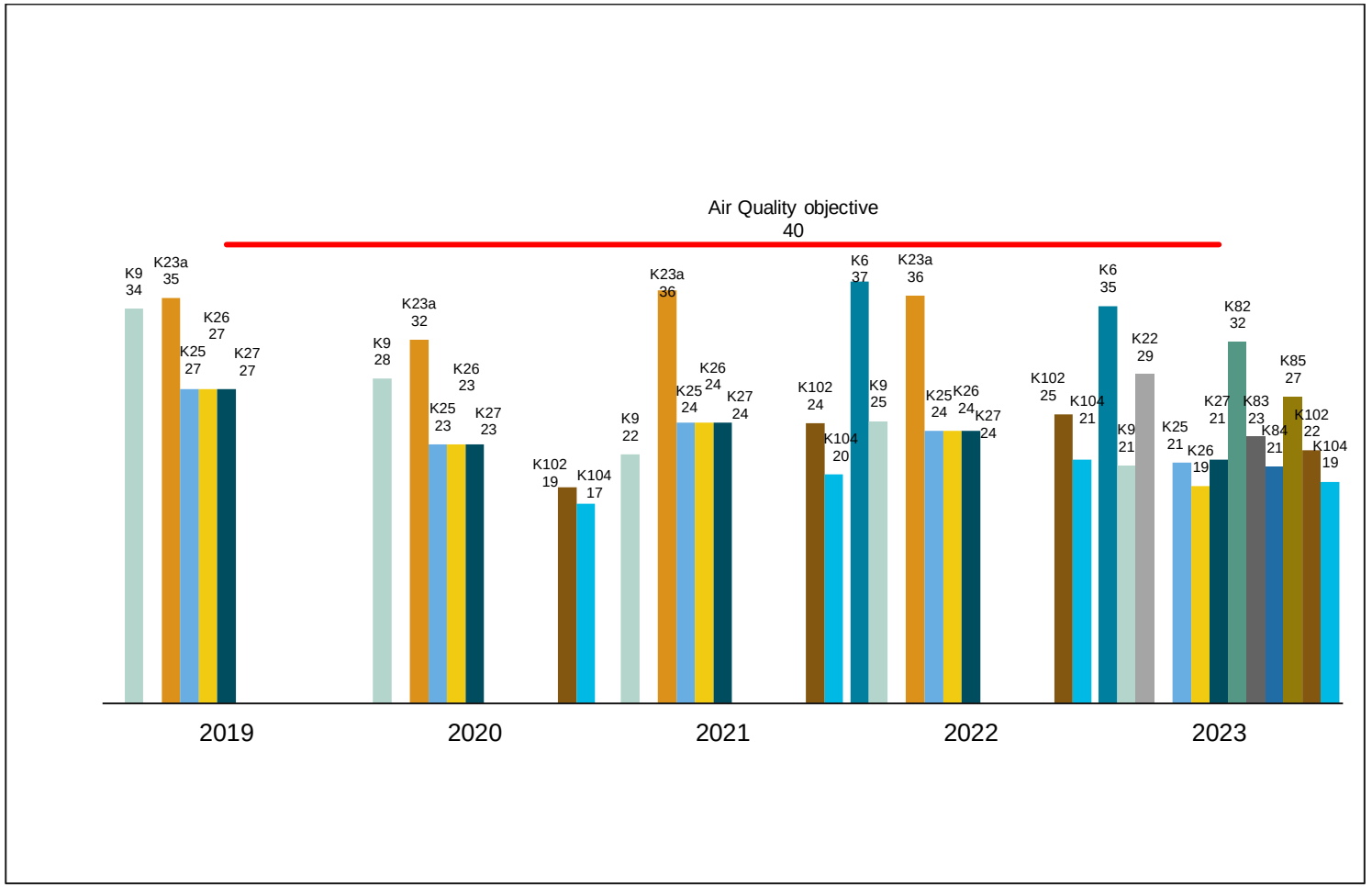
Figure A.21 – Trends in annual mean NO_2 concentrations, Oakes and Marsh



This chart shows current roadside NO_2 annual mean concentrations between years 2019 and 2023 in the Oakes and Marsh area. There were no exceedances between 2019 and 2023.

See Map D.20.

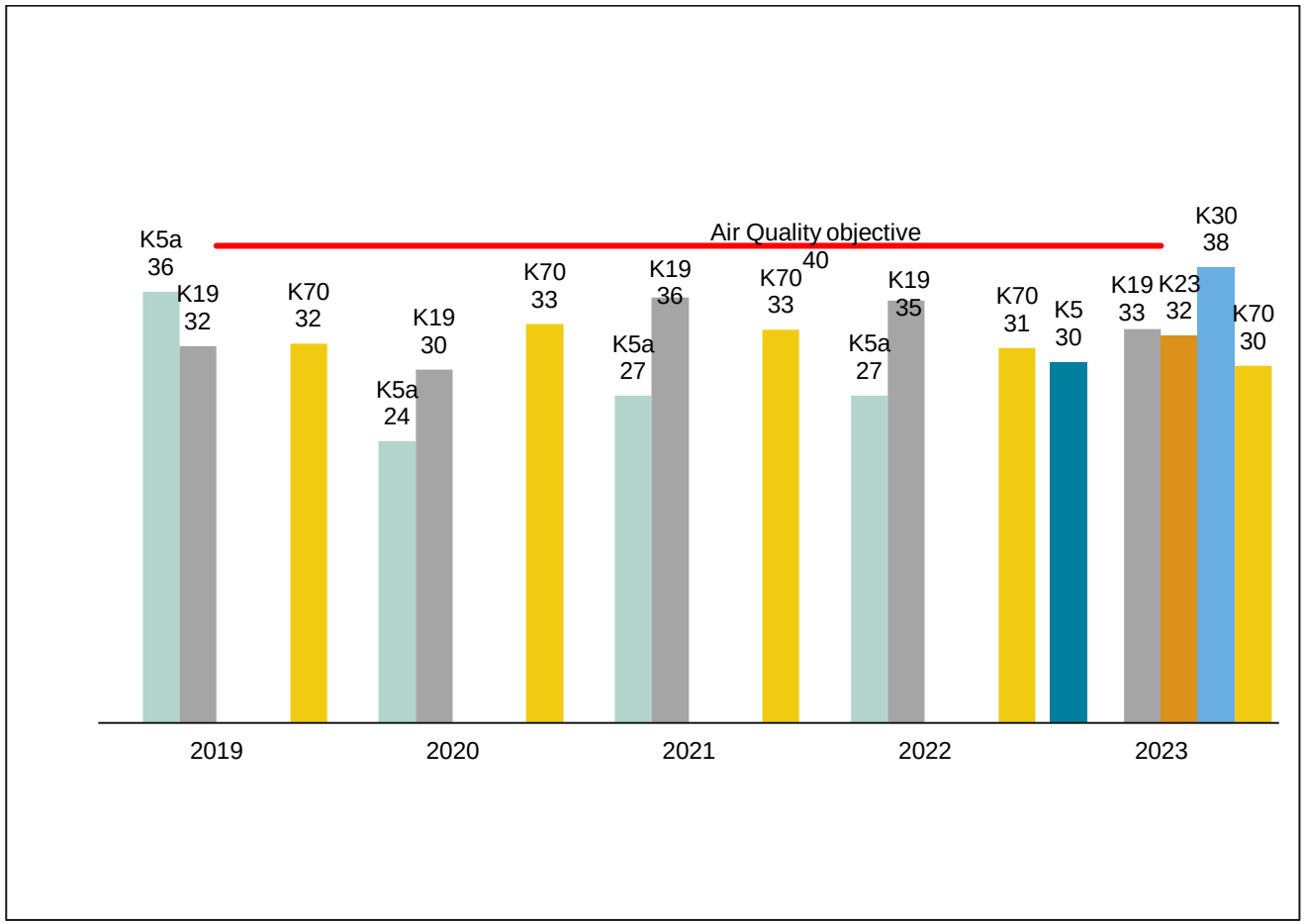
Figure A.22 – Trends in annual mean NO_2 concentrations, Bradley



This chart shows current roadside NO_2 annual mean concentrations between years 2019 and 2023 in the Bradley area. There are no exceedances in the period 2019 to 2023.

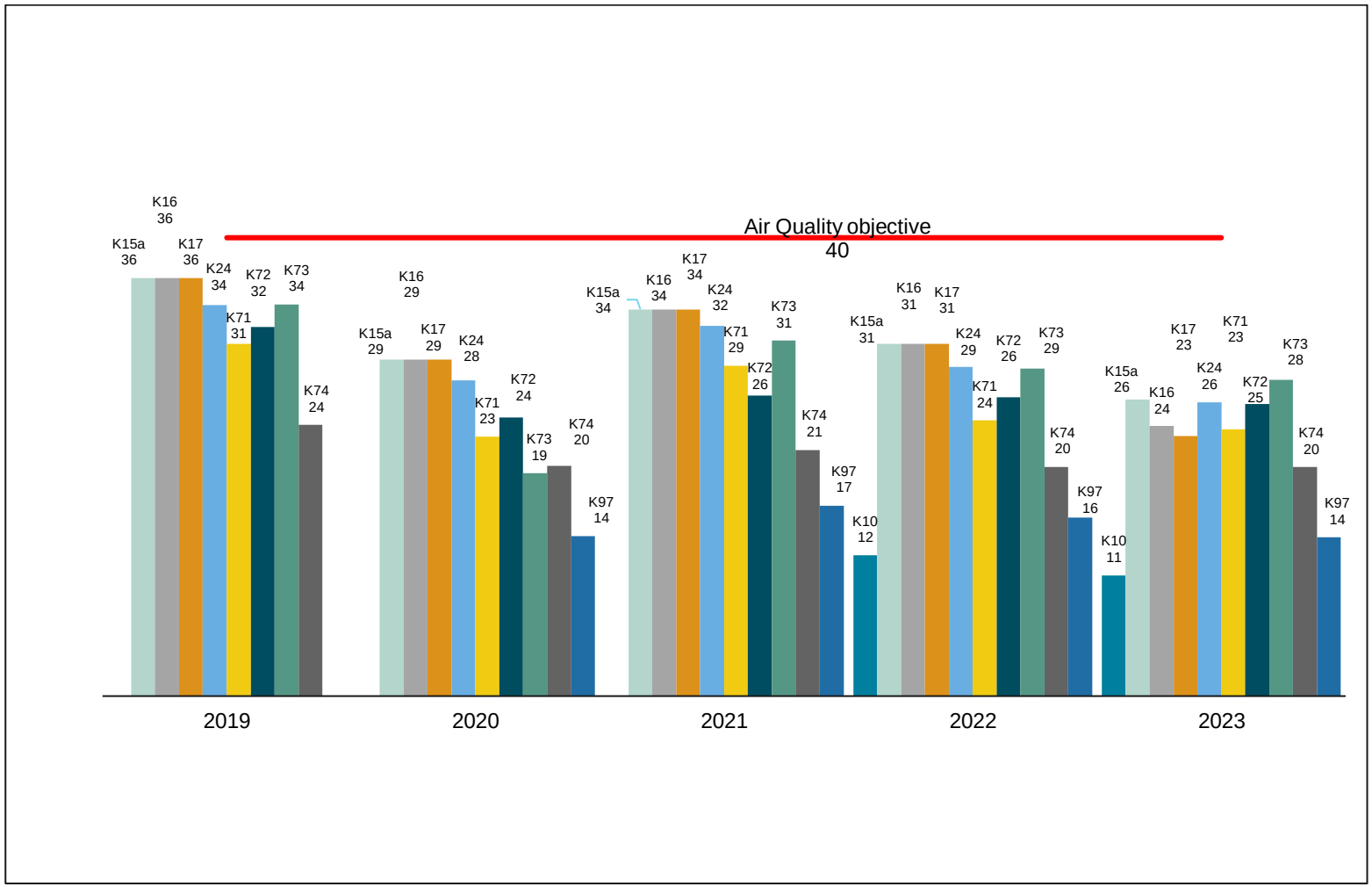
See Maps D.1 and D.21.

Figure A.23 – Trends in annual mean NO_2 concentrations, Ravensthorpe, Scouthill



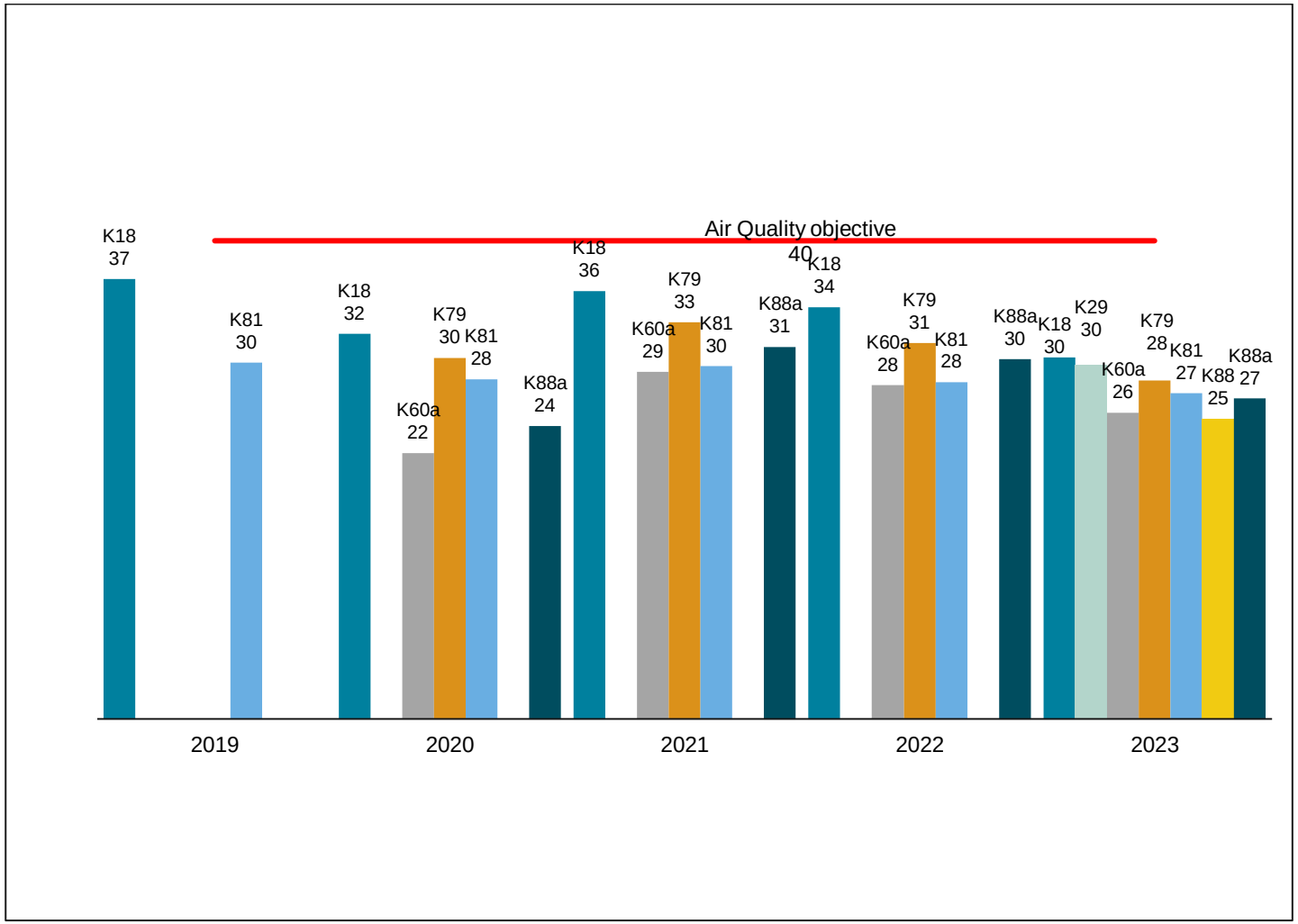
This chart shows current roadside NO_2 annual mean concentrations between years 2019 and 2023 in the Ravensthorpe/Scouthill area. There were no exceedances between 2019 and 2023.

Figure A.24 – Trends in annual mean NO_2 concentrations, Ainley Top, Mount, Lindley



This chart shows current roadside NO_2 annual mean concentrations between years 2019 and 2023 in the Ainley Top, Mount and Lindley area. There are no exceedances in the period 2019 to 2023.

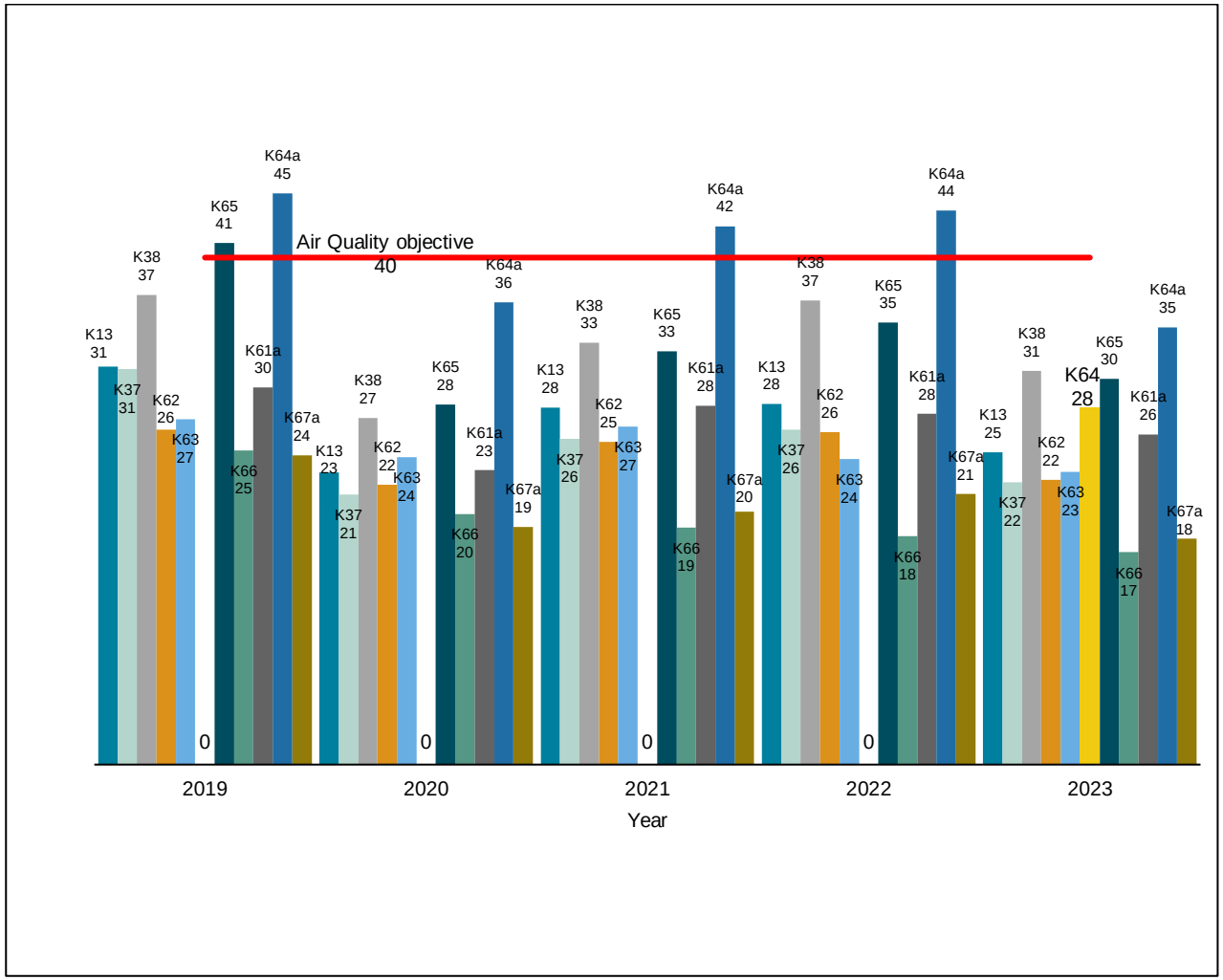
Figure A.25 – Trends in annual mean NO_2 concentrations, Birstall



This chart shows current roadside NO_2 annual mean concentrations between years 2019 and 2023 in the Birstall area. There are no exceedances in the period 2019 to 2023.

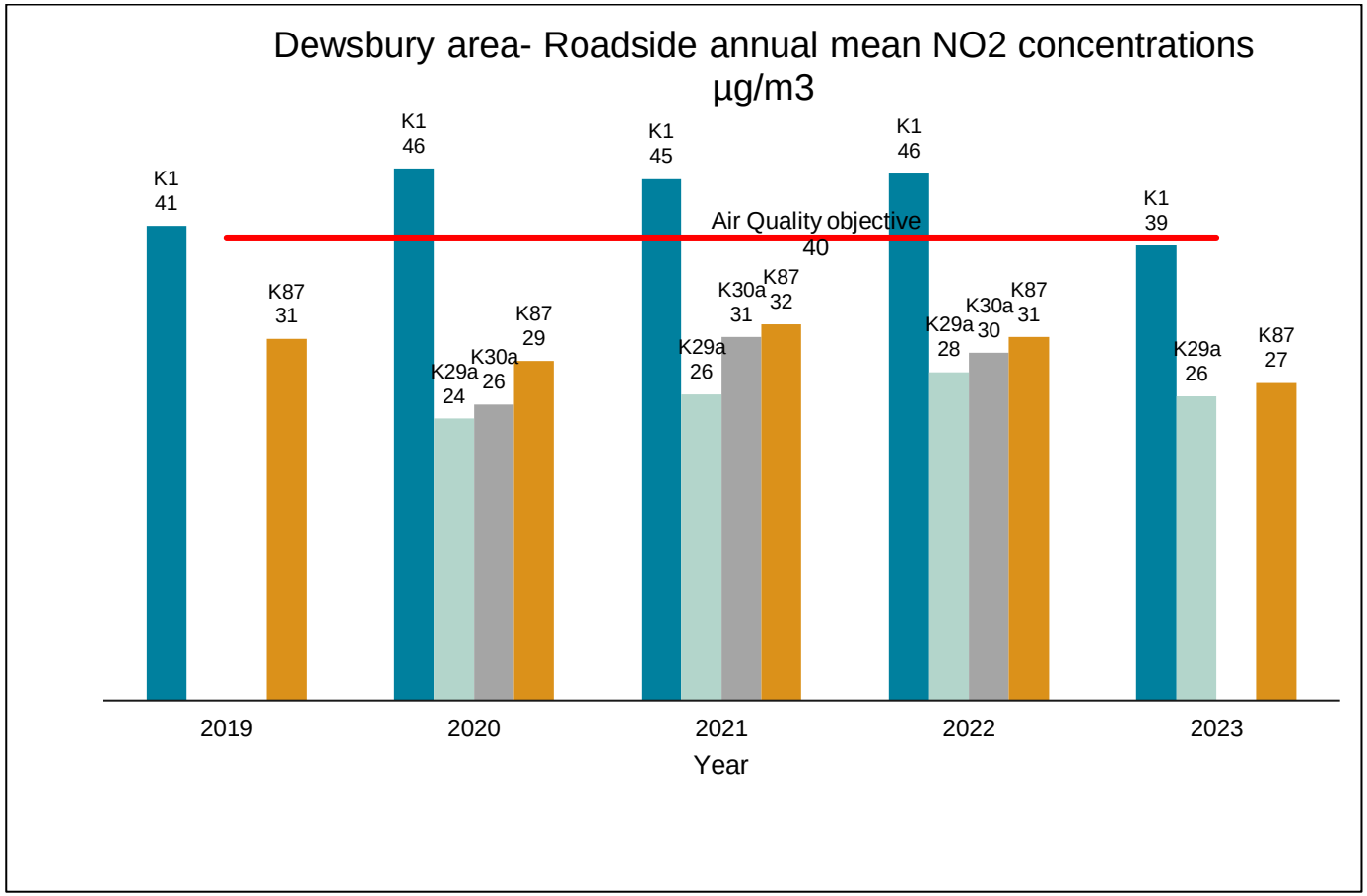
See Map D.13.

Figure A.26 – Trends in annual mean NO_2 concentrations, Birkenshaw



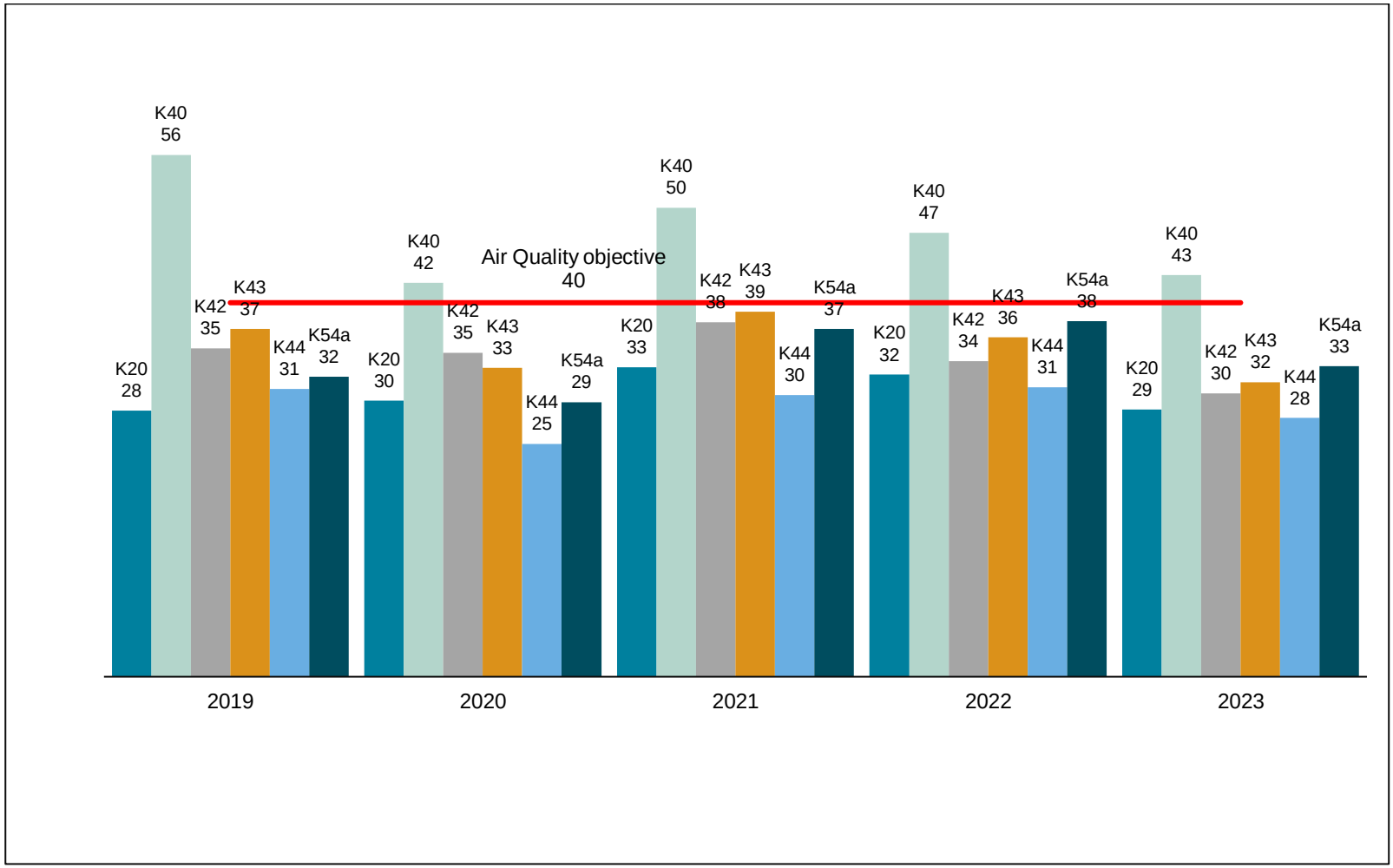
This chart shows current roadside NO_2 annual mean concentrations between years 2019 and 2023 in the Birkenshaw area. There are no exceedances in 2023.

