2023 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

Date: June 2023

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Executive Summary: Air Quality in Our Area

Air Quality in Kirklees

Air pollution is associated with a number of adverse health impacts. It is recognised as a contributing factor in the onset of heart disease and cancer. Additionally, air pollution particularly affects the most vulnerable in society: children, the elderly, and those with existing heart and lung conditions. There is also often a strong correlation with equalities issues because areas with poor air quality are also often less affluent areas[1,2].

The mortality burden of air pollution within the UK is equivalent to 29,000 to 43,000 deaths at typical ages[3], with a total estimated healthcare cost to the NHS and social care of £157 million in 2017[4].

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 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

[1] Public Health England. Air Quality: A Briefing for Directors of Public Health, 2017

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

[3] Defra. Air quality appraisal: damage cost guidance, January 2023

[4] Public Health England. Estimation of costs to the NHS and social care due to the health impacts of air pollution: summary report, May 2018

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.

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[5] sets out actions that will drive continued improvements to air quality and to meet the new national interim and long-term $PM_{2.5}$ targets. The National Air Quality Strategy, due to be published in 2023, will provide more information on local authorities' responsibilities to work towards these new targets and reduce $PM_{2.5}$ in their areas. The Road to Zero[6] details the approach to reduce exhaust emissions from road transport through a number of mechanisms; this is extremely important given that 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 2022 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 and climate change. Consequently, Kirklees Council created an Air Quality, Electric Vehicle Infrastructure, Energy and Climate Change team to deliver on these priority agendas and increased resource availability in order to achieve the council's ambitions, including the linking of the Council's emerging Climate Change Action Plan (published in 2022)[7] and Environmental Strategy to the eventual update of the Councils' Air Quality Action Plan, which runs from 2019 to 2024. In 2022, this team incorporated staff involved with developing the district's electric vehicle charging infrastructure, and this team is now

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

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

[7] Climate Change Action Plan for Kirklees

working on various projects which will be reported in our next year's Annual Status Report (ASR).

Post pandemic in 2021 and 2022, NO_2 concentrations breached (exceeded) the air quality objectives (annual mean objective for NO_2) in:

- AQMA 5 – Eastborough, Dewsbury
- AQMA 7 – Liversedge / Heckmondwike
- AQMA 9 – Huddersfield Town Centre

Concentrations within all our other AQMAs declared due to raised concentrations of NO_2 gas complied with annual mean objective in these years.

In 2022 Kirklees Council continued to work undertake partnership working, both local and regionally to bring about reductions and the Air Quality team have taken the lead on delivery of electric vehicle charging infrastructure within the district. The key measures in 2022 were:

- Birkenshaw Roundabout Scheme - Work continued on a £40,000 project to install a skirt around the roundabout to improve flow and reduce stop-starts within one of our AQMAs.
- Procurement of £1 million capital public electric vehicle charging scheme and £1m towards electrification of council's own fleet. In January 2019, Kirklees Council declared a Climate Emergency and as part of that, allocated £2 million for electric vehicle schemes. This capital budget is split into two elements, one million for the council's own and the other million for a strategic public charge network. This work is now progressing.
- Updating West Yorkshire Low Emission Strategy (WYLES) document, including revision of the planning guidance section to take account of new Building Control regulations for electric vehicle charging infrastructure with new development.

Most importantly, we note that our current Air Quality Action Plan is for the five-year period 2019-24.

Conclusions and Priorities

From analysis of 2022 air quality data, we conclude that there have been exceedances of the annual mean NO_2 air quality objective within three of our ten AQMAs. Outside of these areas, the rest of Kirklees complied with the air quality objectives.

Real-time data NO_2, PM_{10} and $PM_{2.5}$ for 2022, indicated no exceedance of any air quality objectives, although this conclusion is based on an incomplete (and annualised) dataset, and these monitoring stations are not located in AQMAs where concentrations are exceeding the objectives.

Falls in roadside NO_2 concentrations in 2020 of 17-19%, of which 10% was estimated to be a result of COVID19 pandemic, were followed with an increase in 2021 of 12-15%. In 2022 there was an overall 4% decrease in roadside NO_2 annual mean concentrations throughout the district, a 3% decrease in concentrations within AQMAs 3–10, whilst in AQMAs 1 and 2 an increase of 3% in concentrations. The 2022 data therefore suggests a "levelling off" with roadside NO_2 concentrations in 2022 following the post pandemic increase in 2021.