Figure A.27 – Trends in annual mean NO_2 concentrations, Dewsbury



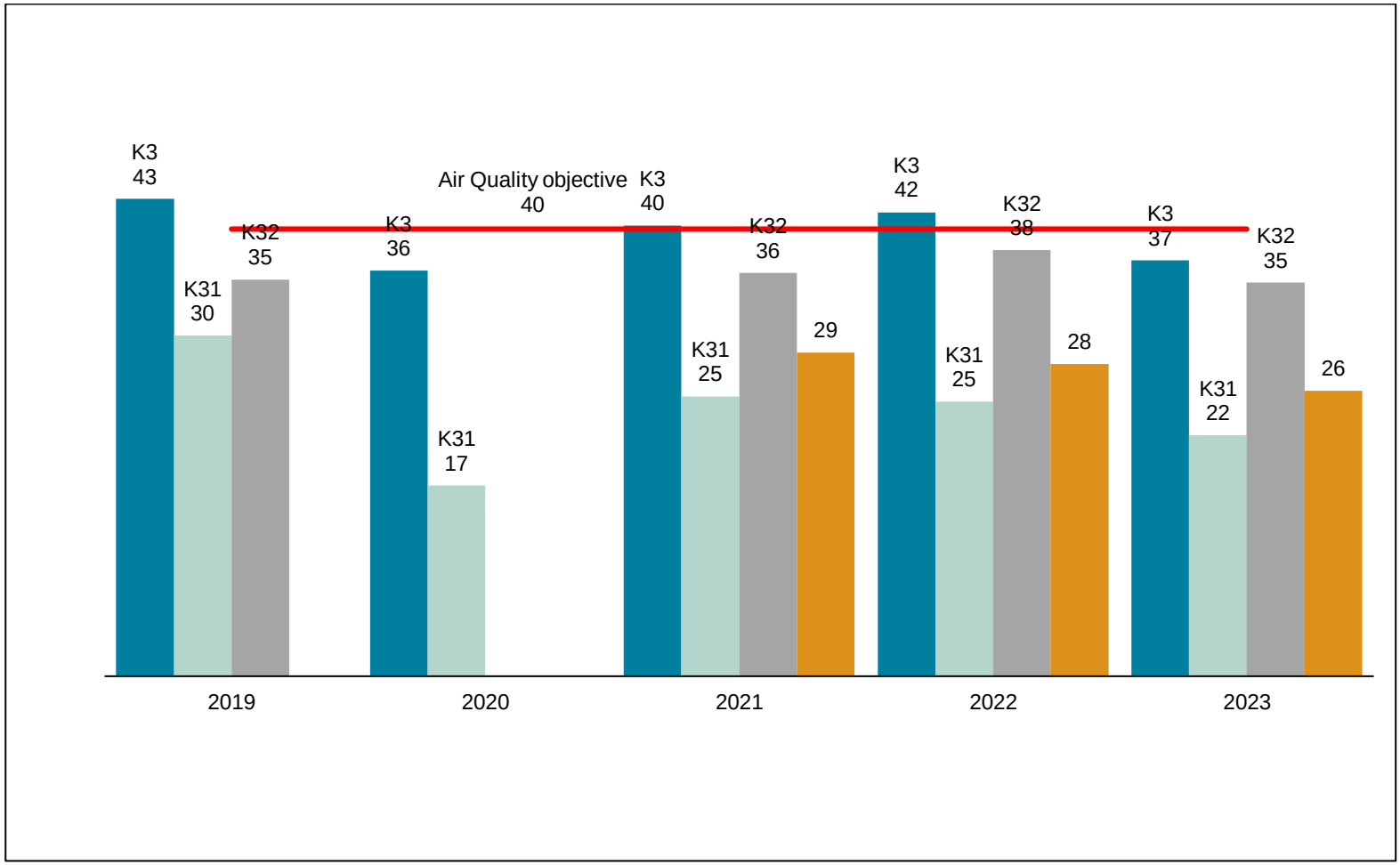
This chart shows current roadside NO_2 annual mean concentrations between years 2019 and 2023 in the Dewsbury area. Concentrations reduced at all locations in 2023.

Figure A.28 – Trends in annual mean NO_2 concentrations, Eastborough



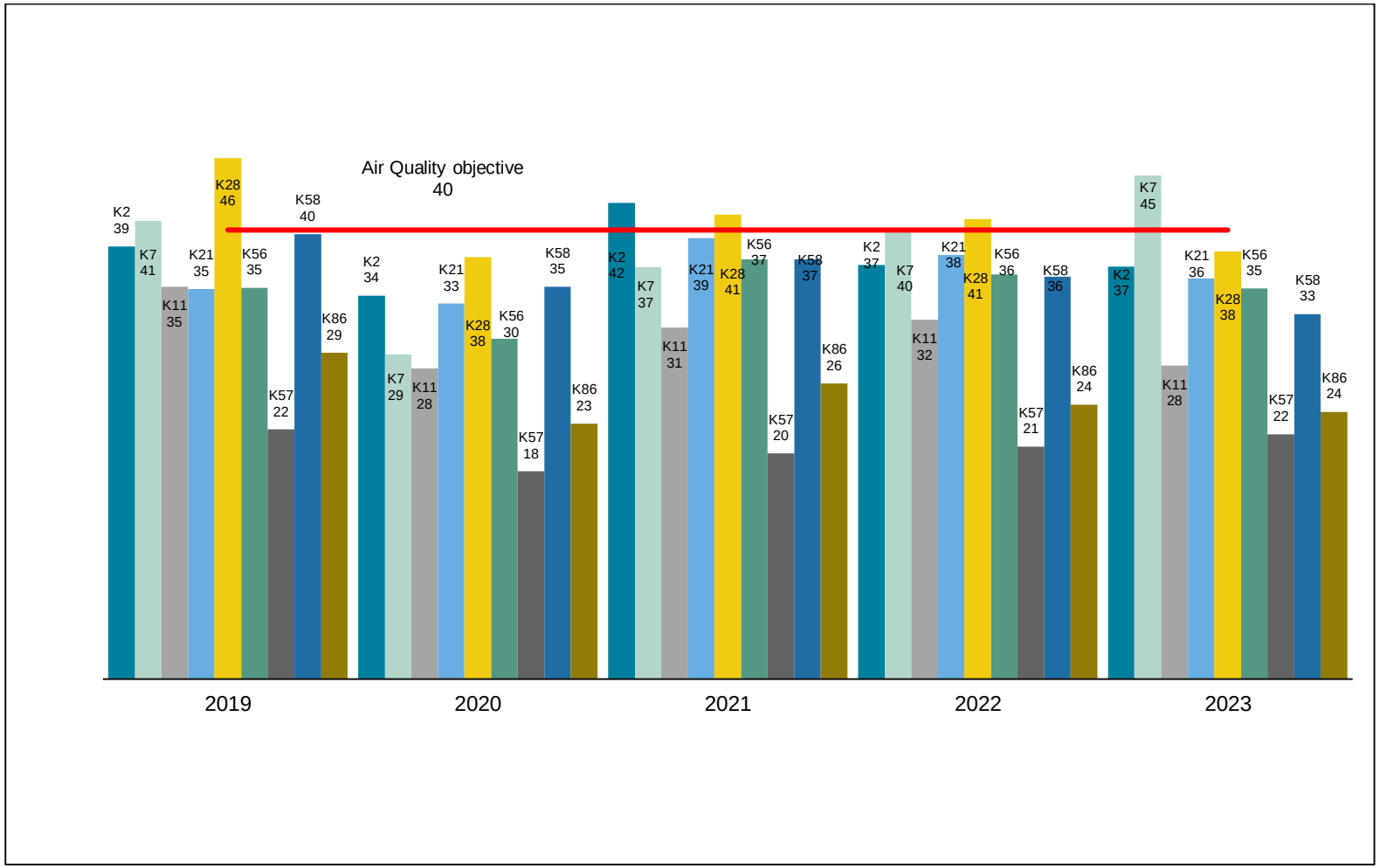
This chart shows current roadside NO_2 annual mean concentrations between years 2019 and 2023 in the Dewsbury area. Concentrations reduced at all locations in 2023.

Figure A.29 – Trends in annual mean NO_2 concentrations, Edgerton



This chart shows current roadside NO2 annual mean concentrations between years 2019 and 2023 in the Edgerton area. Concentrations reduced at all locations in 2023.

Figure A.30 – Trends in annual mean NO_2 concentrations, Huddersfield



This chart shows current roadside NO_2 annual mean concentrations between years 2019 and 2023 in the Huddersfield Town Centre area. In 2023, there has been an exceedance in concentrations at location K7, Westgate.

Table A.5 – 1 Hour mean NO_2 monitoring results, number of 1hour means greater than 200µg/m^3

Site ID	X OS grid ref (easting)	Y OS grid ref (northing)	Site type	Valid data capture for monitoring period (%) (1)	Valid data capture 2023 (%) (2)	2019	2020	2021	2022	2023
CM1	424060	421912	Urban background	89.6	89.6	n/a	0	0	0	0

Notes:

Results are presented as the number of 1-hour periods where concentrations greater than 200µg/m^3 have been recorded.

Exceedances of the NO_2 1-hour mean objective (200µg/m^3 not to be exceeded more than 18 times/year) are shown in **bold**.

If the period of valid data is less than 85%, the 99.8th percentile of 1-hour means is provided in brackets.

(1) Data capture for the monitoring period, in cases where monitoring was only carried out for part of the year.

(2) Data capture for the full calendar year (e.g. if monitoring was carried out for 6 months, the maximum data capture for the full calendar year is 50%).

Table A.6 – Annual mean PM_{10} monitoring results ($\mu g/m_3$)

Site ID	X OS grid ref (easting)	Y OS grid ref (northing)	Site type	Valid data capture for monitoring period (%) (1)	Valid data capture 2023 (%) (2)	2019	2020	2021	2022	2023
CM1	424060	421912	Urban background	99.5	99.5	n/a	n/a	n/a	12.6	12

☐ Annualisation has been conducted where data capture is <75% and >25% in line with LAQM.TG22.

Notes:

The annual mean concentrations are presented as $\mu g/m^3$.

Exceedances of the PM_{10} annual mean objective of $40\mu g/m^3$ are shown in **bold**.

All means have been “annualised” as per LAQM.TG22 if valid data capture for the full calendar year is less than 75%. See Appendix C for details.

(1) Data capture for the monitoring period, in cases where monitoring was only carried out for part of the year.

(2) Data capture for the full calendar year (e.g. if monitoring was carried out for 6 months, the maximum data capture for the full calendar year is 50%).

Table A.2 – 24 hour mean PM_{10} monitoring results, number of PM_{10} 24 hour means greater than 50µg/m^3

Site ID	X OS grid ref (easting)	Y OS grid ref (northing)	Site type	Valid data capture for monitoring period (%) (1)	Valid data capture 2023 (%) (2)	2019	2020	2021	2022	2023
CM1	424060	421912	Urban background	99.5	99.5	n/a	n/a	n/a	0 (20)	2

Notes:

Results are presented as the number of 24-hour periods where daily mean concentrations greater than 50µg/m^3 have been recorded.

Exceedances of the PM_{10} 24-hour mean objective (50µg/m^3 not to be exceeded more than 35 times/year) are shown in **bold**.

If the period of valid data is less than 85%, the 90.4th percentile of 24-hour means is provided in brackets.

(1) Data capture for the monitoring period, in cases where monitoring was only carried out for part of the year.

(2) Data capture for the full calendar year (e.g. if monitoring was carried out for 6 months, the maximum data capture for the full calendar year is 50%).

Table A.8 – Annual mean $PM_{2.5}$ monitoring results (µg/m^3)

Site ID	X OS grid ref (easting)	Y OS grid ref (northing)	Site type	Valid data capture for monitoring period (%) (1)	Valid data capture 2023 (%) (2)	2019	2020	2021	2022	2023
CM1	424060	421912	Urban background	99.5	99.5	n/a	n/a	n/a	8.3	7

☐ Annualisation has been conducted where data capture is <75% and >25% in line with LAQM.TG22.

Notes:

The annual mean concentrations are presented as µg/m^3.

All means have been “annualised” as per LAQM.TG22 if valid data capture for the full calendar year is less than 75%. See Appendix C for details.

(1) Data capture for the monitoring period, in cases where monitoring was only carried out for part of the year.

(2) Data capture for the full calendar year (e.g. if monitoring was carried out for 6 months, the maximum data capture for the full calendar year is 50%).

Appendix B: Full monthly diffusion tube results for 2023

DT ID	X OS grid ref (easting)	Y OS grid ref (northing)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual mean: raw data	Annual mean: annualised and bias adjusted (0.77)	Annual mean: distance corrected to nearest exposure	Comment
K1	424506	421535	60.7	50.6	43.6	43.9	46.7	49.4	47.2	49.6	62.1	49.6	59.8	49.8	51.1	39.3		5 weeks exposure December 2023
K2	414214	416504	60.4	55.9	55.1	36.6	39.6	35.3	47.2	45.2	48.4	46.4	54.3	47.9	47.7	36.7		5 weeks exposure December 2023
K3	413504	417439	55.6	50.7	52.9	38.2	42.4	38.0	53.9	52.8	55.6	49.5		41.6	48.3	37.2	34.0	4 weeks exposure December 2023 (national calendar)
K4	424464	424395	34.8	34.5	31.2	23.9	27.5	25.8	27.3	27.3	34.6	33.0	38.5	33.1	31.0	23.8		5 weeks exposure December 2023
K5	422442	420380			42.3	31.8	35.8	43.1	34.2	33.9	44.5	43.8	43.0	40.6	39.3	30.3		5 weeks exposure December 2023
K6	417878	421054	53.7	34.1	55.3		45.9	40.4	39.0	43.5	45.2	49.5		43.3	45.0	34.6		4 weeks exposure December 2023 (national calendar)
K7	414434	416744	73.9	62.0	58.4	54.2	62.1		45.2	54.2	52.7	64.1		55.7	58.3	44.9		5 weeks exposure December 2023
K8	414483	417726	53.1		46.4	37.3	37.8	33.3	33.9	36.1	37.2	48.2	36.4	38.9	39.9	30.7		4 weeks exposure December 2023 (national calendar)
K9	417280	420482	33.4	25.6	27.3	22.2	25.4	27.7		22.9	27.9	30.6	32.3	21.1	26.9	20.7		4 weeks exposure December 2023 (national calendar)
K10	411861	418270	22.1	16.7	16.9	6.0	10.2	11.7	8.5	11.2	14.2	10.1	22.8	13.8	13.7	10.5		4 weeks exposure December 2023 (national calendar)
K11	414359	416277	39.2	42.0	43.2	35.0	32.9	35.6	26.1	31.6	39.8	36.8	38.4	34.4	36.3	27.9		5 weeks exposure December 2023
K12	417302	425961	17.8	25.3	19.5	17.9	14.6	14.7	13.4	16.3	18.2	21.0	24.2	24.0	18.9	14.6		5 weeks exposure December 2023
K13	420377	427871	31.9	36.1	32.3	29.9	29.2	31.8	27.0	32.2	32.6	35.1	34.9	30.9	32.0	24.6		5 weeks exposure December 2023

DT ID	X OS grid ref (easting)	Y OS grid ref (northing)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual mean: raw data	Annual mean: annualised and bias adjusted (0.77)	Annual mean: distance corrected to nearest exposure	Comment
K14	413667	416467	22.5	20.7	16.8	15.7	11.7	13.6	9.8	11.4	15.3	16.7	20.9	12.9	15.7	12.1		4 weeks exposure December 2023 (national calendar)
K15	409752	415893	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	16.9	16.5	11.0	14.8	9.9		4 weeks exposure December 2023 (national calendar)
K16	411715	419032	36.5	24.4	35.4	31.1	30.7	27.5	25.3	33.6	29.9	34.9		27.3	30.6	23.6		4 weeks exposure December 2023 (national calendar)
K17	411715	419032	36.3	21.9	33.1	31.4	30.6	30.5	27.7	34.4	32.5	33.9	24.2	17.0	29.5	22.7		4 weeks exposure December 2023 (national calendar)
K18	422686	426229	44.7	41.4	45.6	35.0	35.6	39.4	31.7	37.9	36.4	42.5	36.2	44.9	39.3	30.2		5 weeks exposure December 2023
K19	423563	421014	48.1	45.3	53.1	38.2	38.3	40.0	33.7	37.7	43.6		46.5	46.9	42.9	33.0		5 weeks exposure December 2023
K20	424858	421904	50.6	38.8	40.9	29.5	32.2	31.5	32.5	35.5	39.4	34.3	41.3	39.1	37.1	28.6		5 weeks exposure December 2023
K21	414149	416686	50.7	52.7	52.4	47.2	50.0	43.2	36.4	40.5	51.4	49.8	38.9	43.3	46.4	35.7		5 weeks exposure December 2023
K22	417394	420458		39.7	41.6	34.4	37.8	39.1	29.9	36.7	41.8	37.5	36.0	34.9	37.2	28.7		4 weeks exposure December 2023 (national calendar)
K23	422300	420337			28.5	37.8	39.0	41.1	37.9	42.5	46.7	51.3	42.4	54.3	42.2	32.5		5 weeks exposure December 2023
K24	409775	418397	43.1	35.8	36.1	23.4	38.8	30.6	27.7	34.8	34.7	37.2	27.4	30.1	33.3	25.6		4 weeks exposure December 2023 (national calendar)
K25	417255	420360	31.3	28.3	28.3	27.2	28.0	27.2	20.2	23.7	25.5	31.3	32.3	23.5	27.2	21.0		4 weeks exposure December 2023 (national calendar)
K26	417255	420360	28.5	28.7	31.2	26.4	25.1	24.7	21.1	24.3	27.6	23.3	10.4	23.9	24.6	18.9		4 weeks exposure December 2023 (national calendar)

DT ID	X OS grid ref (easting)	Y OS grid ref (northing)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual mean: raw data	Annual mean: annualised and bias adjusted (0.77)	Annual mean: distance corrected to nearest exposure	Comment
K27	417255	420360	29.2	30.8	30.7	16.6	27.9	28.8	21.2	24.3	29.2	29.6	30.1	32.7	27.6	21.2		4 weeks exposure December 2023 (national calendar)
K28	414747	416708	62.3		53.1	40.9	42.0	39.0	46.2	45.1	54.4	48.1	61.6	51.1	49.4	38.1	37.9	5 weeks exposure December 2023
K29	422710	426487										45.2	42.9	46.1	44.7	29.6		5 weeks exposure December 2023
K30	423154	420658				50.0	43.5	41.5	37.9	42.3	51.6	42.0		44.3	44.1	38.2		5 weeks exposure December 2023
K31	413400	417495	34.0	27.8	23.9	29.1	26.6	25.6	22.7	26.3	30.6	29.9	33.1	26.3	28.0	21.6		4 weeks exposure December 2023 (national calendar)
K32	413513	417481	53.5	55.6	42.0	38.6	47.1	48.7	45.9	36.7	52.3	41.8		40.8	45.7	35.2		4 weeks exposure December 2023 (national calendar)
K33	420727	423668	43.8	39.3	41.3		29.7	33.7	25.1	30.9	36.9	38.1	38.9	38.2	36.0	27.7		5 weeks exposure December 2023
K34	420845	423770	43.2		38.5	37.4	38.1	40.8	33.9	38.0	39.0	43.4	42.8	37.3	39.3	30.3		5 weeks exposure December 2023
K35	420853	423866	57.8	41.6	54.8	55.0	53.0	52.1	42.7	46.7	55.6	46.5	63.0	36.5	50.4	38.8	29.4	5 weeks exposure December 2023
K36	420398	419777										36.2	40.1	35.5	37.3	24.7		5 weeks exposure December 2023
K37	420356	427810	37.5	38.1	30.5	n/a	n/a	25.6	24.8	26.8	32.6	24.3	21.7	27.4	28.9	22.3		5 weeks exposure December 2023
K38	420222	427764	41.4	44.9	40.2	36.4	39.9	47.5	36.5	38.8	43.8	38.8		35.2	40.3	31.0		5 weeks exposure December 2023
K39	424526	424326	48.0		35.6	39.0	36.1	34.4	31.0	30.5	39.1	41.3	45.7	42.6	38.5	29.6		5 weeks exposure December 2023
K40	424922	421972	61.3	53.4	59.3	59.1	54.3	60.6	41.3	52.2	62.0	60.0	51.4	54.6	55.8	43.0	40.1	5 weeks exposure December 2023
K41	414714	415768										37.5	39.1	32.0	36.2	24.0		5 weeks exposure December 2023

DT ID	X OS grid ref (easting)	Y OS grid ref (northing)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual mean: raw data	Annual mean: annualised and bias adjusted (0.77)	Annual mean: distance corrected to nearest exposure	Comment
K42	424969	422002	46.1		36.4	32.2	38.5	39.5	32.4	36.1	42.0	45.5	46.2	37.9	39.3	30.3		5 weeks exposure December 2023
K43	425093	422024	53.0	35.5		34.3	41.0	40.9	37.1	40.5	48.7	42.7	46.0	30.5	40.9	31.5		5 weeks exposure December 2023
K44	425179	422116	40.4	43.1	38.9		30.0	29.7	31.7	30.7	37.1	33.2	43.3	37.3	35.9	27.7		5 weeks exposure December 2023
K45	414041	416754										42.9	42.4		-	-		4 weeks exposure December 2023 (national calendar)
K46	414542	417759		42.6	49.8	42.3	37.7	29.6	34.3	38.9	42.2	39.0	43.9	35.9	39.7	30.5		4 weeks exposure December 2023 (national calendar)
K47	407942	417261	41.1	37.8	39.1	32.0	36.5	30.8	38.7	45.1	43.7	41.7	44.4	40.4	39.3	30.2		4 weeks exposure December 2023 (national calendar)
K48	421039	423673	52.6		47.5	47.3	44.7	51.1	45.0	47.6	55.3	52.9	49.4	49.7	49.4	38.0		5 weeks exposure December 2023
K49	413659	416182	52.7	43.5	47.4		36.9	32.2	32.2	30.7	38.8	46.6	51.9	49.4	42.0	32.4		4 weeks exposure December 2023 (national calendar)
K50	413433	415989	58.9		55.4		43.6	47.7	37.6	39.6	53.0	57.0	45.1	48.0	48.6	37.4	34.8	4 weeks exposure December 2023 (national calendar)
K51	421898	423576	48.1	38.1	30.9	32.9	33.9	29.6	30.1	36.4	41.0	45.1	40.8		37.0	28.5		5 weeks exposure December 2023
K52	417627	416472	40.3	35.8	33.6	25.6	33.0	34.2	27.9	26.6	32.3		26.5	34.7	31.9	24.5		5 weeks exposure December 2023
K53	411564	415902	39.4	37.4	38.6								33.5		37.2	23.7		4 weeks exposure December 2023 (national calendar)
K54	425186	421568										36.2		36.6	-	-		5 weeks exposure December 2023
K55	414187	408264	40.3		33.7	29.4	29.9	23.6	24.4	27.2	28.9	30.3		33.2	30.1	23.2		5 weeks exposure December 2023

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K56	415009	416420	51.1	51.5	44.9	44.2	42.8	41.1	33.8	41.0	42.2	55.9	41.8	51.6	45.2	34.8		5 weeks exposure December 2023
K57	414291	417281	31.5	28.7	28.5			47.5			28.5	25.1	29.7	25.2	30.6	21.8		4 weeks exposure December 2023 (national calendar)
K58	414350	417270	55.7	49.1	42.7	36.2	36.9	33.8	32.6	36.9	49.4	43.1	46.3	43.9	42.2	32.5		4 weeks exposure December 2023 (national calendar)
K59	412944	417244	39.9	38.7	35.6	30.8	29.0	30.9	23.3	28.0	30.7	37.5	36.3	26.1	32.2	24.8		4 weeks exposure December 2023 (national calendar)
K60	414269	408218										26.5		25.9	-	-		5 weeks exposure December 2023
K61	412247	417354										33.6	42.8	39.8	38.7	25.9		4 weeks exposure December 2023 (national calendar)
K62	420472	427360	41.8	38.7	30.6	27.1	21.1	21.4	23.9	26.5	26.6	31.8	34.5	26.0	29.2	22.5		5 weeks exposure December 2023
K63	419866	427561	34.1	36.4	31.2	27.1	25.2	24.3	20.1	26.7	29.3	38.4	31.5	35.9	30.0	23.1		5 weeks exposure December 2023
K64	419937	427614										43.5	41.6	42.4	42.5	28.2		5 weeks exposure December 2023
K65	419981	427623										45.7	48.8	42.1	45.5	30.4		4 weeks exposure December 2023 (national calendar)
K66	420349	427434	30.1	26.1	21.1	18.3	16.9	13.9	15.7	19.1	19.6	26.2	28.7	25.5	21.8	16.8		5 weeks exposure December 2023
K67	413390	416229											31.7	20.5	-	-		4 weeks exposure December 2023 (national calendar)
K68	425185	423684	36.7	34.5	25.7	24.3	25.8	22.4	22.3	22.4	28.1	29.2	32.6	22.5	27.2	21.0		5 weeks exposure December 2023
K69	418223	426556	37.4	20.1	27.5	29.9	23.8	19.2	21.0	22.2	27.1	29.9	33.0	25.6	26.4	20.3		5 weeks exposure December 2023

DT ID	X OS grid ref (easting)	Y OS grid ref (northing)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual mean: raw data	Annual mean: annualised and bias adjusted (0.77)	Annual mean: distance corrected to nearest exposure	Comment
K70	423247	420761	40.2	45.3	37.1	32.4	38.7	35.7	31.5	37.0	34.8	42.7	49.4	41.7	38.9	29.9		5 weeks exposure December 2023
K71	411007	419190	36.9	39.2		30.8	28.6	26.2	22.7	27.1	26.3	36.5	35.0	23.3	30.2	23.3		4 weeks exposure December 2023 (national calendar)
K72	410227	418653	39.4	41.7			33.5	25.3	29.3	30.5	31.5	34.8	36.7	28.4	33.1	25.5		4 weeks exposure December 2023 (national calendar)
K73	410080	418568	46.6	39.6			39.2	27.6	33.1	34.4	35.5	36.1	39.9	26.3	35.8	27.6		4 weeks exposure December 2023 (national calendar)
K74	410095	418559	36.4	39.6		26.7	24.6	19.4	17.4	21.3	23.8	27.0	27.0	22.5	26.0	20.0		4 weeks exposure December 2023 (national calendar)
K75	413153	415894	37.1	37.6		40.2		30.6	23.6	30.4	33.1	38.3	31.4	36.3	33.9	26.1		4 weeks exposure December 2023 (national calendar)
K76	413198	415957	48.0	40.7		38.3	29.6	31.1	27.1	30.4	27.9		38.4	25.5	33.7	25.9		4 weeks exposure December 2023 (national calendar)
K77	413455	416013	62.9	60.6		46.0	49.7	40.1	43.5	48.1	51.5	50.2	48.5	45.0	49.6	38.2	35.9	4 weeks exposure December 2023 (national calendar)
K78	413478	415953	50.1	33.5		31.9							27.1		35.7	22.6		4 weeks exposure December 2023 (national calendar)
K79	423903	427756	38.0	49.5		30.2		27.7	21.1	37.5	32.4	44.8	44.5	41.8	36.8	28.3		5 weeks exposure December 2023
K80	425566	423696	39.3	38.8		29.5	28.0	29.9	23.0	29.5	36.2	26.5	30.5	32.7	31.3	24.1		5 weeks exposure December 2023
K81	422991	426992	42.5	41.8		32.7	32.8	29.6	24.4	30.3	33.3	33.6	45.8	42.4	35.4	27.2		5 weeks exposure December 2023
K82	417508	420570				43.2	39.1	36.2	33.1	37.2	50.3	44.4	42.4	42.5	40.9	31.5		4 weeks exposure December 2023 (national calendar)

DT ID	X OS grid ref (easting)	Y OS grid ref (northing)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual mean: raw data	Annual mean: annualised and bias adjusted (0.77)	Annual mean: distance corrected to nearest exposure	Comment
K83	417364	420482		36.4	34.1	27.4	33.1	33.5	21.9	27.5	34.1	33.9	20.6	29.3	30.2	23.2		4 weeks exposure December 2023 (national calendar)
K84	417160	420296		31.7	27.7	28.4	25.3	21.1	21.0	22.5	28.5	28.8	34.8	25.1	26.8	20.6		4 weeks exposure December 2023 (national calendar)
K85	417170	420267		46.3	37.4	33.5	30.6	28.2	25.9	29.7	36.9	31.9	43.3	38.4	34.7	26.7		4 weeks exposure December 2023 (national calendar)
K86	415164	416323	35.8	30.8	31.1	31.6	27.6	27.2	25.8	29.5	33.0	35.9	32.3	30.5	30.9	23.8		5 weeks exposure December 2023
K87	424409	421271	44.9	45.2		43.2	35.0	27.9	28.3	33.5	35.6	36.6	28.0	34.0	35.7	27.5		5 weeks exposure December 2023
K88	422435	425889										34.9	39.5	39.2	37.9	25.1		5 weeks exposure December 2023
K89	419362	427203	38.4	38.5	35.4	33.3	27.9	26.7	23.8	32.0	38.9	42.7	29.4	30.8	33.2	25.5		5 weeks exposure December 2023
K90	419262	427060	36.7	36.3	35.0		31.8	30.7	25.8	28.9	35.5	33.4	34.1	25.7	32.2	24.8		5 weeks exposure December 2023
K91	412647	418008	30.9	34.5	33.8	36.5	40.3	35.4	23.9	n/a	38.8	33.5		23.7	33.1	25.5		4 weeks exposure December 2023 (national calendar)
K92	418656	426078	36.3	31.2	22.6	20.1	20.9	17.1	19.3	22.5	23.8	29.8	33.2	23.6	25.0	19.3		5 weeks exposure December 2023
K93	417501	427802	31.6	37.5	32.4	30.0	32.9	36.4	23.1	26.8	30.3	37.0		34.2	32.0	24.7		5 weeks exposure December 2023
K94	426242	423106	42.4	44.3	38.8	35.1	35.4	30.3			37.4	34.6	40.6	35.9	37.5	28.9		5 weeks exposure December 2023
K95	414170	408118	32.2	33.6	25.0	17.9	26.0	27.0	22.0	23.2	26.6	33.0	27.8	26.5	26.7	20.6		5 weeks exposure December 2023
K96	414163	408195	n/a		40.6	34.2	32.8	26.4	32.0	35.8	35.8	40.3	45.3	37.0	36.0	27.7		5 weeks exposure December 2023

DT ID	X OS grid ref (easting)	Y OS grid ref (northing)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual mean: raw data	Annual mean: annualised and bias adjusted (0.77)	Annual mean: distance corrected to nearest exposure	Comment
K97	409762	418019	20.0	20.7	16.3	17.0	16.5	15.6	12.1	16.6	17.3	25.1	21.0	17.6	18.0	13.8		4 weeks exposure December 2023 (national calendar)
K98	414092	408133	32.4	35.2	31.7	30.9	25.8	24.1	19.8	25.3	24.0	26.9	30.4	25.8	27.7	21.3		5 weeks exposure December 2023
K99	426312	422830	31.2	32.8	25.7	31.0	29.4	21.3	27.3	34.0	25.7	31.2	36.3	27.0	29.4	22.6		5 weeks exposure December 2023
K100	412477	417290	31.8	35.4	27.4	28.6	19.9	20.0	16.4	18.7	24.8	28.9	29.8	34.0	26.3	20.3		4 weeks exposure December 2023 (national calendar)
K101	413495	417139										41.9	44.1		-	-		4 weeks exposure December 2023 (national calendar)
K102	418540	421188	37.2	42.6	33.2	29.1	28.4	25.6	22.1	27.9	31.4	23.2	28.1	14.9	28.6	22.1		4 weeks exposure December 2023 (national calendar)
K103	419426	420293	32.3	29.7	26.2	24.5	22.5	21.2	18.0	22.7	25.3	25.8	21.1	26.4	24.6	19.0		4 weeks exposure December 2023 (national calendar)
K104	415810	420554	31.7	26.3	25.0	24.2	21.7	21.1	21.1	24.3	28.4	30.2	24.5	22.7	25.1	19.3		4 weeks exposure December 2023 (national calendar)
K101a	413531	417137	38.1	38.8	36.4	40.9	32.8	32.9	22.6	25.8	31.9				33.4	25.7		4 weeks exposure December 2023 (national calendar)
K15a	411715	419032	34.8	35.4	32.0		30.8	29.4	26.3	26.2	33.4				31.0	25.9		4 weeks exposure December 2023 (national calendar)
K23a	418483	420978	48.8	43.9											-	-		4 weeks exposure December 2023 (national calendar)
K29a	424425	421499	39.1	33.6	32.9	35.0	31.8	31.6	24.9	29.8	48.7				34.2	26.3		4 weeks exposure December 2023 (national calendar)

DT ID	X OS grid ref (easting)	Y OS grid ref (northing)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual mean: raw data	Annual mean: annualised and bias adjusted (0.77)	Annual mean: distance corrected to nearest exposure	Comment
K30a	424457	421510	40.6	35.1											-	-		4 weeks exposure December 2023 (national calendar)
K36a	420304	419766	32.8	35.9	37.6	35.5	38.5	33.4	26.3	32.3	35.7				34.2	26.4		4 weeks exposure December 2023 (national calendar)
K41a	418285	426630	46.2	24.6	31.2	28.4									32.6	21.9		4 weeks exposure December 2023 (national calendar)
K45a	414498	417798	46.8	38.0	44.1		46.0	38.3	35.1	39.0	41.4				41.1	34.3		4 weeks exposure December 2023 (national calendar)
K46a	414402	417806	33.0												-	-		4 weeks exposure December 2023 (national calendar)
K54a	425157	421584	53.2	40.6	39.0	42.3	37.2	35.9	38.5	38.3					40.6	33.2		4 weeks exposure December 2023 (national calendar)
K5a	422350	420391	29.9	24.2											-	-		4 weeks exposure December 2023 (national calendar)
K60a	422435	425889	39.0	44.6	36.1	30.5	30.6	28.1	24.9	30.7	35.0				33.3	25.6		4 weeks exposure December 2023 (national calendar)
K61a	420441	427353	39.2	41.5	34.9	30.6	27.9	26.8	22.4	31.5					31.9	26.1		4 weeks exposure December 2023 (national calendar)
K64a	419914	427588	46.7	56.1	42.0	39.0	41.5	40.8	37.1	46.8	53.3				44.8	34.5		4 weeks exposure December 2023 (national calendar)
K67a	421128	427298	32.6	24.8	27.6	19.5	18.7	20.2	18.0	21.1	25.8				23.1	17.8		4 weeks exposure December 2023 (national calendar)
K88a	422403	425845	35.4	46.6	40.1	35.6	32.6	30.0	26.7	31.1	35.1				34.8	26.8		4 weeks exposure December 2023 (national calendar)

☒ All erroneous data has been removed from the NO_2 diffusion tube dataset presented in Table B.1.

☒ Annualisation has been conducted where data capture is <75% and >25% in line with LAQM.TG22.

☐ Local bias adjustment factor used.

☒ National bias adjustment factor used.

☒ Where applicable, data has been distance corrected for relevant exposure in the final column.

☒ Kirklees Council confirm that all 2023 diffusion tube data has been uploaded to the Diffusion Tube Data Entry System.

Notes:

Exceedances of the NO_2 annual mean objective of 40µg/m^3 are shown in **bold**.

NO_2 annual means exceeding 60µg/m^3, indicating a potential exceedance of the NO_2 1-hour mean objective are shown in **bold and underlined**.

See Appendix C for details on bias adjustment and annualisation.

Appendix C: Supporting technical information / air quality monitoring data QA/QC

New or changed sources identified within Kirklees Council during 2023

Significant planning applications were approved for residential development at Chidswell, Dewsbury for 1800 units (2021/92331). An air quality impact assessment was undertaken in support of this development with an estimation of damage costs and proposed mitigation measures. This assessment was subsequently appraised and accepted by the Council.

Other notable planning applications approved in 2023 included a mixed commercial development at Crosland Moor, Huddersfield and a residential development at Rowley Lane, Lepton.

The Councils' Environmental Planning team review all planning applications for air quality impact in accordance with the WYLES guidance. They also issue Section 106 planning agreements to offset impact, when appropriate.

All planning applications in Kirklees can be viewed using the online portal.

Additional air quality works undertaken by Kirklees Council during 2023

We are involved with two regional projects involving WYCA and West Yorkshire local authorities. One involves investigating the spatial distribution of non-road $PM_{2.5}$ emissions, along with consideration of appropriate measures to reduce these emissions. The other is to develop a regional low-cost sensor monitoring network.

QA/QC of diffusion tube monitoring

Nitrogen dioxide diffusion tubes for 2023 were analysed by the Socotec Laboratory. This laboratory uses the analytical technique of the grid absorbent being 50% triethanolamine (TEA) in acetone. The analytical technique used is spectrometry, at a wavelength of 540 nanometres.

Socotec participate in the WASP / Air PT scheme for nitrogen dioxide diffusion tubes and has previously participated within the survey's interlaboratory comparison scheme.

Laboratory performance in 2023 was based four of the AIR PT annual performance criteria for NO_2 diffusion tubes used in Local Air Quality Management[20]. For these AIR PT rounds

[20] WASP – Annual Performance Criteria for NO2 Diffusion Tubes (defra.gov.uk)

(AR055 January-February 2023, AR056 May-June 2023, AR058 July-August 2023 and AR059 September-October 2023), the results of measurements based on a satisfactory z-score of < +/- 2 were 100% for all four periods. Changing of tubes adhered to the 2023 Diffusion Tube Monitoring Calendar for the months January-November 2023, however, due to staffing resources in January 2024, some of the December 2023 tubes were changed on the correct four week period for that month, whilst others were changed after five weeks. This has been accounted for within the diffusion tube processing tool for our 2023 data.

Diffusion tube annualisation

Annualisation is required for any site with data capture less than 75% but greater than 25%. Our Kirklees Council 2023 diffusion tube data have been annualised where required using Defra's Diffusion Tube Data Processing Tool v4.0, following guidance within Chapter 7 of LAQM.TG22: NOx and NO_2 Monitoring, including the procedure laid out in Box 7.10.

The four background continuous monitoring sites within the region used to calculate the annualisation factors were Leeds Centre, Dewsbury Ashworth Grange, Bradford Mayo Avenue and Barnsley Gawber. Annualised data are presented in Table C.1 below. The diffusion tubes sites requiring annualisation of 2023 data are listed under Site ID.

Table C.1 – Annualisation summary (concentrations presented in microgrammes per cubic metre)

Site ID	Annualisation Factor Leeds Centre	Annualisation Factor Dewsbury Ashworth Grange	Annualisation Factor Bradford Mayo Avenue	Annualisation Factor Barnsley Gawber	Average Annualisation Factor	Raw Data Annual Mean	Annualised Annual Mean
K15a	1.1031	1.0909	1.0283	1.1127	1.0837	31.0	33.6
K15	0.7984	0.8671	1.0018	0.8036	0.8677	14.8	12.8
K29	0.7957	0.8531	0.9978	0.7948	0.8604	44.7	38.5
K30	1.1280	1.1875	1.0621	1.1174	1.1237	44.1	49.6
K36	0.7957	0.8531	0.9978	0.7948	0.8604	37.3	32.1
K41	0.7957	0.8531	0.9978	0.7948	0.8604	36.2	31.1
K41a	0.8890	0.8210	0.8766	0.9078	0.8736	32.6	28.5
K45a	1.1031	1.0909	1.0283	1.1127	1.0837	41.1	44.5
K53	0.8002	0.7863	0.8973	0.8220	0.8265	37.2	30.8
K54a	1.1053	1.0538	0.9904	1.1012	1.0627	40.6	43.2
K57	0.9094	0.9111	0.9672	0.9182	0.9265	30.6	28.3
K61a	1.1053	1.0538	0.9904	1.1012	1.0627	31.9	33.8
K61	0.7984	0.8671	1.0018	0.8036	0.8677	38.7	33.6
K65	0.7984	0.8671	1.0018	0.8036	0.8677	45.5	39.5
K78	0.8211	0.7752	0.8768	0.8177	0.8227	35.7	29.3
K88	0.7957	0.8531	0.9978	0.7948	0.8604	37.9	32.6

Diffusion tube bias adjustment factors

The diffusion tube data presented within the 2024 ASR have been corrected for bias using an adjustment factor. Bias represents the overall tendency of the diffusion tubes to under or over-read relative to the reference chemiluminescence analyser. LAQM.TG22 provides guidance with regard to the application of a bias adjustment factor to correct diffusion tube monitoring. Triplicate co-location studies can be used to determine a local bias factor based on the comparison of diffusion tube results with data taken from NO_x/NO_2 continuous analysers. Alternatively, the national database of diffusion tube co-location surveys provides bias factors for the relevant laboratory and preparation method.

Kirklees Council have applied a national bias adjustment factor of 0.77 to the 2023 monitoring data, as no data are available from local monitoring to calculate a local bias adjustment, due to the cessation of the monitoring in 2023 at the Council's roadside monitoring stations. A summary of bias adjustment factors used by Kirklees Council over the past five years is presented in Table C.2.

Table C.2 – Bias adjustment factor

Monitoring year	Local or national	If national, version of national spreadsheet	Adjustment factor
2023	National – SOCOTEC	03/23	0.77
2022	National – SOCOTEC	03/23	0.76
2021	National - SOCOTEC	04/22	0.78
2020	National - WY Analytical Services	09/19	0.77
2019	National - WY Analytical Services	06/18	0.8

NO2 fall-off with distance from the road

Wherever possible, monitoring locations are representative of exposure. However, where this is not possible, the NO_2 concentration at the nearest location relevant for exposure has been estimated using the Diffusion Tube Data Processing Tool/NO_2 fall-off with distance calculator available on the LAQM Support website. Where appropriate, non-automatic annual mean NO_2 concentrations corrected for distance are presented in **Error! Reference source not found.**.

We have adopted a cautious approach when calculating NO_2 fall-off with distance from the road. This calculation requires the use of local background concentrations to derive the final calculated concentration at receptor façade. There are two sources of local background NO_2 concentration data which we can use for Kirklees data, these being the use of data from the AURN monitoring station within Kirklees at Dewsbury Ashworth

Grange: the other being the use of Defra's 1 km grid square data[21]. We have undertaken a comparative exercise using the two datasets for each distance corrected diffusion tube location and applied the data exhibiting the highest concentrations accordingly.

In order to report concentrations at receptor façade within Table 2.1, we have undertaken separate distance correction calculations for tubes K6 (AQMA 1), K16 (AQMA 3) and K13 (AQMA 4). These have subsequently been added to table C.4 below.

[21] Background Maps | LAQM (defra.gov.uk)

Table C.3 – Non-automatic NO_2 fall off with distance calculations (concentrations presented in microgrammes per cubic metre)

Site ID	Distance (m): monitoring site to kerb	Distance (m): receptor to kerb	Monitored concentration (annualised and bias adjusted	Background concentration	Concentration predicted at receptor	Comments
K1	0.8		39.3	20.3		Warning: Receptor to kerb must be between 0.1m and 50m to calculate concentration. Please check distances and update STEP 2 - Diffusion Tube Inputs tab Columns Distance to Relevant Exposure and Distance to Kerb of Nearest Road
K2	4.1		36.7	12.7		Warning: Receptor to kerb must be between 0.1m and 50m to calculate concentration. Please check distances and update STEP 2 - Diffusion Tube Inputs tab Columns Distance to Relevant Exposure and Distance to Kerb of Nearest Road
K3	2.4	4.4	37.2	16.0	34.0	
K7	0.5		44.9	16.0		Warning: Receptor to kerb must be between 0.1m and 50m to calculate concentration. Please check distances and update STEP 2 - Diffusion Tube Inputs tab

Site ID	Distance (m): monitoring site to kerb	Distance (m): receptor to kerb	Monitored concentration (annualised and bias adjusted	Background concentration	Concentration predicted at receptor	Comments
						Columns Distance to Relevant Exposure and Distance to Kerb of Nearest Road
K28	3.1	3.2	38.1	18.8	37.9	Predicted concentration at Receptor within 10% the AQS objective.
K30	2.1		38.2	17.3		Warning: Receptor to kerb must be between 0.1m and 50m to calculate concentration. Please check distances and update STEP 2 - Diffusion Tube Inputs tab Columns Distance to Relevant Exposure and Distance to Kerb of Nearest Road
K35	1.9	11.3	38.8	16.0	29.4	
K40	1.6	2.8	43.0	20.3	40.1	Predicted concentration at Receptor above AQS objective.
K77	2.2	3.4	38.2	16.0	35.9	

In order to report concentrations at receptor façade within Table 2.1, we have undertaken separate distance correction calculations for tubes K6 (AQMA 1), K16 (AQMA 3) and K13 (AQMA 4).

Site ID	Distance (m): Monitoring Site to Kerb	Distance (m): Receptor to Kerb	Monitored Concentration (Annualised and Bias Adjusted	Background Concentration	Concentration Predicted at Receptor	Comments
K6	4.0	11.6	34.6	16	29.1	Calculated separately in order to meet the requirements of Table 2.1 for level of exceedance in the current year
K13	2.6	4.7	24.6	17.7	23.6	Calculated separately in order to meet the requirements of Table 2.1 for level of exceedance in the current year
K16	6.0	14.0	23.6	16	21.6	Calculated separately in order to meet the requirements of Table 2.1 for level of exceedance in the current year

Abnormal monthly data

Within the 2023 monthly data set we noticed some abnormal monthly concentrations, which we discussed with the LAQM Helpdesk. Following dialogue with the Helpdesk[i], the following way forward was agreed:

- Where data appears to be evidently anomalous e.g. concentrations of less than 10µg/m3 at locations reporting 30µg/m3 or 40µg/m3 for other months, judgement can be used to remove these.
- Once the full 2023 dataset is available, consider how removing one or two months of erroneous data will affect the annual average concentration at specific tube locations. For example, if removing the data brings the annual average concentration at a location into an exceedance, where there was not an exceedance previously, judgement should be used on whether these should be removed, considering location and AQMA declarations. A worst-case approach should be taken. Also consider those situations where it might lead to the annual concentration suggesting the AQMA is now compliant.
- Please note, annualization will still need to be completed where data capture is less than 75% but more than 25% at these locations in accordance with TG22.
- If data is removed for any particular months, please ensure this is reported within the QA/QC Section of the 2024 ASR and justified.

The raw monthly data that have been removed from the dataset are detailed in the below table. In undertaking this exercise, we adopted a conservative approach as advised by the Helpdesk.

On investigation of the revised dataset, we conclude that removal of the abnormal data does not have significant impact on the status of AQMAs (with regards to revocation, variation or identifying new areas of exceedance).

The below table summarises the impact of removal of the abnormal data:

Table C.5 – Impact of removal of abnormal data

Tube No.	Raw annual mean, µg/m^3 (without removal of abnormal data)	Raw annual mean, µg/m^3 (with removal of abnormal data)	Annual mean (annualised and bias adjusted), µg/m^3, with removal of abnormal data
K3	47.2	48.3	37.2
K6	41.2	45.0	34.6
K7	52.3	58.3	44.9
K8	37.9	39.9	30.7
K9	26.0	26.9	20.7

Tube No.	Raw annual mean, µg/m^3 (without removal of abnormal data)	Raw annual mean, µg/m^3 (with removal of abnormal data)	Annual mean (annualised and bias adjusted), µg/m^3, with removal of abnormal data
K19	40.8	42.9	33.0
K28	47.2	49.4	38.1
K30	38.3	44.1	38.2
K32	44.2	45.7	35.2
K33	35.6	36.0	27.7
K34	36.9	39.3	30.3
K38	39.4	40.3	31.0
K39	37.3	38.5	29.6
K42	38.1	39.3	30.3
K43	39.5	40.9	31.5
K44	35.3	35.9	27.7
K45a	38.3	41.1	34.3
K45	39.1	42.7	-
K48	47.7	49.4	38.0
K49	41.6	42.0	32.4
K50	47.4	48.6	37.4
K51	35.5	37.0	28.5
K52	29.3	31.9	24.5
K53	33.3	37.2	23.7
K55	29.1	30.1	23.2
K57	26.5	30.6	21.8
K71	29.7	30.2	23.3

Tube No.	Raw annual mean, µg/m^3 (without removal of abnormal data)	Raw annual mean, µg/m^3 (with removal of abnormal data)	Annual mean (annualised and bias adjusted), µg/m^3, with removal of abnormal data
K72	31.4	33.1	25.5
K73	32.5	35.8	27.6
K74	24.5	26.0	20.0
K75	31.6	33.9	26.1
K76	31.7	33.7	25.9
K77	45.7	49.6	38.2
K78	25.8	35.7	22.6
K79	35.2	36.8	28.3
K80	30.1	31.3	24.1
K81	34.6	35.4	27.2
K82	37.7	40.9	31.5
K87	35.2	35.7	27.5
K90	31.6	32.2	24.8
K91	31.7	33.1	25.5
K93	30.2	32.0	24.7
K94	34.7	37.5	28.9
K101	39.0	43.0	-

Methodology

Data were removed using officer professional judgement:

- If anomalies were clearly obvious (e.g. more than 10 µg/m^3 difference in concentrations from the neighbouring months i.e., a three month period). For each tube location we considered:
    - the previous several year's data trends, (including the monthly trends from previous years) and comparable monthly data from neighbouring tubes

    - the inherent overread (positive bias) of diffusion tubes when compared to the reference method in winter months and underread in the summer months.
- Its removal presented higher concentrations overall rather than an improvement. As can be seen from the above table, this process has not had a significant impact on final reported concentrations once bias adjustment has been undertaken.
- We paid particular scrutiny to those tubes located close / within AQMAs or close to or above an annual mean of 40 µg/m^3, as these are of greatest interest in delivering LAQM.