Exceedance of legal, health based objectives both in 2021 and 2022 indicate that further measures may be required to ensure future compliance with air quality objectives within all our AQMAs.

Kirklees Council has taken forward several measures during the current reporting year of 2022 in pursuit of improving local air quality. Kirklees Council's priorities for the coming year are:

- Improve air quality around schools/town centres/AQMAs and increase knowledge about air quality and links with public health/active travel
- Start reviewing and updating our existing Air Quality Action Plan 2019-2024
- Consideration of revocation (removal) of some of AQMAs where concentrations have complied with legal air quality objectives for five years or more
- Delivery of electric vehicle and infrastructure projects
- Implementation of wider regional projects to assess distribution of $PM_{2.5}$ (fine respirable particle) emissions and concentrations within West Yorkshire, along with identification of future action to reduce these emissions and concentrations.
- Replacement of our continuous air quality monitoring stations
- Complete the revision of the West Yorkshire Low Emission Strategy
- Support other services delivering actions around active travel, climate change and environmental regulation etc., which all have improved air quality benefit.

Whilst the measures, stated above and detailed in the tables of this report, will help to contribute towards compliance, Kirklees Council anticipates that further additional

measures not yet prescribed may be required in subsequent years to achieve compliance and enable the revocation of the councils current ten AQMAs.

Local Engagement and How to get Involved

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

http://www.kirklees.gov.uk/community/noisePollution/pollution.aspx

https://uk-air.defra.gov.uk/

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

Local Responsibilities and Commitment

This ASR was prepared by the Air Quality, Electric Vehicle Infrastructure, Energy and Climate Change team 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 approved by:

Shaun Berry, Operational Manager- Air Quality and Climate Change, Environmental Strategy and Climate Change, Kirklees Council

This ASR has not been signed off by a Director of Public Health.

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

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1 Local Air Quality Management

This report provides an overview of air quality in Kirklees Council during 2022. 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) is an annual requirement showing the strategies employed by Kirklees Council to improve air quality and any progress that has been made.

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

2 Actions to Improve Air Quality

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 also 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 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 (AQMA 1, and 3 to 10)
- PM_{10} 24-hour mean (AQMA 2)

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 (2018-2022 inclusive). Furthermore, in calculating the 2022 data at the point of relevant exposure, we have undertaken additional distance correction calculations for the locations within AQMAs three and four respectively.

Table 2.1 – Declared Air Quality Management Areas

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: Declaration	Level of Exceedance: Current Year	Number of Years Compliant with Air Quality Objective	Name and Date of AQAP Publication	Web Link to AQAP
AQMA 1 Bradley	Declared 17/10/08	NO2 Annual Mean	The designated area incorporates the Leeds Road (A62) - Bradley Road (A6107) junction	NO	73 µg/m3	31 µg/m3	Four	Air Quality Action Plan for Kirklees Council Version 1.4 Published; Sept 2019	https://www.kirklees.gov.uk/beta/crime-and-safety/air-pollution.aspx
AQMA 2 Scouthill	Declared 27/02/09	PM10 24 Hour Mean	Now revoked, the designated area incorporated part of Huddersfield Road (A644) in Scouthill	NO	43 Days	n/a	Five	Air Quality Action Plan for Kirklees Council Version 1.4 Published; Sept 2019	https://www.kirklees.gov.uk/beta/crime-and-safety/air-pollution.aspx

AQMA 3 Ainley Top	Declared 01/11/17	NO2 Annual Mean	The designated area incorporates Halifax Road (A629), Lindley Moor Road Bradley Road (A643), Warren House Lane and Stirling Wood Close, which is in close proximity to the Ainley Top Roundabout at Birchencliffe	YES	44 µg/m3	27 µg/m3	Five	Air Quality Action Plan for Kirklees Council Version 1.4 Published; Sept 2019	https://www.kirklees.gov.uk/beta/crime-and-safety/air-pollution.aspx