Table C.6 – Impact of removal of abnormal data

Tube No	Month (2023)	Concentration µg/m^3 (raw)	Justification
K3	November	35.5	K3 is located within AQMA 6 at roadside, the annual mean in 2023 (bias adjusted) was 37.2 µg/m^3. Final data capture was 90.4% following removal of this month's erroneous data. February's raw monthly concentration (µg/m^3) appears abnormally low when compared to October (49.5) and December (41.6). On this basis, this month's data was removed.
K6	April November	18.1 26	K6 is located within AQMA 1 at roadside, the annual mean in 2023 (bias adjusted) was 34.6 µg/m^3. Final data capture was 82.7% following removal of these month's erroneous data. April's raw monthly concentration (µg/m^3) appears abnormally low when compared to March (55.3) and May (45.9). Similarly, November's raw monthly concentration appears abnormally low when compared to October (49.5) and December (43.3). On this basis, these month's data were removed.
K7	June November	15.9 29.1	K7 is located within AQMA 9 at roadside, the annual mean in 2023 (bias adjusted) was 44.9 µg/m^3. Final data capture was 80.9% following removal of these month's erroneous data. June's raw monthly concentration (µg/m^3) appears abnormally low when compared to May (62.1) and July (45.2). Similarly, November's raw monthly concentration appears abnormally low when compared to October (64.1) and May (55.7). On this basis, these month's data were removed.
K8	February	15.8	K8 is not within an AQMA but is located at roadside on Bradford Road near to Huddersfield town centre and adjacent to a busy signalised junction. The annual mean in 2023 (bias adjusted) was 30.7 µg/m^3. Final data capture was 92.3% following removal of this month's erroneous data. February's raw monthly

Tube No	Month (2023)	Concentration µg/m^3 (raw)	Justification
			concentration (µg/m^3) appears abnormally low when compared to January (53.1) and March (46.4). On this basis, this month's data was removed.
K9	July	15.9	K9 is located adjacent to AQMA 1. The annual mean in 2023 (bias adjusted) was 20.7 µg/m^3. Final data capture was 92.3% following removal of this month's erroneous data. July's raw monthly concentration (µg/m^3) appears abnormally low when compared to June (27.7) and August (22.9). On this basis, this month's data was removed.
K19	October	18.5	K19 is within AQMA 2 at roadside. The annual mean in 2023 (bias adjusted) was 33 µg/m^3. Final data capture was 92.2% following removal of this month's erroneous data. October's raw monthly concentration (µg/m^3) appears abnormally low when compared to September (43.6) and August (46.5). On this basis, this month's data was removed.
K28	February	22.5	K28 is located within AQMA 9 at roadside, the annual mean in 2023 (bias adjusted) was 38.1 µg/m^3. Final data capture was 92.2% following removal of this month's erroneous data. February's raw monthly concentration (µg/m^3) appears abnormally low when compared to January (62.3) and March (53.1). On this basis, this month's data was removed.
K30	March November	3.8 26.2	K30 is located within AQMA 2 at roadside, the annual mean in 2023 (annualised and bias adjusted) was 38.2 µg/m^3. Final data capture was 65.9% following removal of these month's erroneous data. March's raw monthly concentration (µg/m^3) appears abnormally low when compared to and April (50, no data collected for February). 3.8 µg/m^3 is also below the 10 µg/m^3 threshold as recommended by the LAQM Helpdesk for removal. Similarly, November's raw monthly concentration appears abnormally low when compared to October (42) and December (44.3). On this basis, these month's data were removed.
K32	November	27.5	K32 is located adjacent to AQMA 6 at roadside, the annual mean in 2023 (bias adjusted) was 35.2 µg/m^3. Final data capture was 90.4%

Tube No	Month (2023)	Concentration µg/m^3 (raw)	Justification
			following removal of this month's erroneous data. February's raw monthly concentration (µg/m^3) appears abnormally low when compared to October (41.8) and December (40.8). On this basis, this month's data was removed.
K33	April	31.5	K33 is located adjacent to AQMA 7 at roadside, the annual mean in 2023 (bias adjusted) was 27.7 µg/m^3. Final data capture was 92.2% following removal of this month's erroneous data. April's raw monthly concentration (µg/m^3) appears abnormally low when compared to March (41.3). On this basis, this month's data was removed.
K34	February	10	K34 is located within AQMA 7 at roadside, the annual mean in 2023 (bias adjusted) was 30.3 µg/m^3. Final data capture was 92.2% following removal of this month's erroneous data. February's raw monthly concentration (µg/m^3) appears abnormally low when compared to January (43.2) and March (38.5). On this basis, this month's data was removed.
K38	November	29	K38 is located close to AQMA 4 at roadside, the annual mean in 2023 (bias adjusted) was 31 µg/m^3. Final data capture was 90.3% following removal of this month's erroneous data. November's raw monthly concentration (µg/m^3) appears abnormally low when compared to October (38.8) and December (35.2). On this basis, this month's data was removed.
K39	February	23.9	K39 is located on Bradford Road, Batley at roadside, the annual mean in 2023 (bias adjusted) was 29.6 µg/m^3. Final data capture was 92.2% following removal of this month's erroneous data. February's raw monthly concentration (µg/m^3) appears abnormally low when compared to January (48) and March (35.6). On this basis, this month's data was removed.
K42	February	24.1	K42 is located close to AQMA 5 at roadside, the annual mean in 2023 (bias adjusted) was 30.3 µg/m^3. Final data capture was 92.2% following removal of this month's erroneous data. February's raw monthly concentration (µg/m^3) appears abnormally low when compared to

Tube No	Month (2023)	Concentration µg/m^3 (raw)	Justification
			January (46.1) and March (36.4). On this basis, this month's data was removed.
K43	March	23.9	K42 is located close to AQMA 5 at roadside, the annual mean in 2023 (bias adjusted) was 23.9 µg/m^3. Final data capture was 90.3% following removal of this month's erroneous data. February's raw monthly concentration (µg/m^3) appears abnormally low when compared to January (35.5) and March (34.3). On this basis, this month's data was removed.
K44	April	28.2	K44 is located close to AQMA 5 at roadside, the annual mean in 2023 (bias adjusted) was 27.7 µg/m^3. Final data capture was 92.2% following removal of this month's erroneous data. February's raw monthly concentration (µg/m^3) appears abnormally low when compared to January (35.5) and March (34.3). On this basis, this month's data was removed.
K45a	April	15.6	K45a was not within an AQMA but is located at roadside on Bradford Road near to Huddersfield town centre and adjacent to a busy signalised junction. Monitoring ceased at this location in September 2023. The annual mean in 2023 (annualised and bias adjusted) was 34.3 µg/m^3. Final data capture was 67.3% following removal of this month's erroneous data. April's raw monthly concentration (µg/m^3) appears abnormally low when compared to January (44.1) and March (46). On this basis, this month's data was removed.
K45	December	31.9	K45 is located close to AQMA 9 at roadside. Monitoring commenced at this location in September 2023. We note that December's raw monthly concentration (µg/m^3) appears abnormally low when compared to October (42.9) and November (42.4) On this basis, this month's data was removed. Due to a subsequent data capture less than 25%, these data have not been reported further within this report. Data from this location will be reported in future ASRs.
K48	February	29.1	K48 is located within AQMA 7 at roadside, the annual mean in 2023 (bias adjusted) was 38 µg/m^3. Final data capture was 92.2% following removal of this month's erroneous data.

Tube No	Month (2023)	Concentration µg/m^3 (raw)	Justification
			February's raw monthly concentration (µg/m^3) appears abnormally low when compared to January (52.6) and March (47.5). On this basis, this month's data was removed.
K49	April	36.6	K49 is located within AQMA 10 at roadside, the annual mean in 2023 (bias adjusted) was 32.4 µg/m^3. Final data capture was 92.3% following removal of this month's erroneous data. April's raw monthly concentration (µg/m^3) appears abnormally low when compared to March (47.4). On this basis, this month's data was removed.
K50	April	35.5	K50 is located adjacent to AQMA 10 at roadside, the annual mean in 2023 (bias adjusted) was 37.4 µg/m^3. Final data capture was 84.6% following removal of this month's erroneous data. April's raw monthly concentration (µg/m^3) appears abnormally low when compared to March (55.4) and May (43.6). On this basis, this month's data was removed.
K51	December	18.6	K51 is located on High Street, Heckmondwike at roadside, the annual mean in 2023 (bias adjusted) was 28.5 µg/m^3. Final data capture was 90.3% following removal of this month's erroneous data. December's raw monthly concentration (µg/m^3) appears abnormally low when compared to October (45.1) and November (40.8). On this basis, this month's data was removed.
K52	October	1	K52 is located on Penistone Road, Waterloo at roadside, the annual mean in 2023 (bias adjusted) was 24.5 µg/m^3. Final data capture was 92.2% following removal of this month's erroneous data. October's raw monthly concentration (µg/m^3) appears abnormally low when compared to September (32.3) and November (26.5). 1 µg/m^3 is also below the 10 µg/m^3 threshold as recommended by the LAQM Helpdesk for removal. On this basis, this month's data was removed.
K53	December	17.4	K53 is located on Yates Lane, Milnsbridge at roadside, the annual mean in 2023 (annualised and bias adjusted) was 23.7 µg/m^3. Final data capture was 34.6% following removal of this month's erroneous data. December's raw monthly concentration (µg/m^3) appears

Tube No	Month (2023)	Concentration µg/m^3 (raw)	Justification
			abnormally low when compared to November (33.5, no data for October). On this basis, this month's data was removed. We note the generally low data capture for this location and interpretation of data in 2023 for this tube has to be treated with caution.
K55	November	19.7	K55 is located on Huddersfield Road, Holmfirth at roadside, the annual mean in 2023 (bias adjusted) was 23.2 µg/m^3. Final data capture was 82.8% following removal of this month's erroneous data. November's raw monthly concentration (µg/m^3) appears abnormally low when compared to October (30.3), and December (33.2). On this basis, this month's data was removed.
K57	April May July August	16.2 20.3 17 19.8	K57 is located on Cambridge Road at roadside, close to AQMA 9. The annual mean in 2023 (annualised and bias adjusted) was 21.8 µg/m^3. Final data capture was 67.3% following removal of these month's erroneous data. These month's data appear abnormally low when compared to the remainder of 2023 as detailed in Table B.1 in Appendix B. On this basis, these month's data were removed.
K71	March	24	K71 is located within AQMA 3 at roadside, the annual mean in 2023 (bias adjusted) was 23.3 µg/m^3. Final data capture was 90.4% following removal of this month's erroneous data. March's raw monthly concentration (µg/m^3) appears abnormally low when compared to February (39.2) and April (30.8). On this basis, this month's data was removed.
K72	March April	22.5 22.6	K72 is located on Lindley Moor Road close to AQMA 3 at roadside, the annual mean in 2023 (bias adjusted) was 25.5 µg/m^3. Final data capture was 82.7% following removal of these month's erroneous data. March and April's raw monthly concentrations (µg/m^3) appear abnormally low when compared to February (41.7) and May (33.5). On this basis, these month's data were removed.
K73	March April	11.2 20.2	K73 is located on Lindley Moor Road close to AQMA 3 at roadside, the annual mean in 2023 (bias adjusted) was 27.6 µg/m^3. Final data capture was 83.3% following removal of these

Tube No	Month (2023)	Concentration µg/m^3 (raw)	Justification
			month's erroneous data. March and April's raw monthly concentrations (µg/m^3) appear abnormally low when compared to February (39.6) and May (39.2). On this basis, these month's data were removed.
K74	March	8.8	K74 is located on Lindley Moor Road close to AQMA 3 at roadside, the annual mean in 2023 (bias adjusted) was 20 µg/m^3. Final data capture was 90.4% following removal of this month's erroneous data. March's raw monthly concentration (µg/m^3) appears abnormally low when compared to February (39.6) and April (26.7). 8.8 µg/m^3 is also below the 10 µg/m^3 threshold as recommended by the LAQM Helpdesk for removal. On this basis, this month's data was removed.
K75	March	9.3	K75 is located on Blackmoorfoot Road close to AQMA 10 at roadside, the annual mean in 2023 (bias adjusted) was 26.1 µg/m^3. Final data capture was 82.7% following removal of this month's erroneous data. March's raw monthly concentration (µg/m^3) appears abnormally low when compared to February (37.6) and April (40.2). 9.3 µg/m^3 is also below the 10 µg/m^3 threshold as recommended by the LAQM Helpdesk for removal. On this basis, this month's data was removed.
K76	March	11.9	K76 is located within AQMA 10 at roadside, the annual mean in 2023 (bias adjusted) was 25.9 µg/m^3. Final data capture was 82.7% following removal of this month's erroneous data. March's raw monthly concentration (µg/m^3) appears abnormally low when compared to February (40.7) and April (38.3). On this basis, this month's data was removed.
K77	March	2.2	K77 is located within AQMA 10 at roadside, the annual mean in 2023 (bias adjusted) was 38.2 µg/m^3. Final data capture was 90.4% following removal of this month's erroneous data. March's raw monthly concentration (µg/m^3) appears abnormally low when compared to February (60.6) and April (46). On this basis, this month's data was removed.
K78	March	7.9	K78 is located on Thornton Lodge Road at roadside, close to AQMA 10. The annual mean

Tube No	Month (2023)	Concentration µg/m^3 (raw)	Justification
	July	18.5	in 2023 (annualised and bias adjusted) was 22.6 µg/m^3. Final data capture was 32.7% following removal of this month's erroneous data. These month's data appear abnormally low when compared to the remainder of 2023 as detailed in Table B.1 in Appendix B. On this basis, these month's data were removed.
	August	19.8	
	September	25.1	
	October	24.8	
	December	19.2	
K79	March	19.6	K79 is located at roadside on A62 Gelderd Road, adjacent to junction 27 of the M62 motorway. The annual mean in 2023 (bias adjusted) was 28.3 µg/m^3. Final data capture was 82.8% following removal of this month's erroneous data. March's raw monthly concentration (µg/m^3) appears abnormally low when compared to February (49.5) and April (30.2). On this basis, this month's data was removed.
K80	March	17.1	K80 is located at roadside on Grange Road, Batley, the annual mean in 2023 (bias adjusted) was 24.1 µg/m^3. Final data capture was 90.3% following removal of this month's erroneous data. March's raw monthly concentration (µg/m^3) appears abnormally low when compared to February (38.8) and April (29.5). On this basis, this month's data was removed.
K81	March	26	K81 is located at roadside on A62 Gelderd Road, Birstall, the annual mean in 2023 (bias adjusted) was 27.2 µg/m^3. Final data capture was 90.3% following removal of this month's erroneous data. March's raw monthly concentration (µg/m^3) appears abnormally low when compared to February (41.8) and April (32.7). On this basis, this month's data was removed.
K82	March	8.6	K82 is located at roadside adjacent to AQMA 1, the annual mean in 2023 (bias adjusted) was 31.5 µg/m^3. Final data capture was 75% following removal of this month's erroneous data. March's raw monthly concentration (µg/m^3) appears abnormally low when compared to April (43.2, no data for February). 8.6 µg/m^3 is also below the 10 µg/m^3 threshold as recommended by the LAQM Helpdesk for removal. On this basis, this month's data was removed.
K87	March	29.7	K82 is located at roadside on Mill Street West in Dewsbury town centre, the annual mean in 2023 (bias adjusted) was 27.5 µg/m^3. Final data

Tube No	Month (2023)	Concentration µg/m^3 (raw)	Justification
			capture was 90.3% following removal of this month's erroneous data. March's raw monthly concentration (µg/m^3) appears abnormally low when compared to February (45.2) and April (43.2). On this basis, this month's data was removed.
K90	April	25.8	K90 is located at roadside on A58 Whitehall Road at Hunsworth, the annual mean in 2023 (bias adjusted) was 24.8 µg/m^3. Final data capture was 92.2% following removal of this month's erroneous data. March's raw monthly concentration (µg/m^3) appears abnormally low when compared to February (35) and April (31.8). On this basis, this month's data was removed.
K91	November	17.3	K91 is located at roadside on A629 Halifax Road at Edgerton, the annual mean in 2023 (bias adjusted) was 25.5 µg/m^3. Final data capture was 80.8% following removal of this month's erroneous data. November's raw monthly concentration (µg/m^3) appears abnormally low when compared to October (33.5) and December (23.7). On this basis, this month's data was removed.
K93	November	10.2	K93 is located at roadside on Wyke Lane, Oakenshaw, adjacent to the M606 motorway, the annual mean in 2023 (bias adjusted) was 24.7 µg/m^3. Final data capture was 90.3% following removal of this month's erroneous data. November's raw monthly concentration (µg/m^3) appears abnormally low when compared to October (37) and December (34.2). On this basis, this month's data was removed.
K94	July August	17.6 23.5	K94 is located at roadside on Leeds Road, Shawcross, Dewsbury, the annual mean in 2023 (bias adjusted) was 28.9 µg/m^3. Final data capture was 82.8% following removal of these month's erroneous data. July and August's raw monthly concentrations (µg/m^3) appear abnormally low when compared to June (30.3) and September (37.4). On this basis, these month's data were removed.
K101	December	31	K101 is located at roadside Trinity Street, near to Huddersfield town centre. Monitoring commenced at this location in October 2023.

Tube No	Month (2023)	Concentration µg/m^3 (raw)	Justification
			We note that December's raw monthly concentration (µg/m^3) appears abnormally low when compared to October (41.9) and November (44.1) On this basis, this month's data was removed. Due to a subsequent data capture less than 25%, these data have not been reported further within this report. Data from this location will be reported in future ASRs.

The subsequent raw monthly data that have been removed from the dataset are detailed in the below table. In undertaking this exercise, we have adopted a conservative approach as advised by the Helpdesk. On investigation of the subsequent revised dataset, we concluded that removal of the dataset did not have significant impact on the status of AQMAs, with regards to revocation, variation or identifying new areas of exceedance.

QA/QC of automatic monitoring

We have reported data from the Dewsbury Ashworth Grange AURN continuous monitoring station only within this ASR. QA/QC procedures are therefore those adopted by the AURN for this site[22]. It should be noted that the data detailed in this report has been fully ratified.

PM10 and PM2.5 monitoring adjustment

As discussed above, we have only reported ratified AURN data within this ASR, so any monitoring adjustment will have been undertaken nationally as part of the AURN data ratification process.

Automatic monitoring annualisation

Annualisation was not required for 2023 AURN data from Dewsbury Ashworth Grange. The data we reported for 2023 (NO_2, PM_{10} and $PM_{2.5}$) had annual data capture rates of 89.6 %, 99.5 % and 99.5 % respectively.

NO_2 fall-off with distance from the road

Wherever possible, monitoring locations are representative of exposure. However, where this is not possible, the NO_2 concentration at the nearest location relevant for exposure has been estimated using the NO_2 fall-off with distance calculator available on the LAQM

[22] Microsoft Word - AURN QA QC Manual Sep 09 FINAL.doc (defra.gov.uk)

Support website. Where appropriate, automatic annual mean NO_2 concentrations corrected for distance are presented in Table A.3.

This has not been calculated for the AURN continuous monitoring station Dewsbury Ashworth Grange, as this is an urban background monitoring station. Table C.5 – Automatic NO_2 Fall off With Distance Calculations (concentrations in µg/m^3) has therefore been removed.

Appendix D: Map(s) of monitoring locations and AQMAs

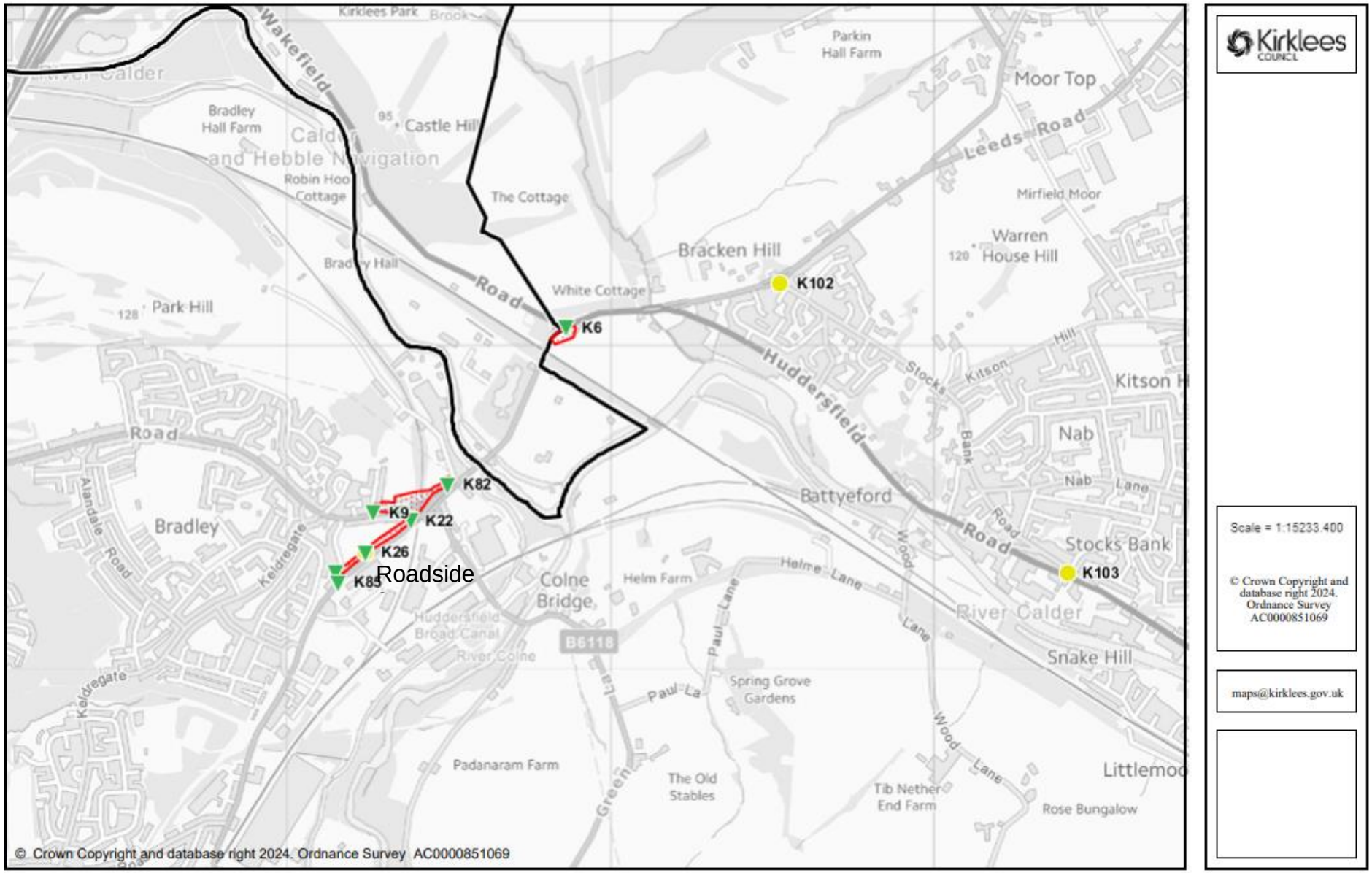
Figure D.1 – Maps of non-automatic monitoring locations

Maps D.1 to D.22 are pictorial displays of the data shown in Tables A.1 and A.2 and show the locations of our monitoring locations and AQMAs. We use the legend in table D.1 to display the various forms of monitoring, and boundaries of our AQMAs. Maps D.1 to D.21 detail specific areas, focusing on AQMAs and surrounding areas, whilst D.22 is a general map showing monitoring throughout the wide district.

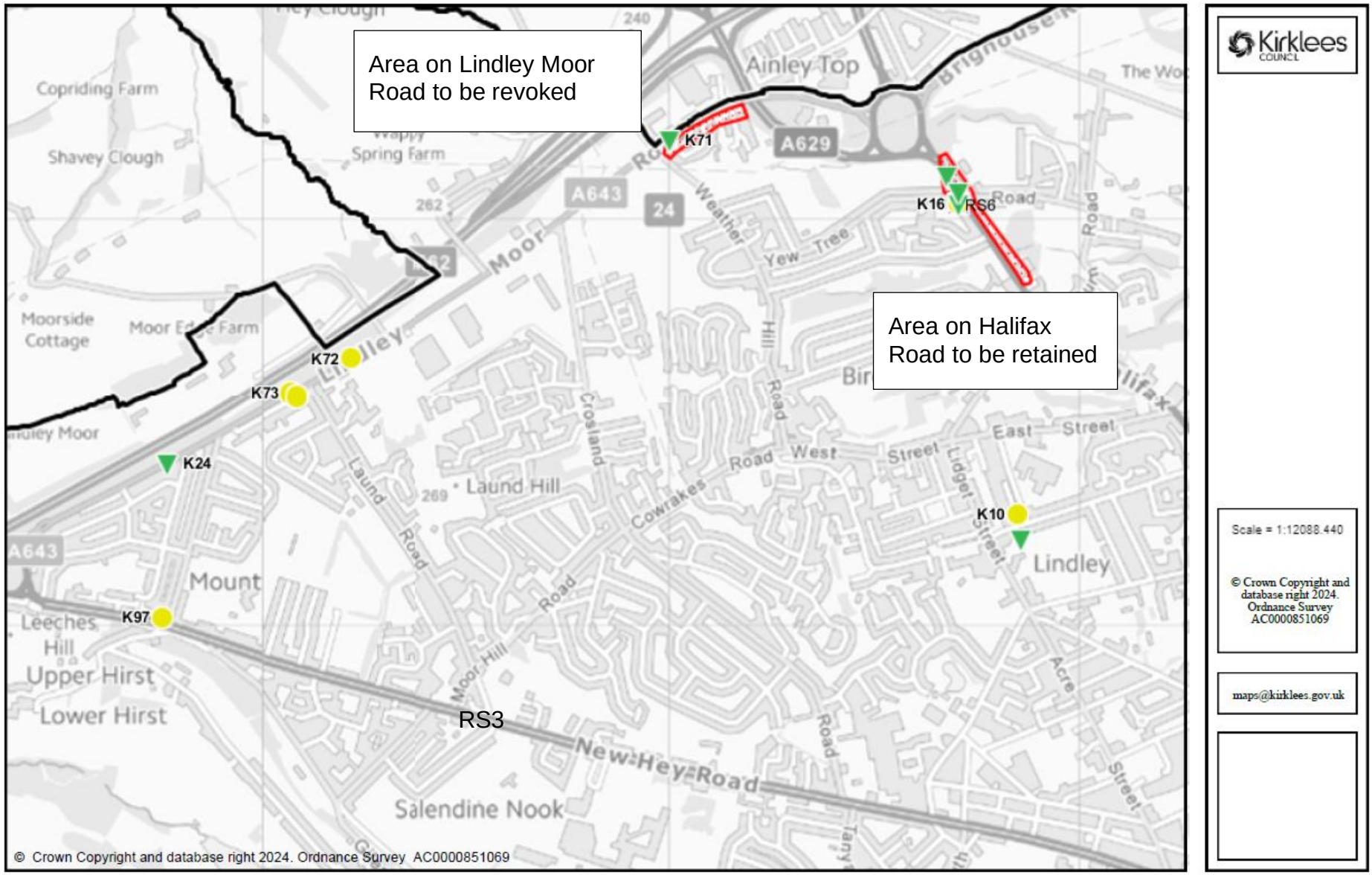
Table D1 – Legend to detail the shapes shown in the maps

Shape	Item
	Diffusion tube locations currently in use. Those diffusion tubes in Maps D1 to D22 without a number assigned to it within the map are new locations sited in early 2024. Data from these particular tubes will be reported in our 2025 ASR.
	Diffusion tube locations, monitoring suspended in 2024
	Diffusion tube locations, monitoring discontinued
	Decommissioned continuous monitors
	Continuous monitors
	AQMAs

Map D.1 Air Quality Management Area 1 Bradley

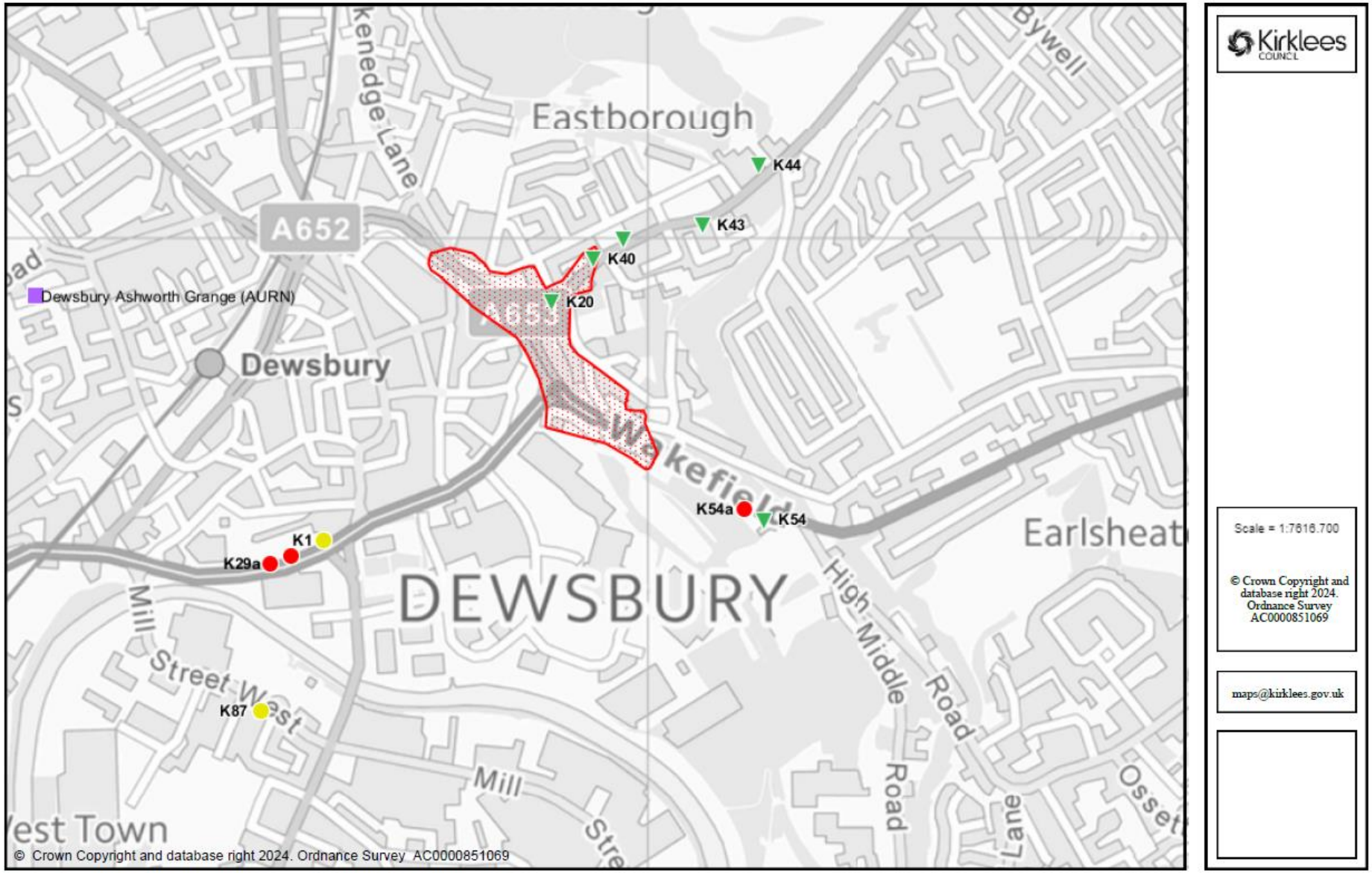


Map D.2 Air Quality Management Area 3 Ainley Top

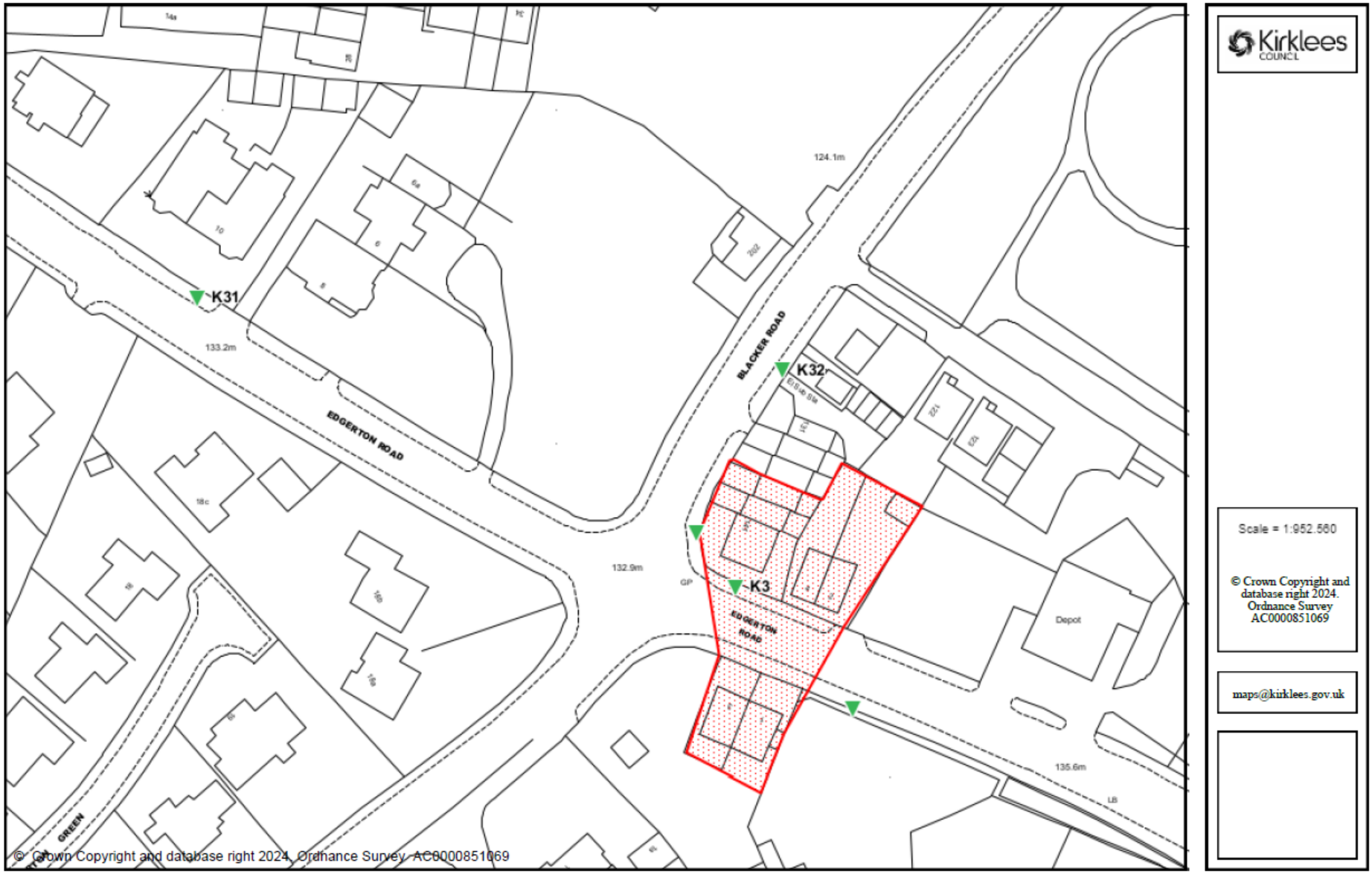


Map D.3 Air Quality Management Area 4 Birkenshaw

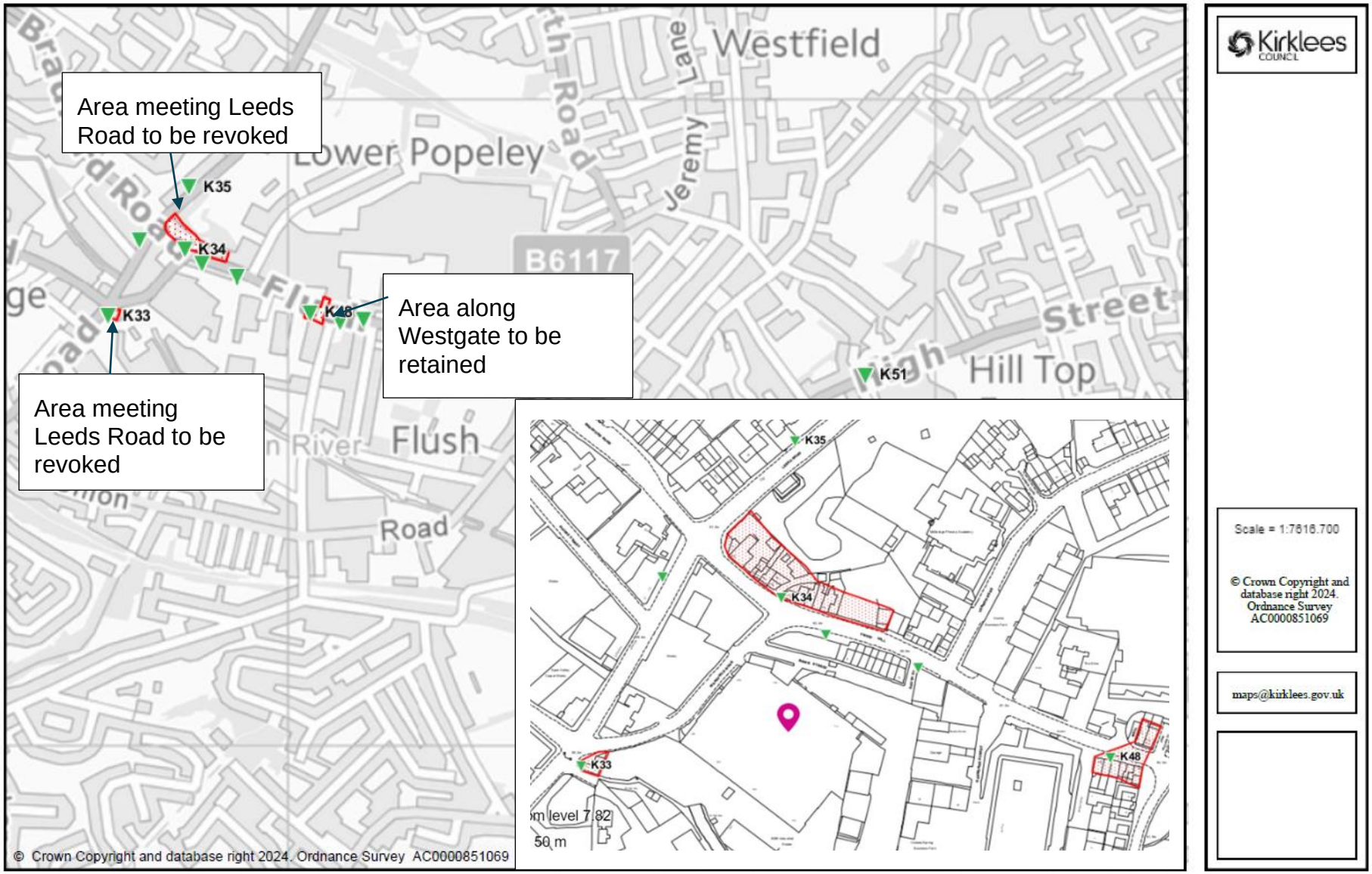
Map D.4 Air Quality Management Area 5 Eastborough



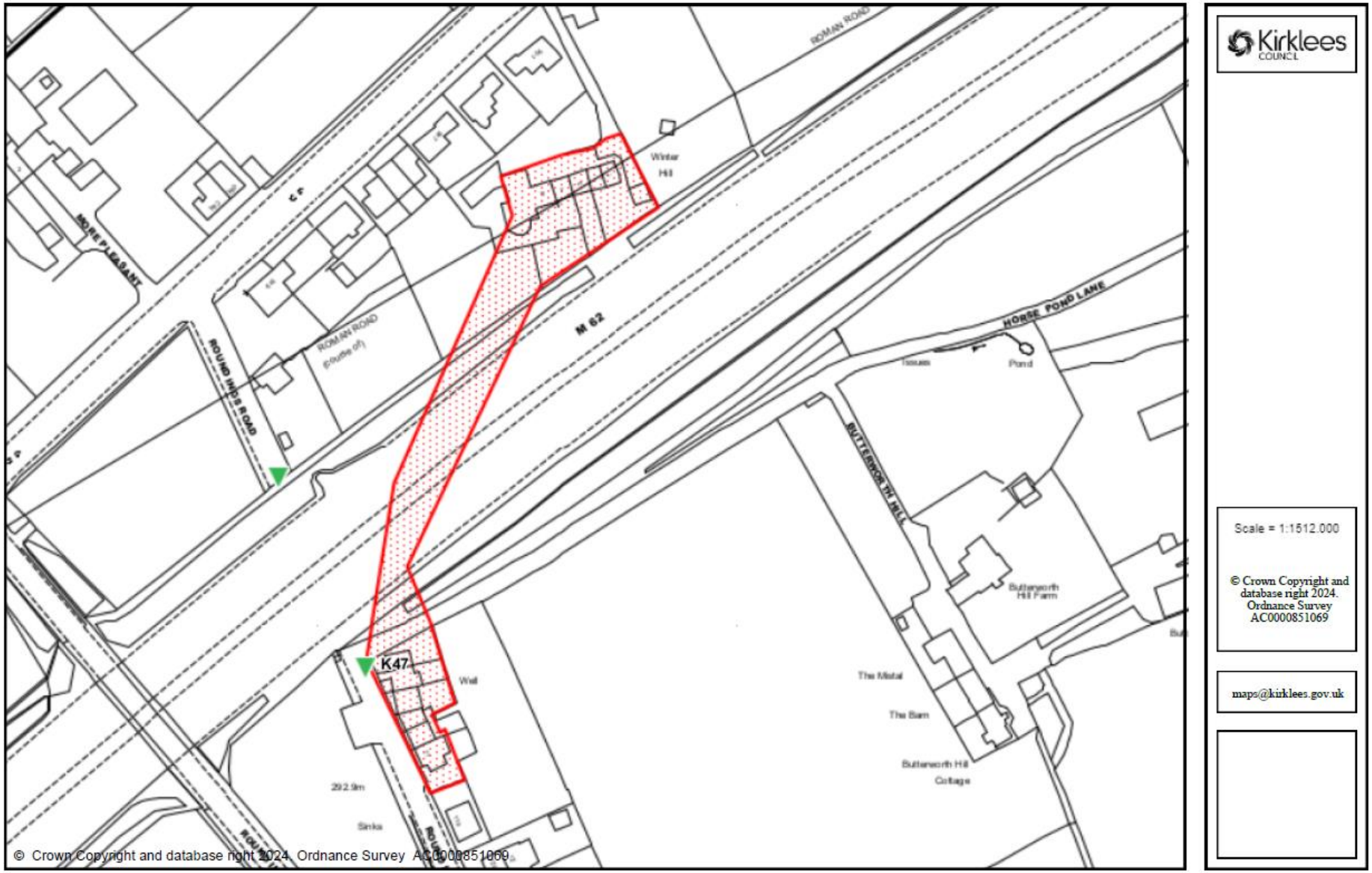
Map D.5 Air Quality Management Area 6 Edgerton



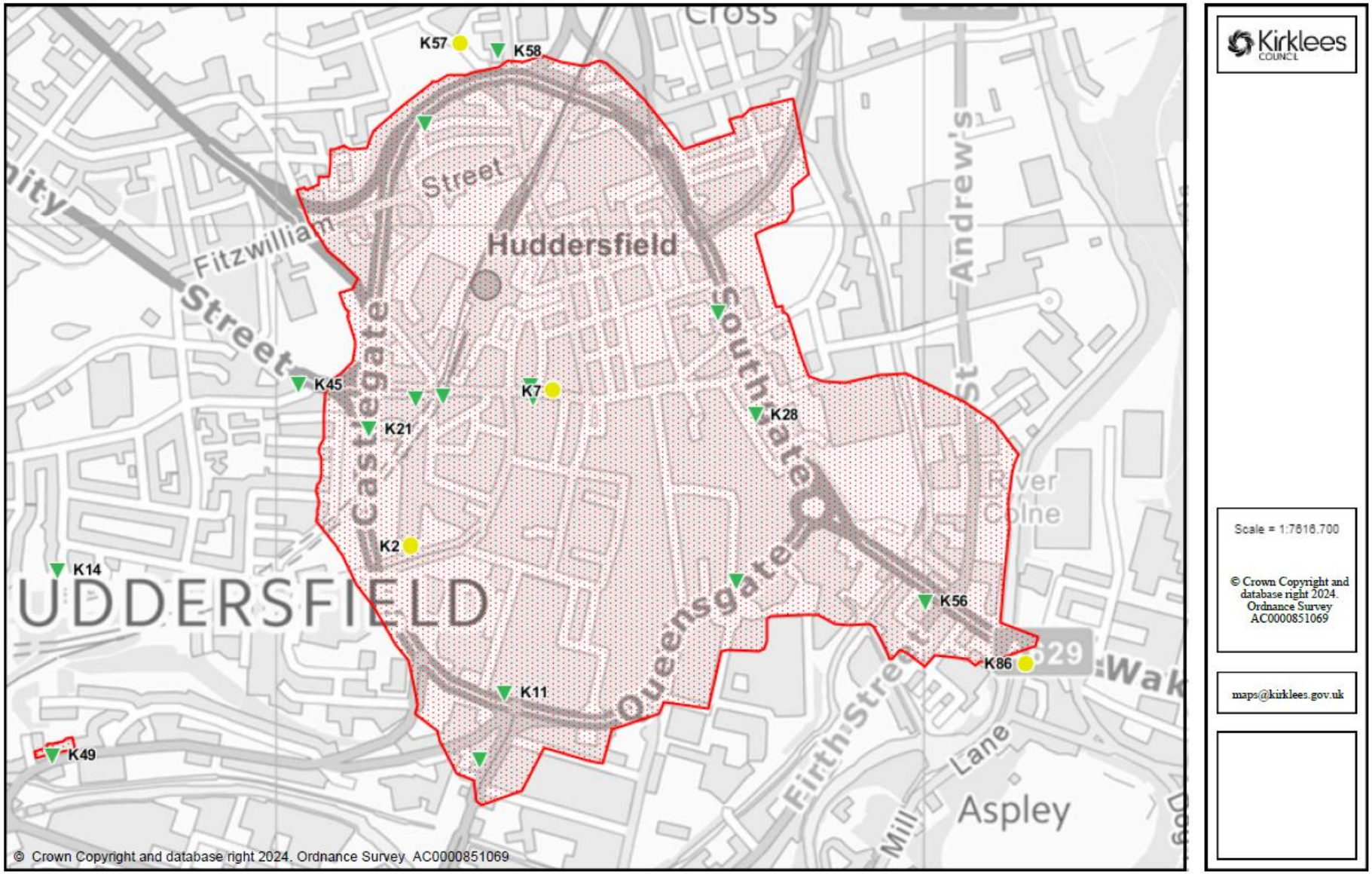
Map D.6 Air Quality Management Area 7 Liversedge



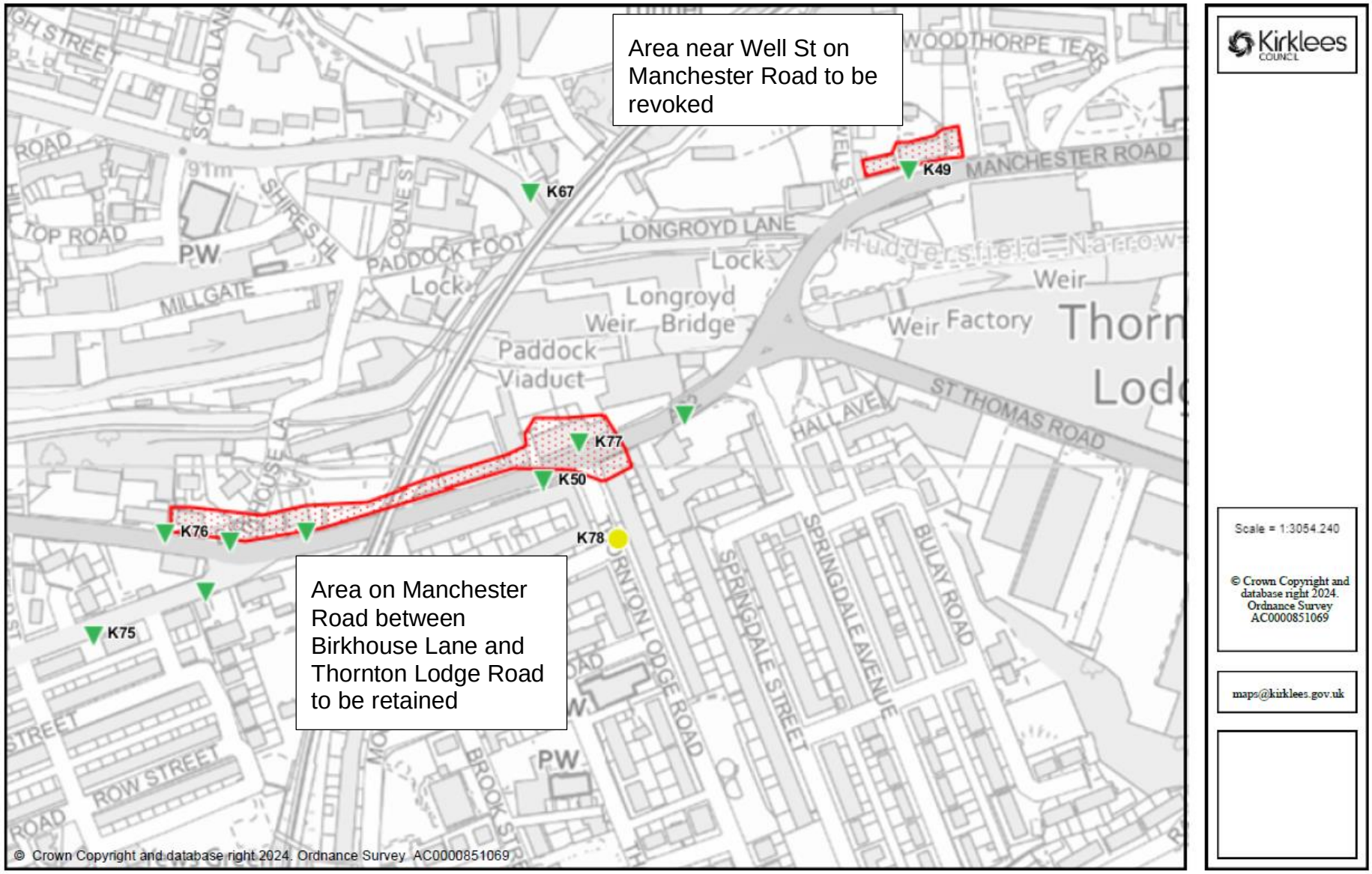
Map D.7 Air Quality Management Area 8 Outlane



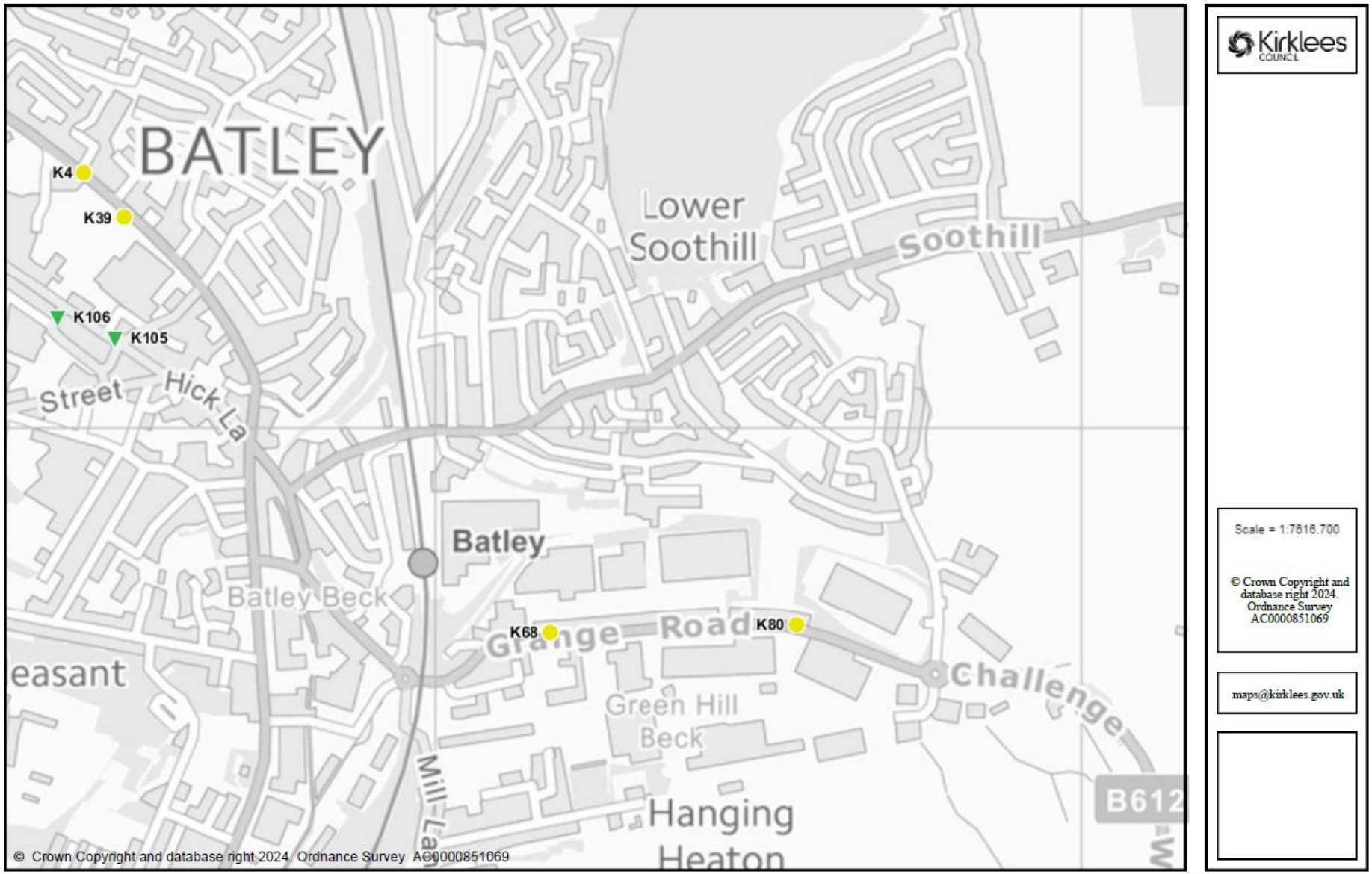
Map D.8 Air Quality Management Area 9 Huddersfield Town Centre