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 to the M62 and A651-A58 Roundabout at Birkenshaw	YES	45 µg/m3	27 µg/m3	Five	Air Quality Action Plan for Kirklees Council Version 1.4 Published; Sept 2019	https://www.kirklees.gov.uk/beta/crime-and-safety/air-pollution.aspx

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	44 µg/m3	n/a	Air Quality Action Plan for Kirklees Council Version 1.4 Published; Sept 2019	https://www.kirklees.gov.uk/beta/crime-and-safety/air-pollution.aspx
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	38 µg/m3	Four	Air Quality Action Plan for Kirklees Council Version 1.4 Published; Sept 2019	https://www.kirklees.gov.uk/beta/crime-and-safety/air-pollution.aspx

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	43 µg/m3	n/a	Air Quality Action Plan for Kirklees Council Version 1.4 Published; Sept 2019	https://www.kirklees.gov.uk/beta/crime-and-safety/air-pollution.aspx
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	33 µg/m3	Three	Air Quality Action Plan for Kirklees Council Version 1.4 Published; Sept 2019	https://www.kirklees.gov.uk/beta/crime-and-safety/air-pollution.aspx
AQMA 9 Huddersfield Town Centre	Declared 01/11/17	NO2 Annual Mean	The designated area incorporates Roads bordering and within the Huddersfiel	NO	55 µg/m3	41 µg/m3	n/a	Air Quality Action Plan for Kirklees Council Version 1.4 Published; Sept 2019	https://www.kirklees.gov.uk/beta/crime-and-safety/air-pollution.aspx

			d Ring Road						
AQMA 10 Thornton Lodge	Declared 06/06/19	NO2 Annual Mean	The designated area incorporates Manchester Road	NO	47 µg/m3	39 µg/m3	Four	Air Quality Action Plan for Kirklees Council Version 1.4 Published; Sept 2019	https://www.kirklees.gov.uk/beta/crime-and-safety/air-pollution.aspx

☒ **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.**

Progress and Impact of Measures to address Air Quality in Kirklees

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

The Annual Status Report sets out new information on air quality obtained by Kirklees Metropolitan Council as part of the Review & Assessment process required under the Environment Act 1995 (as amended by the Environment Act 2021) and subsequent Regulations.

Kirklees Metropolitan Council has 10 air quality management area (AQMAs), within their jurisdiction.

The Council monitors nitrogen dioxide (NO_2) using non-automatic (passive) monitoring across a network of 104 diffusion tube sites. The Council monitors nitrogen dioxide (NO_2) using 2 automatic monitoring sites.

The Council has 10 AQMAs within their jurisdiction. The Council have developed a list of measures within the ASR for the current reporting year to further improve local air quality within Kirklees Council. In terms of NO_2 diffusion tube data post-processing, QA/QC procedures have been applied for bias adjustment (using a national bias adjustment factor) with appropriate calculations provided. An annualisation factor has been applied to sites with data capture below 75%.

During the reporting period, there were 9 exceedances of the NO_2 annual mean objective value recorded at sites of relevant exposure. 6 of these were within the AQMAs, 3 of these were outside of the AQMAs. The maximum non-automatic site recorded NO_2 concentration was noted at 50.2 µg/m^3 at site K40.

*On the basis of the evidence provided by the local authority the conclusions reached are **accepted** for all sources and pollutants.*

Commentary

The report is well structured, detailed, and provides the information specified in the Guidance. The following comments are designed to help inform future reports:

1. *Reference to the Public Health Outcomes Framework has been made and this practice should continue going forward.*
2. *Trends have been presented with a robust comparison to the Air Quality Objectives.*
3. *QA/QC procedures are robust, with sufficient supporting evidence provided.*

Kirklees Council has taken forward a number of direct measures during the current reporting year of 2022 in pursuit of improving local air quality. Details of all measures completed, in progress or planned are set out in Table 2.2. Over 100 measures are included within Table 2.2, with the type of measure and the progress Kirklees Council have made during the reporting year of 2022 presented. Where there have been, or continue to be, barriers restricting the implementation of the measure, these are also presented within Table 2.2.

More detail on these measures can be found in their respective Action Plans, namely The Air Quality Action Plan for Kirklees Council Version 1.4, which is available of the council's website[8]. Key completed measures are:

Birkenshaw Roundabout Scheme - Work continued on a £40,000 project to install a skirt around the roundabout to improve flow and reduce stop-starts.