Map D.9 Air Quality Management Area 10 Thornton Lodge

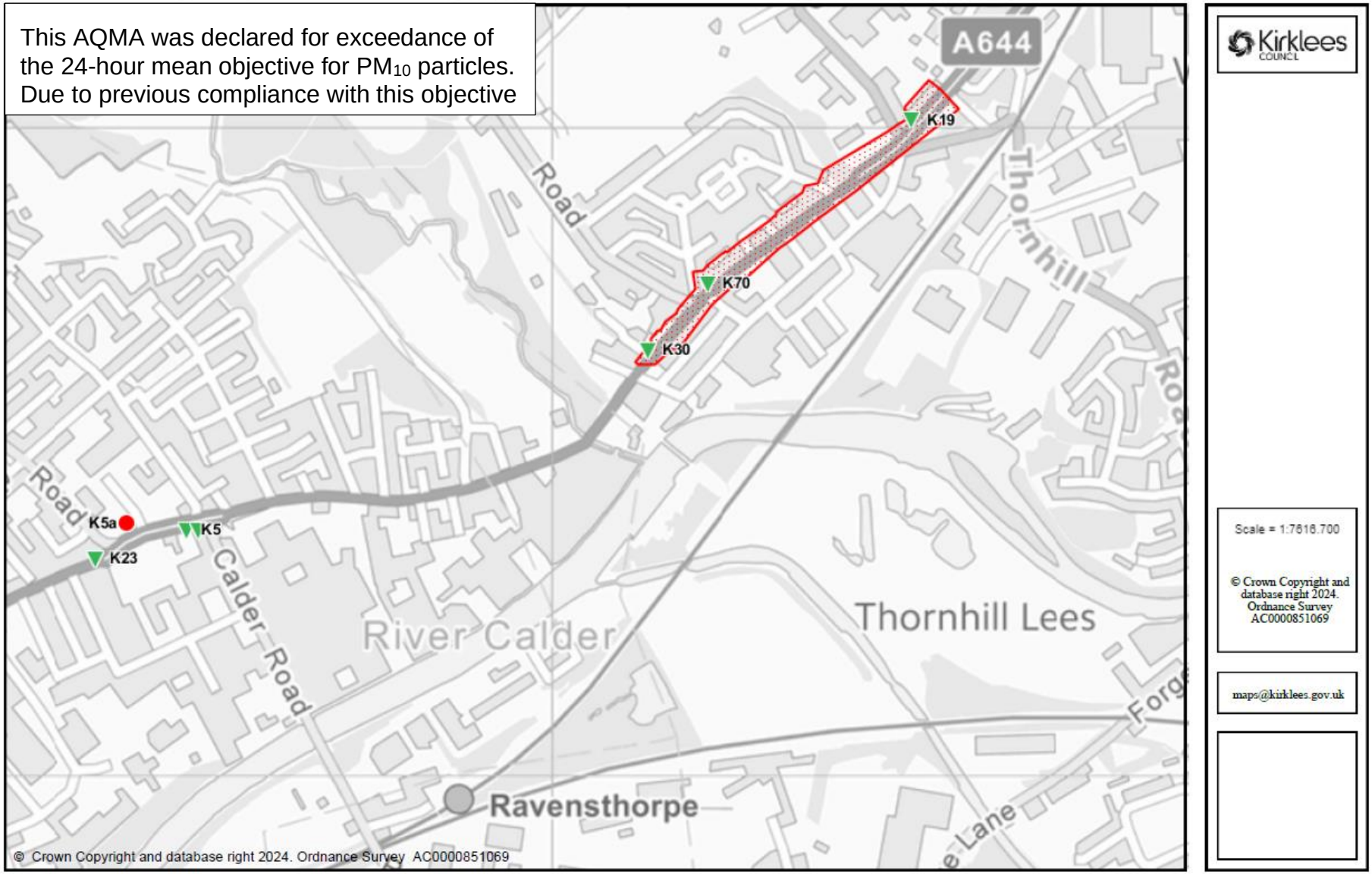


Map D.10 Air Quality Monitoring in Batley



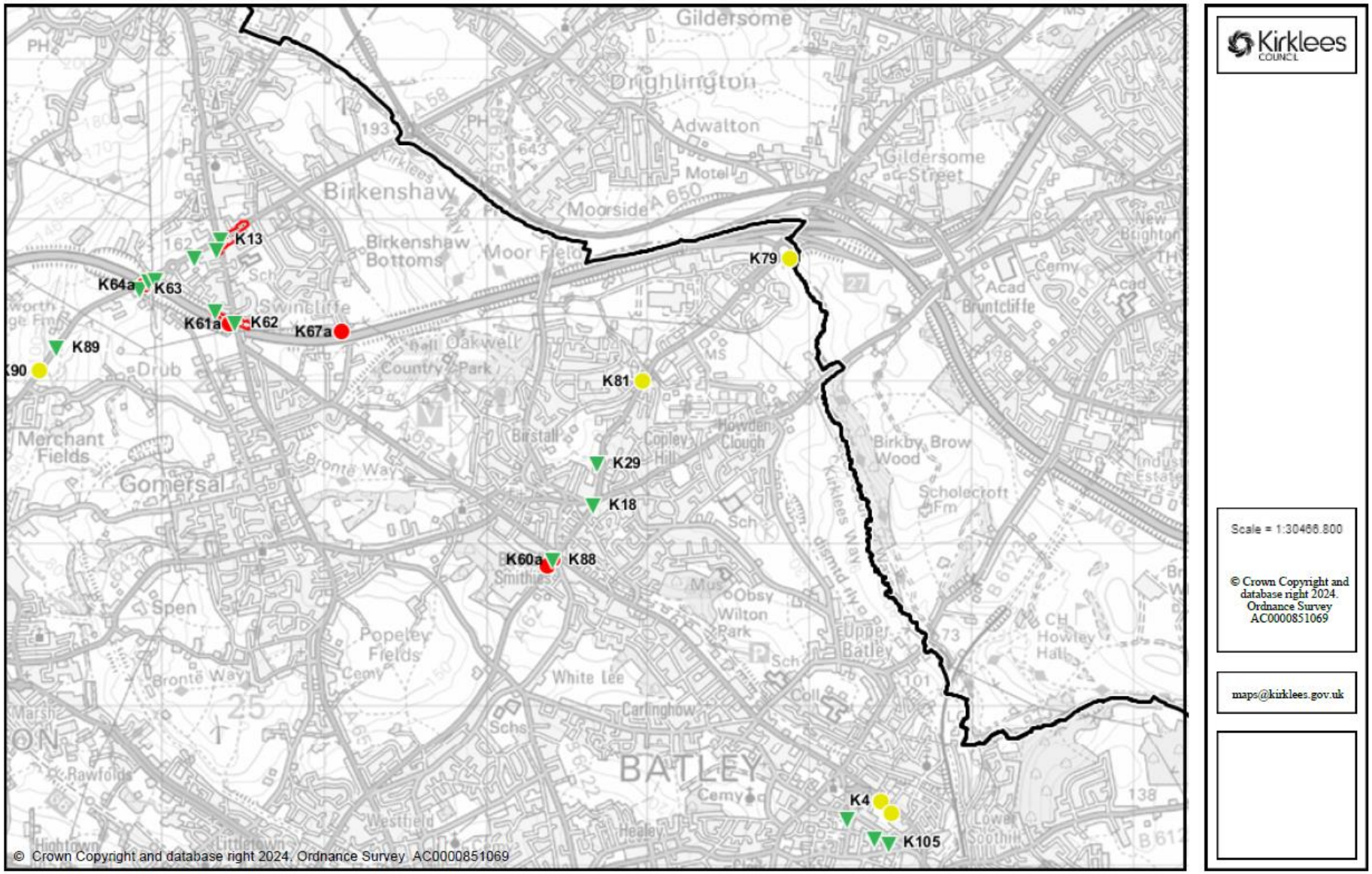
Map D.11 Air Quality Monitoring in Ravensthorpe / Scouthill (AQMA 2)

This AQMA was declared for exceedance of the 24-hour mean objective for PM_{10} particles. Due to previous compliance with this objective

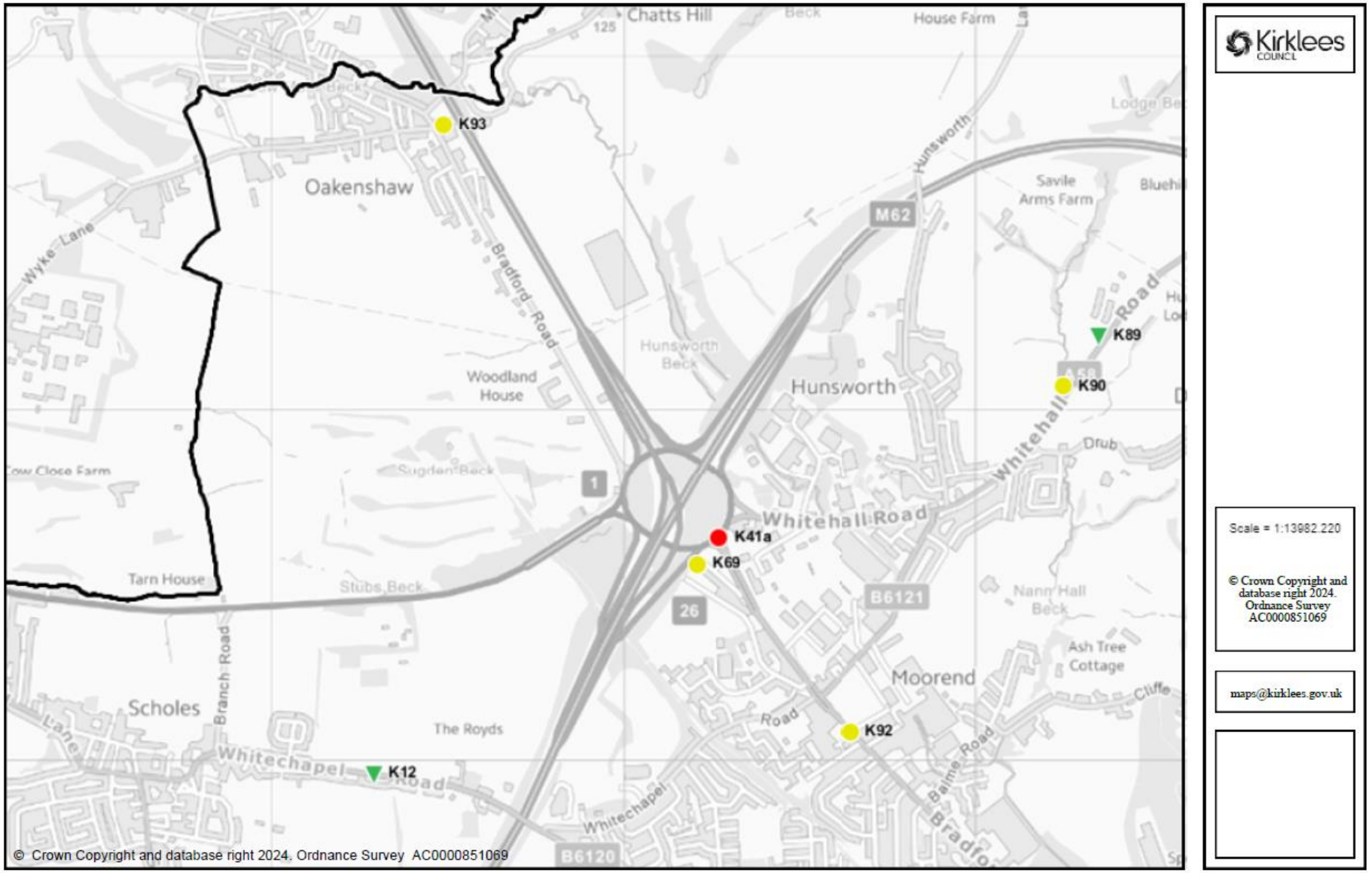


Map D.12 Air Quality Monitoring in Mirfield

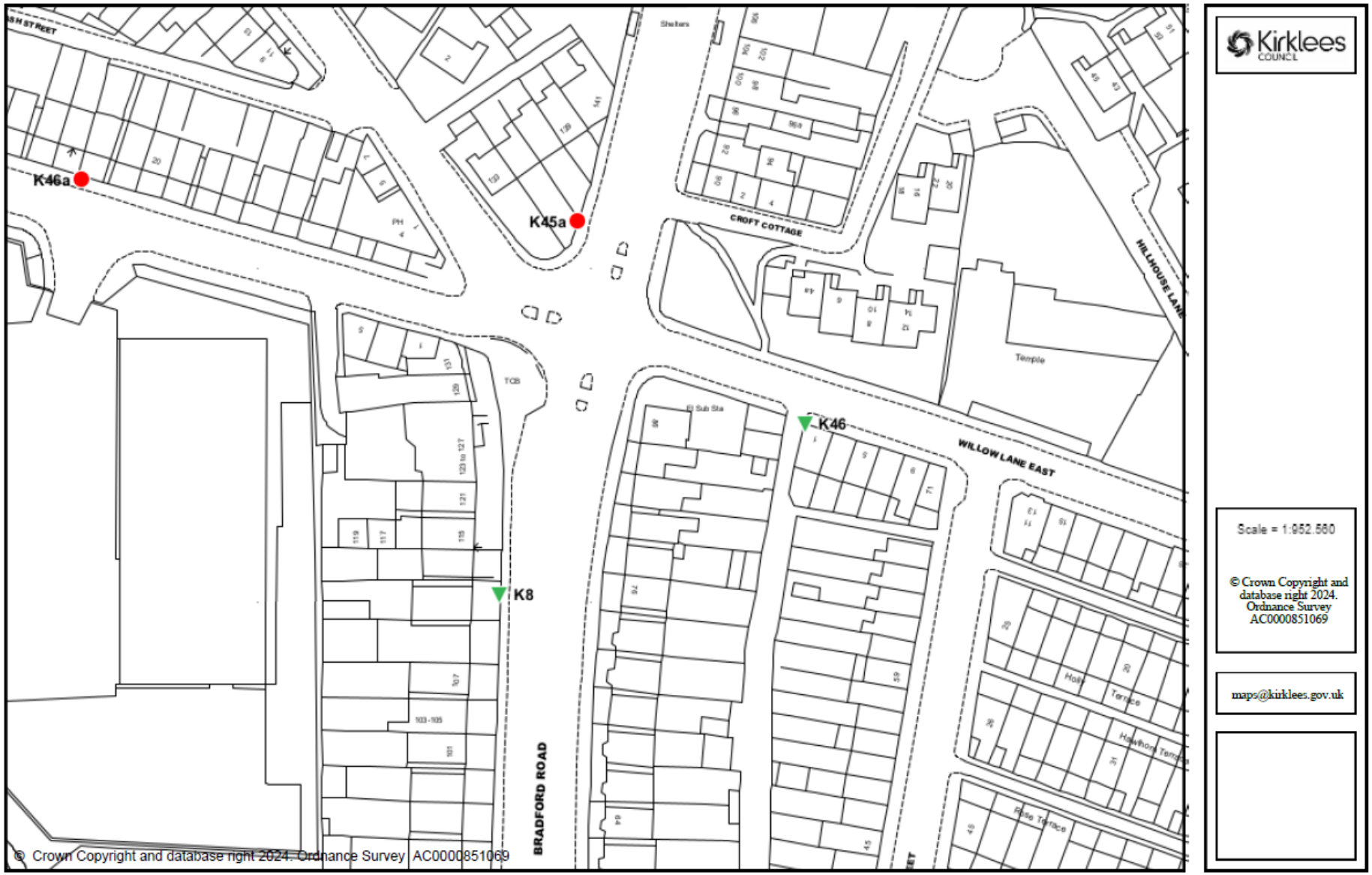
Map D. 13 Air Quality Monitoring in Birstall



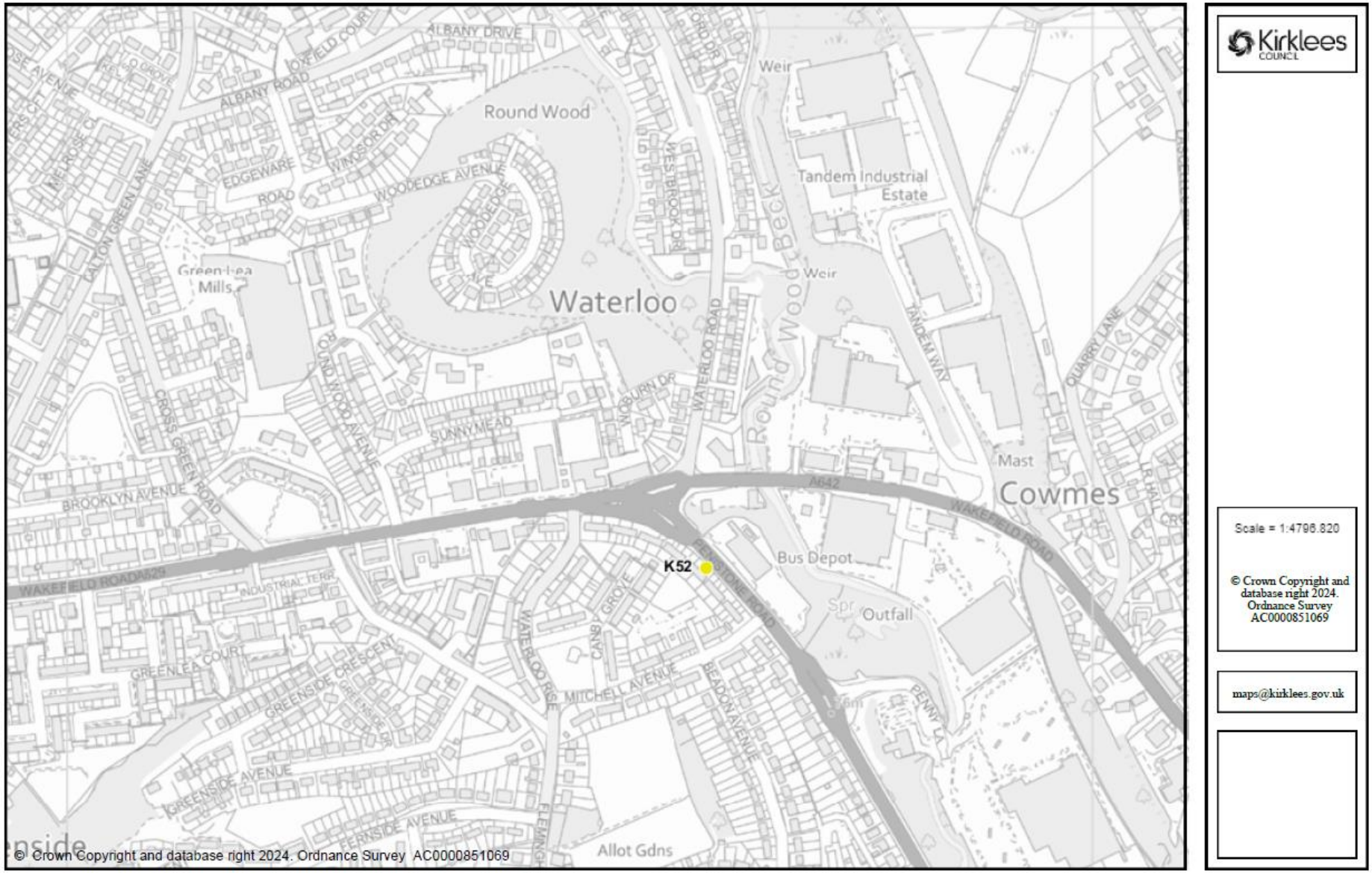
Map D.14 Air Quality Monitoring in Cleckheaton, Hunsworth & Oakenshaw



Map D.15 Air Quality Monitoring in Fartown



Map D.16 Air Quality Monitoring in Waterloo

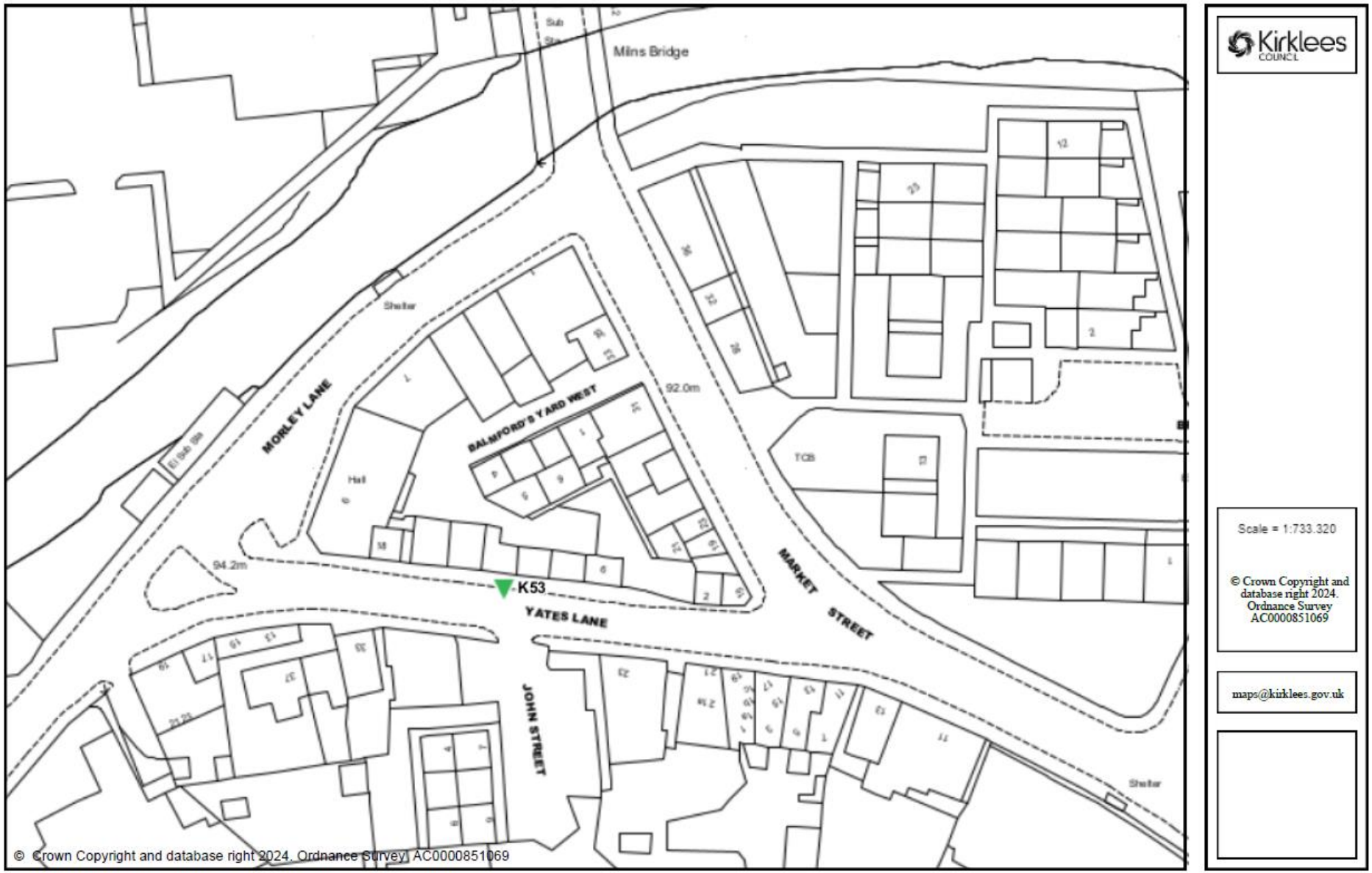


Kirklees COUNCIL

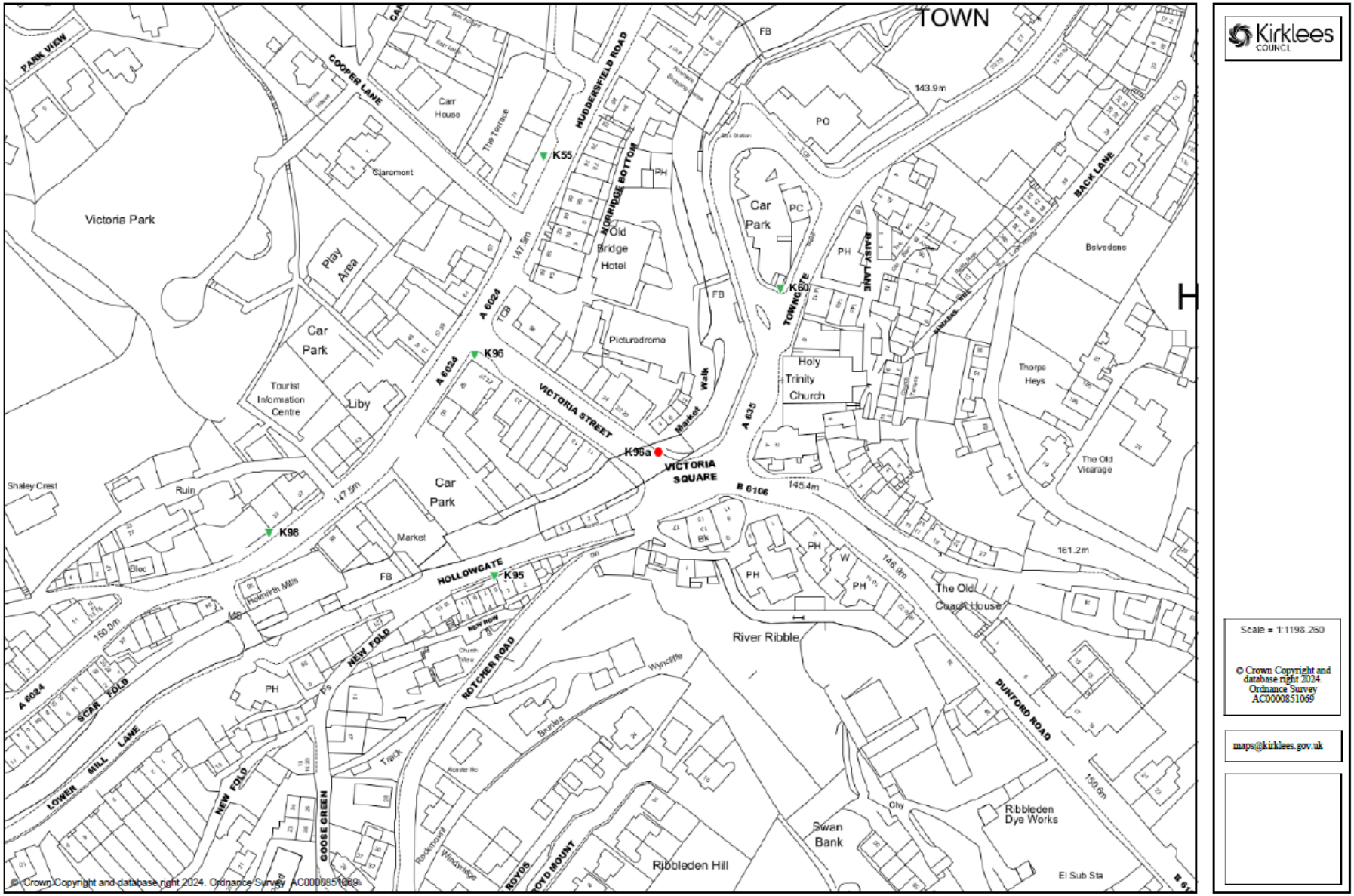
Scale = 1:4796.820

maps@kirklees.gov.uk

Map D.17 Air Quality Monitoring in Milnsbridge

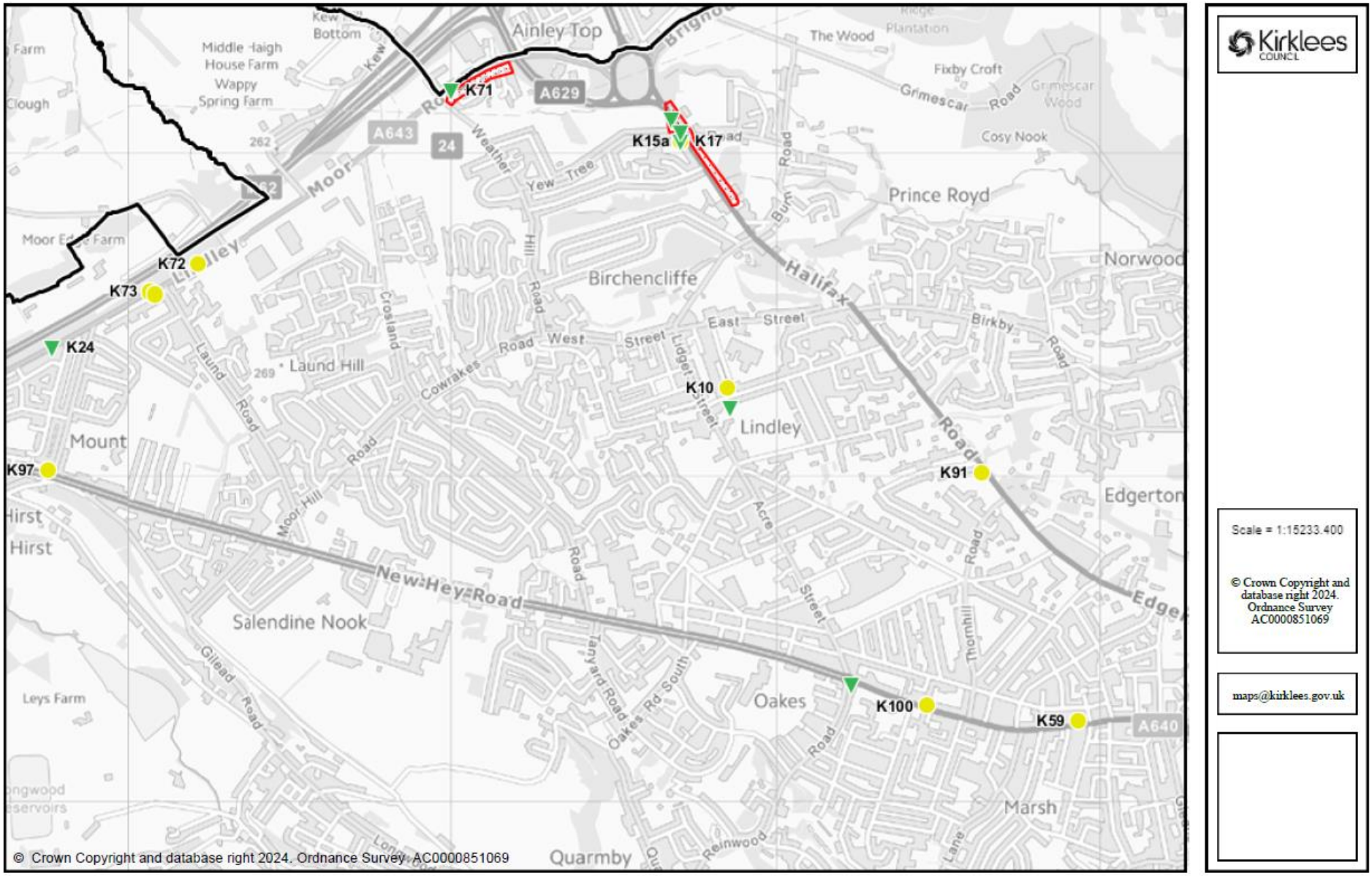


Map D.18 Air Quality Monitoring in Holmfirth

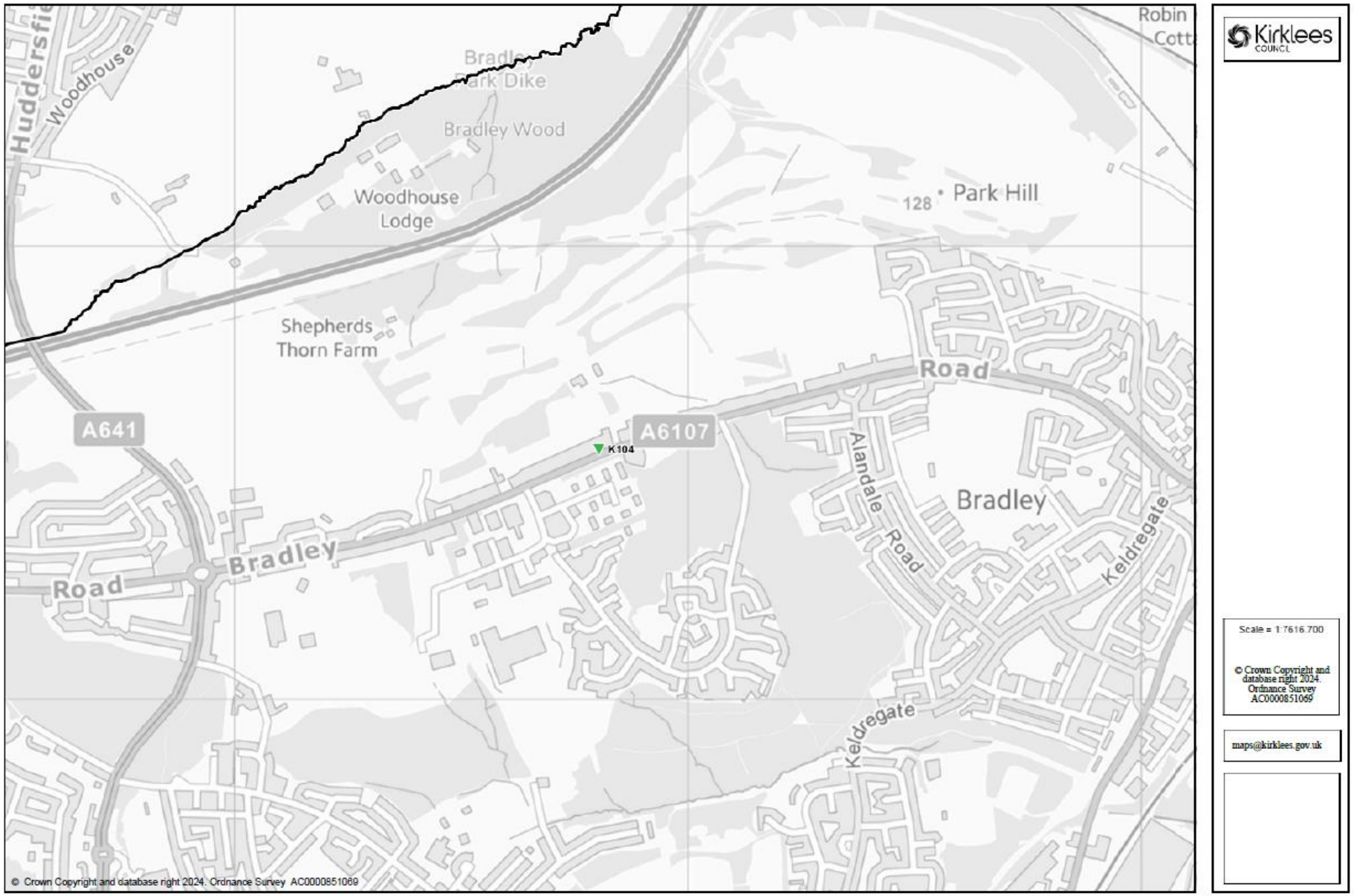


Map D.19 Air Quality Monitoring in Shaw Cross

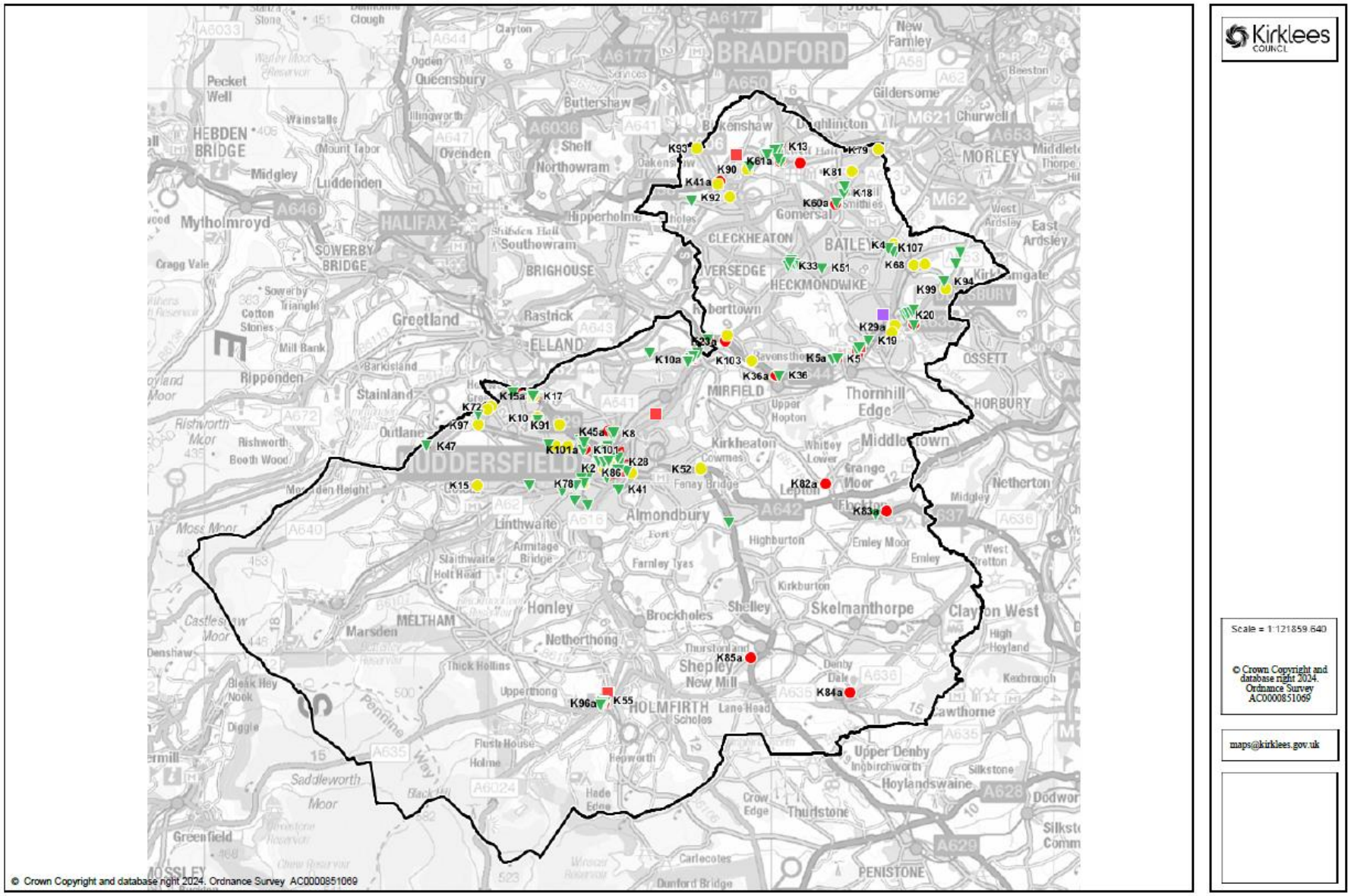
Map D.20 Air Quality Monitoring in Oakes and Marsh



Map D.21 Air Quality Monitoring in Bradley



Map D.22 Air Quality Monitoring in Kirklees



Kirklees COUNCIL

Scale = 1:121859.640

maps@kirklees.gov.uk

Appendix E: Summary of Air Quality Objectives in England

Table E.1 – Air Quality Objectives in England[23]

Pollutant	Air Quality Objective: Concentration	Air Quality Objective: measured as
Nitrogen Dioxide (NO_2)	200µg/m^3 not to be exceeded more than 18 times a year	1-hour mean
Nitrogen Dioxide (NO_2)	40µg/m^3	Annual mean
Particulate Matter (PM_{10})	50µg/m^3, not to be exceeded more than 35 times a year	24-hour mean
Particulate Matter (PM_{10})	40µg/m^3	Annual mean
Sulphur Dioxide (SO_2)	350µg/m^3, not to be exceeded more than 24 times a year	1-hour mean
Sulphur Dioxide (SO_2)	125µg/m^3, not to be exceeded more than 3 times a year	24-hour mean
Sulphur Dioxide (SO_2)	266µg/m^3, not to be exceeded more than 35 times a year	15-minute mean

[23] The units are in microgrammes of pollutant per cubic metre of air (µg/m^3).

Appendix F: Table 2.2 Key Performance Indicators

Table 2.2 Key Performance indicators

Measure No	Measure	Key Performance Indicator
G.1	Adoption of the West Yorkshire Low Emissions Strategy (WYLES)	Kirklees Council Target; +Conclusions of WYLES benchmarking project demonstrating full compliance with WYLES Objectives Kirklees Council Target; Delivery of key WYLES objectives; Obj 2. Age of vehicles in bus fleet measured by; +Change in bus fleet composition towards newer Euro Cat Vehicles Obj 3. Electric Vehicle Uptake Measured by increase in the; +Number of newly registered E.V vehicles within Kirklees +Number of E.V's using charging Infrastructure +Number of Green Parking Permits issues within district Obj 4. ECO-Stars Freight Recognition Scheme Measured by increase in; +Number of operators signed up within the district +Number of fleet vehicles included in the scheme +Number of Operators improving their ECO-Star scores after re-visits Obj 6. Taxi Fleet Improvements measured by; +increase in the number of licensed Hybrid / ULEV vehicles +reduction in the age of the vehicles licensed +reduction in number of diesel vehicles licensed
G.2	Kirklees Council - workplace Active travel	West Yorkshire Target: +Sustainable travel mode increase from 36% in 2011 to 42% by 2026 Kirklees Council Targets: +Increase cycling travel mode by 300% between 2018 baseline and 2030 +Increase walking travel mode by 20% between 2018 baseline and 2030

Measure No	Measure	Key Performance Indicator
		Kirklees Council Measurable: +Number of employees using sustainable travel modes to commute to work.
G.3	Kirklees Sustainable Travel to School Strategy	West Yorkshire Target: +Sustainable travel mode increase from 36% in 2011 to 42% by 2026 Kirklees Council Targets: +Increase cycling travel mode by 300% between 2018 baseline and 2030 +Increase walking travel mode by 20% between 2018 baseline and 2030 Kirklees Council Measurable: +Number of employees using sustainable travel modes to commute to work.
G.4	Bike-ability training provided to school children	Kirklees Council Targets: +Increase cycling travel mode by 300% between 2018 baseline and 2030 Kirklees Council Measurable: + Number of children participating in scheme
G.5	City Cycle Grant	Kirklees Council Targets: + Continued use of the scheme, measured by grant uptake +Contributes to the wider target to increase cycling travel mode by 300% between 2018 baseline and 2030 Kirklees Council Measurable: + Number of grant applications
G.6	Green Parking Permit allowing free parking for ULEV Vehicles within Council owned car parks.	Kirklees Council Targets: +Contributes to wider target to increase in percentage of ULEV registered vehicles within the district year on year in line with national average. + Contributes to wider target to meet the projected IMF target of 30% of registered cars within the district to be ULEV by 2027 + Contributes to wider target for 100% car sales to be ULEV's within by 2040 in line with national government targets.

Measure No	Measure	Key Performance Indicator
		Kirklees Measurable: + Number of ULEV vehicles registered within Kirklees District
G.7	Service level agreements across West Yorkshire for ULEV Parking permits to allow free parking across the region	Kirklees Council Targets: +Contributes to wider target to increase in percentage of ULEV registered vehicles within the district year on year in line with national average. + Contributes to wider target to meet the projected IMF target of 30% of registered cars within the district to be ULEV by 2027 + Contributes to wider target for 100% car sales to be ULEV's within by 2040 in line with national government targets. Kirklees Measurable: + Number of ULEV vehicles registered within Kirklees District
G.8	City Car Club ran within Kirklees district	Kirklees Council Measurables; + Number of members within the scheme + Number of car trips for Kirklees based cars
G.9	Finance & Promote Car Sharing Website	Kirklees Council Targets: + Increased membership on scheme + Increase number of car shares on system Kirklees Council Measurables; + Number of members on the website + Number of users car sharing
G.10	E.V Fleet Feasibility Study for council fleet	Kirklees Council Targets: +Contributes to wider target to increase in percentage of ULEV registered vehicles within the district year on year in line with national average. + Contributes to wider target to meet the projected IMF target of 30% of registered cars within the district to be ULEV by 2027 + Contributes to wider target for 100% car sales to be ULEV's within by 2040 in line with national government targets. + Implementation of further recommendation from study upon completion Kirklees Council Measurables;

Measure No	Measure	Key Performance Indicator
		+ Minimum of 27 diesel vehicles to be replaced by 2021 +Number of E.V vehicles within the council fleet
G.11	Conversion of applicable council fleet to electric vehicles	Kirklees Council Targets: +Contributes to wider target to increase in percentage of ULEV registered vehicles within the district year on year in line with national average. + Contributes to wider target to meet the projected IMF target of 30% of registered cars within the district to be ULEV by 2027 + Contributes to wider target for 100% car sales to be ULEV's within by 2040 in line with national government targets. + Implementation of further recommendation from study upon completionKirklees Council Measurables; + Initial replacement of 27 diesel vehicles with E.V's by 2021
G.12	Kirklees Bike to Work Scheme	Kirklees Council Targets: + Continued use of the scheme, measured by grant uptake +Contributes to the wider target to increase cycling travel mode by 300% between 2018 bassline and 2030 Kirklees Council Measurable: + Number of grant applications
G.13	Update Kirklees Air Quality Strategy	Kirklees Council Measurable: + Adoption of new 5 year Action Plan
G.14	Assess planning applications in accordance with procedures in the WYLES Planning Guidance Document and require the relevant mitigation included on development	Kirklees Council Targets: +Assess all planning applications in accordance with WYLES Planning Guidance Document + Require developers to integrate air quality mitigation into developments according to size of building project Kirklees Council Measurables; + Number of E.V chargers installed within new developments +Section 106 contributions

Measure No	Measure	Key Performance Indicator
G.15	Create a Green Procurement Toolkit	Kirklees Council Targets: + Integrate Air Quality as a consideration on all procurement exercises across Council + Creation of a Green Procurement Toolkit +Once created, number of procurement exercises assessed against the green procurement toolkit
G.16	Subsidised Bus/Rail Card for Kirklees Council Staff	Kirklees Council Targets: + Increase in the number of short journeys using public transport + Reduction in number of low mileage journeys for grey & council fleet Kirklees Council Measurable: + Number of Bus/Rail Card applications + Number of bookings of the company railcards + Number of trips taken in grey fleet or fleet vehicles that are 1mile or less
G.17	Kirklees Policy on Employee Transport (Employee Handbo0k)	+ Contribute to increase in the number of short journeys using public transport + Contribute to the reduction in number of low mileage journeys for grey & council fleet + Reduce grey fleet mileage + Increase ULEV Council Fleet Mileage year on year from baseline year 2020 Kirklees Council Measurables; +Number of grey fleet miles +Number of Fleet vehicle miles + Number of trips taken using bus/rail cards
G.18	Retro-fitting Applicable vehicles within the Bus Fleet with Emissions Abatement Equipment	West Yorkshire Target; + 300 Buses Retrofitted with Exhaust abatement technology by Dec 2019 Kirklees Council Measurables; +Number of buses Retro-fitted
G.19	Electric Vehicle Strategy	Kirklees Council Target; + Creation of an Electric Vehicle Strategy for the District by Dec 2020 +Contributes to wider target to increase in percentage of ULEV registered vehicles within the district year on year inline with national average. + Contributes to wider target to meet the projected IMF target of 30% of registered cars within the district to be ULEV by 2027 + Contributes to wider target for 100% car sales to

Measure No	Measure	Key Performance Indicator
		be ULEV's within by 2040 in line with national government targets. Kirklees Council Measurable: + Creation and adoption of Electric Vehicle Charging Strategy
G.20	West Yorkshire ECO-Stars Scheme	Kirklees Council Targets: + Year 2 target to get 30 new member for the West Yorkshire Scheme + Year 2 target to re-assess 50% of year 1 members (25 re-assessments) Kirklees Council Measurables; +Number of operators signed up within the district +Number of fleet vehicles included in the scheme +Number of Operators improving their ECO-Star scores after re-visits
G.21	West Yorkshire Electric Vehicle Taxi Scheme	Kirklees Council Target; +Contributes to wider target to increase in percentage of ULEV registered vehicles within the district year on year in line with national average. + Contributes to wider target to meet the projected IMF target of 30% of registered cars within the district to be ULEV by 2027 + Contributes to wider target for 100% car sales to be ULEV's within by 2040 in line with national government targets. + Implementation of further recommendation from study upon completion+increase in the number of licensed Hybrid / ULEV vehicles+reduction in the age of the vehicles licensed +reduction in number of diesel vehicles licensed+ increase E.V Taxi charger network usage year on year Kirklees Council Measurables; +Installation of 17 Rapid Chargers within Kirklees District by March 2020 + Number of licensed Hybrid / ULEV vehicles +Number of vehicles 8 years or older

Measure No	Measure	Key Performance Indicator
G.22	West Yorkshire Low Emission Strategy Officer	Kirklees Council Target; +Conclusions of WYLES benchmarking project demonstrating full compliance with WYLES Objectives Kirklees Council Target; Delivery of key WYLES objectives; Obj 2. Age of vehicles in bus fleet Measured by; +Change in bus fleet composition towards newer Euro Cat Vehicles Obj 3. Electric Vehicle Uptake Measured by increase in the; +Number of newly registered E.V vehicles within Kirklees +Number of E.V's using charging Infrastructure +Number of Green Parking Permits issues within district Obj 4. ECO-Stars Freight Recognition Scheme Measured by increase in; +Number of operators signed up within the district +Number of fleet vehicles included in the scheme +Number of Operators improving their ECO-Star scores after re-visits Obj 6. Taxi Fleet Improvements Measured by; +increase in the number of licensed Hybrid / ULEV vehicles+reduction in the age of the vehicles licensed+reduction in number of diesel vehicles licensed
G.23	Joint Strategic Assessment for Air Quality	Kirklees Council Target; +Continued partnership working between Public Health and Environmental Health + Contribute to the delivery of work streams outlined in KJSA Kirklees Council Measurables; + Adoption of the Strategy
G.24	Corporate Carbon Reduction Targets	Kirklees Council Target; + Reduction of 15,214t CO2 by 2021 Kirklees Council Measurables; + Tonnes of CO2 reduction per year

Measure No	Measure	Key Performance Indicator
G.25	West Yorkshire Energy Accelerator Project	West Yorkshire Target; + Estimated 590kt CO2 reduction focusing on high emission industrial sector Kirklees Council Measurables; + Tonnes of CO2 reduction per year
G.26	Air Quality to be included in a relevant Supplementary Planning Guidance Document	Kirklees Council Targets: +Assess all planning applications in accordance with WYLES Planning Guidance Document + Require developers to integrate air quality mitigation into developments according to size of building project Kirklees Council Measurables; + Number of E.V chargers installed within new developments +Section 106 contributions
G.27	Trialling Hybrid and E.V Bin Wagon	Kirklees Council Target; + Determine the savings / issues around ULEV Bin Wagons +Promote findings within industry Kirklees Council Measurables; + Report on trial impacts
G.28	Feasibility Study on use of E.V Mobile Maintenance Equipment	Kirklees Council Target; + Determine cost savings of E.V M.M.E + Replace appropriate M.M.E with E.V equivalent +Promote findings within industry Kirklees Council Measurables; + Construction of a report outlining viability of E.V M.M.E's + Number of M.M.E's replaced with E.V alternatives.
G.29	Feasibility of delivery of Council Officer Car Lease Scheme and delivery (limiting the available options by emission output)	Kirklees Council Target; + Determine the viability of a Council Officer Lease Scheme with built in ULEV promotionScheme aim is to contribute to; +Contributes to wider target to increase in percentage of ULEV registered vehicles within the district year on year in line with national average. + Contributes to wider target to meet the projected IMF target of 30% of registered cars within the district to be ULEV by 2027 + Contributes to wider target for 100% car sales to be ULEV's within by 2040 in line with national

Measure No	Measure	Key Performance Indicator
		government targets. Kirklees Council's Measurables; + Number of ULEV Car Leases
G.30	Grey Fleet Telematics Trial	Kirklees Council Targets: +Reduce number of grey fleet miles for the Council year on year. Baseline year is year prior to introduction of telematics system +Contribute to increase in the number of short journeys using public transport + Reduce grey fleet mileage+ Increase ULEV Council Fleet Mileage year on year from baseline year 2020 Kirklees Council Measurables; + Number of vehicle miles + Number of grey mile trips + Number of service car trips
G.31	Master naught Telematics System	Kirklees Council Targets: +Reduction in number of Driver accidents year on year +Reduction in number of speeding / unsafe driving reports year on year +Identify appropriate targeted driver training for safe and eco driving Kirklees Council Measurables; + Number of speeding exceedances +Number of heavy breaking events
G.32	Pool Bike Feasibility Study	Kirklees Council Targets: +Assess pool bike usage +Determine barriers of pool bike system +Promote pool bikes + Contributes to the reduction in number of low mileage journeys for grey & council fleet +Contributes to the wider target to increase cycling travel mode by 300% between 2018 baseline and 2030 Kirklees Council Measurables; + Number of pool bike bookings +Number of miles undertaken on pool bike

Measure No	Measure	Key Performance Indicator
G.33	Robust Travel Survey to determine better travel plans internally	Kirklees Council Targets: + Increase the number of completed travel surveys year on year +Collect relevant data to assists with decision making process Kirklees Council Measurables; + Number of Travel Survey responses + Yearly report on results of travel survey
G.34	Installation of pollution sensor technology within our AQMAS in conjunction with recognised monitoring to demonstrate validity of new devices	Kirklees Council Targets: + Create a report analysing the validity of sensor technology +Analyse cost effectiveness of sensors when measured against existing monitoring tools +Improve accuracy of current AQ monitoring network Kirklees Council Measurables; + Report outlining the issues relating to Sensor Technology
G.35	Engagement within the district with regional plans on alternative Low Emission Fuel Sources	West Yorkshire Target; + Contribute towards regional low emission fuel source projects currently in development
G.36	Review how Environmental Health delivers regulatory requirements of the Clean Air Act	Kirklees Council Targets: + Reduce number of burning / smoking chimney complaints+Increased business engagement +Integrate new Clean Air Act into Kirklees Council work procedures Kirklees Council Measurables; + Number of complaints Smoking Chimney Complaints to Environmental Health
G.37	Implementation of the Medium Combustion Plant Directive through the planning process	Kirklees Council Target; + All plant meeting directive to be registered with relevant authority + Signpost relevant businesses of directive at development control stage Kirklees Council Measurables; + Number of permits issued within the district