Completed delivery of OLEV funded West Yorkshire Strategic Rapid Charger network for taxis and the general public (17 chargers within Kirklees)

Increase monitoring tools available to council (diffusion tubes / low cost sensors) and operating multiple low cost sensor technology to evaluate accuracy and effectiveness

Procurement of £1 million capital public electric vehicle charging scheme and £1m towards electrification of council's own fleet

In January 2019, Kirklees Council declared a Climate Emergency and as part of that, allocated £2 million for Electric vehicle schemes. This capital budget is split into two

[8] Air pollution | Kirklees Council

elements, one million for the council's own and the other million for a strategic public charge network.

Updating West Yorkshire Low Emission Strategy (WYLES) document, including revision of the planning guidance section to take account of new Building Control regulations for electric vehicle charging infrastructure with new development.

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
    - Developing / restarting working Groups with key stakeholders (such as public health, active travel, anchor institutions and Councillor engagement)
- Procurement Stage:
    - West Yorkshire regional $PM_{2.5}$ source apportionment and monitoring exercise to determine $PM_{2.5}$ emission sources and concentrations within Kirklees and West Yorkshire
    - Upgrade and replacement of the Council's continuous air quality monitoring stations
- Delivery Stage:
    - Birkenshaw Roundabout Scheme
    - Electric vehicle schemes
    - "Low-cost" air quality monitoring technology

      Complete assessment of the validity of sensor technology considering new developments (indicative MCERTS for particulate matter low cost sensors[9], British Standards Institute proposals etc.). We then plan to deploy the monitors tactically to evaluate projects, localities previously not assessed for particulate matter and to evaluate impact from large changes to road network and other sources. This relates to the $PM_{2.5}$ project detailed above

[9] MCERTS: performance standard for indicative ambient particulate monitors - GOV.UK (www.gov.uk)

- Complete updated West Yorkshire Low Emission Strategy (WYLES) document.

Kirklees Council's priorities for the coming year are:

- Improve air quality around schools/town centres/AQMAs and increase knowledge about air quality and links with public health/active travel.
- Start reviewing and updating our existing Air Quality Action Plan 2019-2024
- Consideration of revocation (removal) of some of AQMAs where concentrations have complied with legal air quality objectives for five years or more.
- Delivery of electric vehicle and infrastructure projects
- Implementation of wider regional projects to assess distribution of $PM_{2.5}$ (fine respirable particle) emissions and concentrations within West Yorkshire, along with identification of future action to reduce these emissions and concentrations.
- Replacement of our continuous air quality monitoring stations
- Complete the revision of the West Yorkshire Low Emission Strategy
- Support other services delivering actions around active travel, climate change and environmental regulation etc., which all have improved air quality benefit.

Kirklees Council worked to implement these measures in partnership with the following stakeholders during 2022:

- Neighbouring local authorities
- The Highways authority (National Highways)
- Anchor Institutions (NHS Trusts / Universities)
- Energy and Climate Change team
- Electric Vehicle Infrastructure team
- Public Health
- Transport Strategy
- Highways
- Major Projects
- Environmental Health
- Planning.

The principal challenges and barriers to implementation that Kirklees Council anticipates facing are the reintroduction of schemes and measures which were either put on hold due to the pandemic or scaled back. Partner organisations' (internal and external) priorities may have changed in response to the post pandemic socio-economic climate and this may

impact on delivery of measures. This situation will be evaluated with our proposed redraft of the Air Quality Action Plan in due course.

Whilst the measures stated above and in Table 2.2 will help to contribute towards compliance, Kirklees Council anticipates that further additional measures not yet prescribed will be required in subsequent years to achieve compliance and enable the revocation of the nine AQMAs declared due to exceedance of the annual mean objective for NO_2. Please note, we have created an additional appendix to this document (Appendix F). Appendix F contains the text relating Table 2.2. column (Key Performance Indicators). Due the significant amount of text we present in this column we have taken the decision to move this text to a separate appendix to assist in ease of reading of this table.