Measure No	Measure	Key Performance Indicator
G.38	Zoning project to identify errant PPC businesses	Kirklees Council Targets: + Permit all relevant businesses in accordance with the PPC Regulations. Kirklees Council Measurables; + Number of errant PPC businesses identified + Number of areas assessed
G39	Kirklees Walking and Cycling Strategic Framework	West Yorkshire Target: +Sustainable travel mode increase from 36% in 2011 to 42% by 2026 Kirklees Council Targets: +Increase cycling travel mode by 300% between 2018 baseline and 2030 +Increase walking travel mode by 20% between 2018 baseline and 2030 + Increase in number of coaches, leaders & volunteers + Improvement in communication with public. Kirklees Council Measurables; +Creation of a policy document around Walking and Cycling
G.40	Kirklees Neighbourhood Housing Solid Fuel Policy	Kirklees Council Targets: + Prohibit installation of solid fuel stoves +Educate residents on the policy Kirklees Council Measurables; +Number of Solid Fuel Stoves within KnH properties
G.41	West Yorkshire Travel Plan Network	West Yorkshire Targets: +Sustainable travel mode increase from 36% in 2011 to 42% by 2026 +Increase number of local businesses registered as members Kirklees Council Measurables; + Number of Kirklees businesses that are members of the Travel Plan Network
G.42	Development of a Comms Strategy to promote air quality, modal shift and successful emission reduction projects	Kirklees Council Targets: +Creation of a Comms Strategy for AQ, incorporating joint messages for Green Streets, Public Health, Carbon Reduction and other linked work streams Kirklees Council Measurables; +Strategy document outlining plans to promote Air

Measure No	Measure	Key Performance Indicator
		Quality +Number of promotion activities
G.43	Collaborative working with NHS Trusts within District	Kirklees Council Targets: + Set up liaison program with NHS Trusts + Increase number of linked work streams with NHS Trusts
G.44	Collaborative working with University of Huddersfield	Kirklees Council Targets: + Increase number of linked work streams with Huddersfield University
G.45	Collaborative working with Commercial Bus Companies within the district	Kirklees Council Targets: + Set up liaison program with Bus Companies + Increase number of linked work streams with Bus Companies
G.46	Collaborative working with Highways England	Kirklees Council Targets: + Set up liaison program with Highways England + Increase number of linked work streams with Highways England
G.47	De-centralised Energy Use	Kirklees Council Targets: +Contribute towards targets set by Climate Emergency Work Group Kirklees Council Measurables; + CO2 reductions
G.48	Smart Systems to manage energy use within Local Authority Buildings	Kirklees Council Targets: +Contribute towards targets set by Climate Emergency Work Group Kirklees Council Measurable: + CO2 Reductions
G.49	Study the impact of Green Infrastructure	Kirklees Council Target; +To assess the validity of the use of vegetation as a mitigation solution +To determine the best vegetation to reduce air pollution +To assess cost effectiveness of Green Infrastructure +Promote findings within industry

Measure No	Measure	Key Performance Indicator
		Kirklees Council Measurables; + Report determining the impact of Green Infrastructure
G.50	Generate a pollutions based calculation similar to that currently used in carbon reduction calculations	Kirklees Council Target; + Aim to create a simple calculation which will allow the organisation to determine theoretical NO2 / PM10 concentration , which in turn allows firms to set targets similar to Carbon system Kirklees Council Measureable; + Creation of an easier system for calculating emission impact
G.51	Research gathering to inform development of neighbourhood plans as part of Local Plan integration	Kirklees Council Targets: + Collected dataset of a quality that allows informed development control decisions to be made. Kirklees Council Measurable: + Report containing data to inform neighbourhood plans
G.52	Development Clusters Research and Solution Systems	Kirklees Council Targets: + To collect a dataset of a quality that allows informed development control decisions to be made. Kirklees Council Measureable; + Report containing quality dataset
G.53	Feasibility Study of current Traffic Model and identify further highways improvement projects	Kirklees Council Targets: + Use outcomes from feasibility study to identify other highways improvement projects within the district. Kirklees Council Measurable: + Report outlining the validity and potential improvements to current traffic model
G.54	Voluntary Clean Air Zone Feasibility Study	Kirklees Council Targets: + Full cost analysis measured against impact of implementing non-charging clean air zone. Kirklees Council Measurable:

Measure No	Measure	Key Performance Indicator
		+ Report outlining viability of non-charging clean air zone.
G.55	Study into the impact of topography onto clean bus technology	Kirklees Council Targets: + Determine the best bus technology to utilise within the district + Promote findings within industry Kirklees Council Measurable: +Report demonstrating the most appropriate bus technology to deliver a cost effective low emission service within a district with hilly topography
G.56	Project to engage with public on solid fuel regarding compliance into UK Clean Air Strategy	Kirklees Council Targets: + Reduce number of burning / smoking chimney complaints +Increased business engagement +Reduction in particulate associated with solid fuel Kirklees Council Measurable: + Number of smoking chimney complaints
G.57	Feasibility study into changing internal governance and decision making to further incorporate air quality	Kirklees Council Targets: + Use outcomes from feasibility study to identify policy to integrate AQ within. Kirklees Council Measurable: + Report outlining the validity and potential improvements to current policy to incorporate AQ in decision making
G.58	Feasibility Study into On street electric vehicle charging solutions	Kirklees Council Targets: +Contributes to wider target to increase in percentage of ULEV registered vehicles within the district year on year in line with national average. + Contributes to wider target to meet the projected IMF target of 30% of registered cars within the district to be ULEV by 2027 + Contributes to wider target for 100% car sales to be ULEV's within by 2040 in line with national government targets. Kirklees Council Measurable: + Report outlining the viable solutions to provide charging to properties without off-street parking

Measure No	Measure	Key Performance Indicator
G.59	Creation of a delivery plan for Kirklees EV Charging	Kirklees Council Targets: +Contributes to wider target to increase in percentage of ULEV registered vehicles within the district year on year in line with national average. + Contributes to wider target to meet the projected IMF target of 30% of registered cars within the district to be ULEV by 2027 + Contributes to wider target for 100% car sales to be ULEV's within by 2040 in line with national government targets. Kirklees Council Measurable: + Report outlining the a delivery plan to providing charging network across the district to meet future needs
G.60	Provision of EV Charging in all communities of Kirklees	Kirklees Council Targets: + Each council ward to have an even spread of charging network per head of population +Contributes to wider target to increase in percentage of ULEV registered vehicles within the district year on year in line with national average. + Contributes to wider target to meet the projected IMF target of 30% of registered cars within the district to be ULEV by 2027 + Contributes to wider target for 100% car sales to be ULEV's within by 2040 in line with national government targets. Kirklees Council Measurable: + Number of chargers in each ward
G.61	Improvements to the Cycling Network, linking all the Kirklees Towns and with neighbouring districts	West Yorkshire Target:Contribute to; +Sustainable travel mode increase from 36% in 2011 to 42% by 2026 Kirklees Council Targets: +Improve pre-existing walking / cycling facilities within district + Connect local towns and neighbouring districts with improved cycling and walking facilities +Increase cycling travel mode by 300% between 2018 baseline and 2030 +Increase walking travel mode by 20% between 2018 baseline and 2030 +Improvement in facilities across the district for cycling and clear links between all towns within the district.

Measure No	Measure	Key Performance Indicator
		Kirklees Council Measurable: +Number of tows connected by cycle network
G.62	Use of Technology and publicity to incentivise and increase Active travel during commute and business activities	Kirklees Council Targets: +Development of an App to collect data and recommend appropriate methods of transportContribute towards; +Increase cycling travel mode by 300% between 2018 baseline and 2030+Increase walking travel mode by 20% between 2018 baseline and 2030. West Yorkshire Target: +Sustainable travel mode increase from 36% in 2011 to 42% by 2026. Kirklees Council Measurables; +Creation of an App promoting model shift +Number of journeys made by walking / cycling
G.63	Project to promote and incentivise working at home to reduce commuter miles	West Yorkshire Target: +Sustainable travel mode increase from 36% in 2011 to 42% by 2026 Kirklees Council Targets: +Alter modern way of working and reduction in commuter miles +Support business to operate in a modern way +Promote best practice currently being adopted within Kirklees Council Kirklees Councill Measurable: + Number of walking / cycling trips

Measure No	Measure	Key Performance Indicator
G.64	E.V research project to identify appropriate demographics and locations within the district.	Kirklees Council Targets: + Report outlining the best focus for council delivery plan to providing charging network across the district to meet future needs +Contributes to wider target to increase in percentage of ULEV registered vehicles within the district year on year in line with national average. + Contributes to wider target to meet the projected IMF target of 30% of registered cars within the district to be ULEV by 2027 + Contributes to wider target for 100% car sales to be ULEV's within by 2040 in line with national government targets. Kirklees Council Measurable: +Report outlining demand for ULEV within the district
G.65	Feasibility study into the integration of National and Local UTMC	Kirklees Council Targets: + Linked UTMC system between HE and Kirklees Council systems +Improved Journey Times +Improved Road user experience Kirklees Council Measurable: +Report outlining requirements to integrate HE UTMC and Kirklees UTMC
G.66	Feasibility study into the use of anti-adling measures as a control on emissions, giving focus to areas of poor air quality	Kirklees Council Target; +To assess the validity of the use of anti-idling as a mitigation solution +To determine the best / appropriate locations for anti-idling +To assess cost effectiveness of anti-idling enforcement +Creation of a report determining the impact of anti-idling +Promote findings within industry Kirklees Council Measurable: + Report outlining feasibility of anti-idling measures within the district

Measure No	Measure	Key Performance Indicator
G.67	E.V Salary Sacrifice Scheme	Kirklees Council Targets: +Contributes to wider target to increase in percentage of ULEV registered vehicles within the district year on year in line with national average. + Contributes to wider target to meet the projected IMF target of 30% of registered cars within the district to be ULEV by 2027 + Contributes to wider target for 100% car sales to be ULEV's within by 2040 in line with national government targets. Kirklees Measurable: + Number of ULEV vehicles registered within Kirklees District +Reduce Council's Grey Fleet Emissions
G.68	£1million E.V Infrastructure Project	Kirklees Council Targets: + Each council ward to have an even spread of charging network per head of population +Contributes to wider target to increase in percentage of ULEV registered vehicles within the district year on year in line with national average. + Contributes to wider target to meet the projected IMF target of 30% of registered cars within the district to be ULEV by 2027 + Contributes to wider target for 100% car sales to be ULEV's within by 2040 in line with national government targets. Kirklees Council Measurable: + Number of chargers in each ward
AQMA1.1	Install Split Cycle Offset Optimisation technique (SCOOT) Traffic Managements System within AQMA 1	Kirklees Council Targets: + Reduction in queuing times and increased through flow + Reduced stop / start driving style + Increased efficiency in combustion engine process Kirklees Council Measurable: + Average road speed +AM/PM Queue times

Measure No	Measure	Key Performance Indicator
AQMA1.2	Feasibility Study to Alter SCOOT to incorporate actual Air Quality pollution levels	Kirklees Council Targets: + Report outlining impact of integrating monitors into UTMC system. Looking at cost, flowtimes and pollutant reduction +Reduction in queuing times and increased through flow + Reduced stop / start driving style + Increased efficiency in combustion engine process Kirklees Council Measurable: + Average road speed +AM/PM Queue times
AQMA1.3	Kirklees "Virtual Emissions Monitoring Project" to rationale SCOOT system	Kirklees Council Targets: + Reduction in queuing times and increased through flow + Reduced stop / start driving style + Increased efficiency in combustion engine process Kirklees Council Measurable: + Average road speed +AM/PM Queue times
AQMA1.4	Cooper Bridge Road Improvements Project	Kirklees Council Targets: + Reduction in queuing times and increased through flow + Increased capacity on the road + Redistribution of vehicles on network Kirklees Council Measurable: + Average road speed +AM/PM Queue times
AQMA1.5	Resource Smart Corridor	Kirklees Council Targets: + Reduction in queuing times and increased through flow + Increased capacity on the road + Redistribution of vehicles on network Kirklees Council Measurable: + Average road speed +AM/PM Queue times

Measure No	Measure	Key Performance Indicator
AQMA1.6	Kirklees Northern Orbital Route	Kirklees Council Targets: + Reduction in queuing times and increased through flow + Increased capacity on the road + Redistribution of vehicles on network + Bypass current road network and remove traffic from close proximity to residential properties Kirklees Council Measurable: + Average road speed +AM/PM Queue times
AQMA1.7	Trial of Smart UTMC Technology systems within relevant AQMAS	Kirklees Council Targets: + Reduction in queuing times and increased through flow + Reduced stop / start driving style + Increased efficiency in combustion engine process Kirklees Council Measurable: + Average road speed +AM/PM Queue times
AQMA2.1	A640 Road improvements (Mirfield to Dewsbury)	Kirklees Council Targets: + Reduction in queuing times and increased through flow + Increased capacity on the road + Redistribution of vehicles on network Kirklees Council Measurable: + Average road speed +AM/PM Queue times
AQMA2.2	Program of Deep Cleaning to Paths and Road within the AQMA	Kirklees Council Target; + Keep exceedance of daily PM10 below daily AQO Kirklees Council Measurable: + Daily Exceedances of PM10
AQMA2.3	Extension of Ravensthorpe Train Station	West Yorkshire Targets: + Increased services to train station +Increase in patronage Kirklees Council Measurable: + Number of passengers using Ravensthorpe Station +Number of services stopping at Ravensthorpe Station

Measure No	Measure	Key Performance Indicator
AQMA2.4	Kirklees "Virtual Emissions Monitoring Project" to rationale SCOOT system	Kirklees Council Targets: + Reduction in queuing times and increased through flow + Reduced stop / start driving style + Increased efficiency in combustion engine process Kirklees Council Measurable: + Average road speed +AM/PM Queue times
AQMA2.5	Kirklees Northern Orbital Route	Kirklees Council Targets: + Reduction in queuing times and increased through flow + Increased capacity on the road + Redistribution of vehicles on network + Bypass current road network and remove traffic from close proximity to residential properties Kirklees Council Measurable: + Average road speed +AM/PM Queue times
AQMA2.6	Trial of Smart UTMC Technology systems within relevant AQMAS	Kirklees Council Targets: + Reduction in queuing times and increased through flow + Reduced stop / start driving style + Increased efficiency in combustion engine process Kirklees Council Measurable: + Average road speed +AM/PM Queue times
AQMA3.1	A629 Road improvements as part of Halifax to Huddersfield Road Scheme	Kirklees Council Targets: + Reduction in queuing times and increased through flow + Increased capacity on the road + Redistribution of vehicles on network Kirklees Council Measurable: + Average road speed +AM/PM Queue times

Measure No	Measure	Key Performance Indicator
AQMA3.2	Assessment of Cycling Infrastructure between Ainley Top and Huddersfield Town Centre	West Yorkshire Target: Contribute to; +Sustainable travel mode increase from 36% in 2011 to 42% by 2026 Kirklees Council Targets: Contribute to; + Connect local towns and neighbouring districts with improved cycling and walking facilities +Increase cycling travel mode by 300% between 2018 baseline and 2030 +Increase walking travel mode by 20% between 2018 baseline and 2030 Improvement in facilities across the district for cycling and clear links between all towns within the district Kirklees Council Measurable: + Construction of new Cycling Infrastructure within the district
AQMA3.3	Feasibility into the development of System Activated Planned Cycles	West Yorkshire Target: Contribute to; +Sustainable travel mode increase from 36% in 2011 to 42% by 2026 Kirklees Council Targets: Contribute to; + Connect local towns and neighbouring districts with improved cycling and walking facilities +Increase cycling travel mode by 300% between 2018 baseline and 2030 +Increase walking travel mode by 20% between 2018 baseline and 2030 Improvement in facilities across the district for cycling and clear links between all towns within the district Kirklees Council Measurable: + Average road speed +AM/PM Queue times
AQMA4.1	Study into the impact of speed control along the national highway as an emissions reduction tool.	Kirklees Council Targets: +Work with Highways England to implement the recommendations of the study Kirklees Council Measurable: +Creation of a document that determines the impact of speed reduction on the motorway and best method to deliver emissions reduction

Measure No	Measure	Key Performance Indicator
AQMA 4.2	Trial of NOx absorbent material integrated into roundabout design	Kirklees Council Target: +Installation off material on roundabout Kirklees Council Measurable: +NO2 Concentrations adjacent to roundabout
AQMA5.1	Free City Bus for Dewsbury Town Centre	West Yorkshire Target: +Sustainable travel mode increase from 36% in 2011 to 42% by 2026 Kirklees Council Targets: +Increase bus patronage Kirklees Council Measurable: + Number of passengers using service
AQMA5.2	A640 Road improvements (Mirfield to Dewsbury)	Kirklees Council Targets: + Reduction in queuing times and increased through flow + Reduced stop / start driving style + Increased efficiency in combustion engine process Kirklees Council Measurable: + Average road speed +AM/PM Queue times
AQMA5.4	Install Split Cycle Offset Optimisation technique (SCOOT) Traffic Managements System	Kirklees Council Targets: + Reduction in queuing times and increased through flow + Reduced stop / start driving style + Increased efficiency in combustion engine process Kirklees Council Measurable: + Average road speed +AM/PM Queue times
AQMA5.5	Kirklees "Virtual Emissions Monitoring Project" to rationale SCOOT system	Kirklees Council Targets: + Reduction in queuing times and increased through flow + Reduced stop / start driving style + Increased efficiency in combustion engine process Kirklees Council Measurable: + Average road speed +AM/PM Queue times

Measure No	Measure	Key Performance Indicator
AQMA5.6	Trial of Smart UTMC Technology systems within relevant AQMAS	Kirklees Council Targets: + Reduction in queuing times and increased through flow + Reduced stop / start driving style + Increased efficiency in combustion engine process Kirklees Council Measurable: + Average road speed +AM/PM Queue times
AQMA 5.7	Installation of Green Screen at Eastborough J&I School	Kirklees Council Target; +Install a screen to block diffusion of pollutants from ring road Kirklees Council Measurable: +Concentrations within the playground
AQMA6.1	A629 Road improvements as part of Halifax to Huddersfield Road Scheme	Kirklees Council Targets: + Reduction in queuing times and increased through flow + Increased capacity on the road + Redistribution of vehicles on network Kirklees Council Measurable: + Average road speed +AM/PM Queue times
AQMA6.2	Install Split Cycle Offset Optimisation technique (SCOOT) Traffic Managements System	Kirklees Council Targets: + Reduction in queuing times and increased through flow + Reduced stop / start driving style + Increased efficiency in combustion engine process Kirklees Council Measurable: + Average road speed +AM/PM Queue times
AQMA6.3	Kirklees "Virtual Emissions Monitoring Project" to rationale SCOOT system	Kirklees Council Targets: + Reduction in queuing times and increased through flow + Reduced stop / start driving style + Increased efficiency in combustion engine process Kirklees Council Measurable: + Average road speed +AM/PM Queue times

Measure No	Measure	Key Performance Indicator
AQMA6.4	Trial of Smart UTMC Technology systems within relevant AQMAS	Kirklees Council Targets: + Reduction in queuing times and increased through flow + Reduced stop / start driving style + Increased efficiency in combustion engine process Kirklees Council Measurable: + Average road speed +AM/PM Queue times
AQMA7.1	Install Split Cycle Offset Optimisation technique (SCOOT) Traffic Managements System	Kirklees Council Targets: + Reduction in queuing times and increased through flow + Reduced stop / start driving style + Increased efficiency in combustion engine process Kirklees Council Measurable: + Average road speed +AM/PM Queue times
AQMA7.2	Kirklees "Virtual Emissions Monitoring Project" to rationale SCOOT system	Kirklees Council Targets: + Reduction in queuing times and increased through flow + Reduced stop / start driving style + Increased efficiency in combustion engine process Kirklees Council Measurable: + Average road speed +AM/PM Queue times
AQMA7.3	Trial of Smart UTMC Technology systems within relevant AQMAS	Kirklees Council Targets: + Reduction in queuing times and increased through flow + Reduced stop / start driving style + Increased efficiency in combustion engine process Kirklees Council Measurable: + Average road speed +AM/PM Queue times
AQMA8.1	Study into the impact of speed control along the national highway as an emissions reduction tool.	Kirklees Council Targets: +Work with Highways England to implement the recommendations of the study Kirklees Council Measurable: +Creation of a document that determines the impact of speed reduction on the motorway and best method to deliver emissions reduction

Measure No	Measure	Key Performance Indicator
AQMA9.1	Free City Bus for Dewsbury Town Centre	West Yorkshire Target: +Sustainable travel mode increase from 36% in 2011 to 42% by 2026 Kirklees Council Targets: +Increase bus patronage Kirklees Council Measurable: + Number of passengers using service
AQMA9.2	Huddersfield Heat Network Scheme	Kirklees Council Target; +Contribute towards targets set by Climate Emergency Work Group Kirklees Council Measurables; +Number of boilers removed + CO2 reductions
AQMA9.3	Resource Smart Corridor	Kirklees Council Targets: + Reduction in queuing times and increased through flow + Increased capacity on the road + Redistribution of vehicles on network Kirklees Council Measurable: + Average road speed +AM/PM Queue times
AQMA9.4	Huddersfield Southern Gateway Transport Scheme	Kirklees Council Targets: + Reduction in queuing times and increased through flow + Increased capacity on the road + Redistribution of vehicles on network Kirklees Council Measurable: + Average road speed +AM/PM Queue times
AQMA9.5	Huddersfield Ring Road Junction Improvements	Kirklees Council Targets: + Reduction in queuing times and increased through flow + Increased capacity on the road + Redistribution of vehicles on network Kirklees Council Measurable: + Average road speed +AM/PM Queue times

Measure No	Measure	Key Performance Indicator
AQMA9.6	Feasibility Study in to Pedestrianizing Areas of Town Centre for Cycling Access	West Yorkshire Target: Contribute to; +Sustainable travel mode increase from 36% in 2011 to 42% by 2026 Kirklees Council Targets: Contribute to; + Connect local towns and neighbouring districts with improved cycling and walking facilities +Increase cycling travel mode by 300% between 2018 baseline and 2030 +Increase walking travel mode by 20% between 2018 baseline and 2030 Improvement in facilities across the district for cycling and clear links between all towns within the district Kirklees Council Measurable: + Creation of a document cost analysing benefits of pedestrianizing / cycling only in town centre areas
AQMA9.7	Trans-Pennine Express Improvement Scheme	West Yorkshire Target: Contribute to; +Sustainable travel mode increase from 36% in 2011 to 42% by 2026 Kirklees Council Measurable: +Number of rail passengers
AQMA9.8	Kirklees "Virtual Emissions Monitoring Project" to rationale SCOOT system	Kirklees Council Targets: + Reduction in queuing times and increased through flow + Reduced stop / start driving style + Increased efficiency in combustion engine process Kirklees Council Measurable: + Average road speed +AM/PM Queue times
AQMA9.9	Input into the development of the Town Centre Master Plan	Kirklees Council Targets: +Inclusion of Air Quality within the Town Centre Master Plan Document Contribute towards targets for planning; + Number of E.V chargers installed within new developments +Predicted monetary damage compared against mitigation spend / Section 106 contributions

Measure No	Measure	Key Performance Indicator
AQMA9.10	Trial of Smart UTMC Technology systems within relevant AQMAS	Kirklees Council Targets: + Reduction in queuing times and increased through flow + Reduced stop / start driving style + Increased efficiency in combustion engine process Kirklees Council Measurable: + Average road speed +AM/PM Queue times
AQMA10.1	Huddersfield Southern Gateway Transport Scheme	Kirklees Council Targets: + Reduction in queuing times and increased through flow + Increased capacity on the road + Redistribution of vehicles on network Kirklees Council Measurable: + Average road speed +AM/PM Queue times
AQMA10.2	Kirklees "Virtual Emissions Monitoring Project" to rationale SCOOT system	Kirklees Council Targets: + Reduction in queuing times and increased through flow + Reduced stop / start driving style + Increased efficiency in combustion engine process Kirklees Council Measurable: + Average road speed +AM/PM Queue times
AQMA10.3	Kirklees "Virtual Emissions Monitoring Project" to rationale SCOOT system	Kirklees Council Targets: + Reduction in queuing times and increased through flow + Reduced stop / start driving style + Increased efficiency in combustion engine process Kirklees Council Measurable: + Average road speed +AM/PM Queue times
AQMA10.4	Trial of Smart UTMC Technology systems within relevant AQMAS	Kirklees Council Targets: + Reduction in queuing times and increased through flow + Reduced stop / start driving style + Increased efficiency in combustion engine process Kirklees Council Measurable: + Average road speed +AM/PM Queue times

4. Glossary of terms

Table G.1 - Glossary of terms

Abbreviation	Description
AQAP	Air Quality Action Plan - A detailed description of measures, outcomes, achievement dates and implementation methods, showing how the local authority intends to achieve air quality limit values'
AQMA	Air Quality Management Area – An area where air pollutant concentrations exceed / are likely to exceed the relevant air quality objectives. AQMAs are declared for specific pollutants and objectives
ASR	Annual Status Report
AURN	Automatic Urban and Rural Network – the UK wide continuous air quality monitoring network, administered by Defra
Defra	Department for Environment, Food and Rural Affairs
DMRB	Design Manual for Roads and Bridges – Air quality screening tool produced by National Highways
EU	European Union
FDMS	Filter Dynamics Measurement System
FIDAS	Fine Dust Analysis System
LAQM	Local Air Quality Management
MCERTS	Environment Agency emissions and air quality Monitoring Certification Scheme
NO_2	Nitrogen Dioxide
NO_x	Nitrogen Oxides
PM_{10}	Airborne particulate matter with an aerodynamic diameter of 10 micrograms or less
$PM_{2.5}$	Airborne particulate matter with an aerodynamic diameter of 2.5 micrograms or less

5. References

- Local Air Quality Management Technical Guidance LAQM.TG22. August 2022. Published by Defra in partnership with the Scottish Government, Welsh Assembly Government and Department of the Environment Northern Ireland.
- Local Air Quality Management Policy Guidance LAQM.PG22. August 2022. Published by Defra in partnership with the Scottish Government, Welsh Assembly Government and Department of the Environment Northern Ireland.
- Chemical hazards and poisons report: Issue 28. June 2022. Published by UK Health Security Agency
- Air Quality Strategy – Framework for Local Authority Delivery. August 2023. Published by Defra.
- Kirklees Council, Air Quality Action Plan, 2019-24, Kirklees Air Quality Action Plan
- Kirklees Council, Air Quality Annual Status Reports, 2020, 2021, 2022, 2023
- Defra correspondence – appraisal of Kirklees Council 2023 Air Quality Annual Status Report
- Kirklees Council – Air Quality Strategy 2019
- Environment Agency, August 2017, Performance Standards for Indicative Ambient Particulate Monitors, version 4
- United Kingdom Health Security Agency, Public Health Outcomes Framework
- Defra – Environment Act 2021
- Kirklees Council, Climate Change Action Plan for Kirklees 2022
- Public Health Outcomes Framework – “Fingertips”
- BSI, December 2023, PAS 4023:2023 (Selection, deployment and quality control of low-cost air quality sensor systems in outdoor ambient air – Code of Practice)
- Kirklees Council, Ainley Top Detailed Assessment as part of the Kirklees Council Air Quality Annual Status Report, 2016

[i] Personal communication, LAQM Helpdesk 26.09.2023