Table 2.2 – Progress on Measures to Improve Air Quality

Measure No.	Measure	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	Ongoing	Kirklees Environmental Health	Air Quality Grant	YES	Funded		Planning	NO2 & PM	See Appendix F	Active	Currently adopted within the authority and integrated into Kirklees Council policy and work instructions. Further plans outlined in action G.22 for a review of the documents and how they are used. Funding received from Air Quality Grant. Available at; https://www.kirklees.gov.uk/beta/crime-and-safety/pdf/WYLES-strategy.pdf. This document is currently in the process of revision to take account of adoption of Building Control Approved Document S with regard to installation of electric vehicle charge points within new development, along with consideration of the requirements of the Environment Act 2021 and the draft revised National Air Quality Strategy

Measure No.	Measure	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.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		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. Upon conclusion of the review, 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 Employee Travel Survey Results

Measure No.	Measure	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.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		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 school operations, in technology and behaviour. Upon conclusion of the review, 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	Bike-ability 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		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	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. The Council will tender in 2023/24 for continuing this scheme

Measure No.	Measure	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.5	City Cycle Grant	Promoting travel alternatives	Promotion of cycling	2016	Ongoing within the district	Kirklees Public Health / West Yorkshire Combined Authority	Grant	NO	Funded		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. This scheme will be reviewed in due course
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		Implementation	NO2 & PM	See Appendix F	Scheme has now issued 352 electric vehicle permits and 4 low emission vehicle permits	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 consideration being undertaken regarding the evaluation of the environmental benefit of the scheme
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		Planning	NO2 & PM	See Appendix F	Concept	Currently scheme G.6 is available for Kirklees residents and workers. This project is to expand on the Kirklees Scheme to improve viability for users who move across district boundaries within West Yorkshire. 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. Builds on the success of our own permitting system and to further promote ULEVs

Measure No.	Measure	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.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		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		Planning	NO2 & PM	See Appendix F	Active	The West Yorkshire Combined Authority (WYCA) is currently tendering for the creation of a new car club for West Yorkshire and York - https://www.westyorks-ca.gov.uk/news-archive/car-club/
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		Implementation	NO2 & PM	See Appendix F	There are two parts to this work. Firstly, working with the Energy savings Trust (EST), there has been a feasibility assessment of the fleet and development of a forward plan. Subsequent to this, 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.

Measure No.	Measure	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.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		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,	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.

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														cars and sweepers.	
G.12	Kirklees Bike to Work Scheme	Promoting Travel Alternatives	Promotion of cycling	2017	2024	Kirklees Public Health	Council Budget	NO	Funded		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. Due to COVID-19, system has yet be developed to make the bikes available to Kirklees Council staff and will be reviewed in due course

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G.13	Update Kirklees Air Quality Strategy	Policy Guidance and Development Control	Other Policy	2018	Ongoing process	Kirklees Environmental Health	Council Budget	NO	Funded		Completed	NO2 & PM	See Appendix F	Completed	Kirklees Council originally adopted an Air Quality Strategy in 2006. This document has been updated to reflect technology, policy and scientific changes in the Air Quality Sector. Consideration will be given to updating this document following passing of the Environment Act 2021, and subsequent local authority emphasis on actions to reduce $PM_{2.5}$ emissions This document is in conjunction with the action plan and reviewed periodically in line with Action Plan review process.

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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		Implementation	NO2 & PM	See Appendix F	Active	The Planning Guidance document is a key document contained within G.1. 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;https://www.kirklees.gov.uk/beta/crime-and-safety/pdf/WYLES-air-quality-and-emissions-planning-technical-guide.pdf 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	Not Funded		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; https://www.kirklees.gov.uk/beta/crime-and-safety/pdf/WYLES-procurement-guide.pdf
G.16	Subsidised Bus/Rail Card for Kirklees Council Staff	Promoting Travel Alternatives	Workplace Travel Planning	Pre 2006	Ongoing within the Authority	Kirklees Operational Services	West Yorkshire Combined Authority Travel Plan Network	NO	Funded		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.

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G.17	Kirklees Policy on Employee Transport (Employee Handbo0k)	Policy Guidance and Development Control	Other policy	2015	Ongoing Process as funding becomes available	Kirklees Operational Services	Council Budget	NO	Funded		Implementation	NO2 & PM	See Appendix F	Active	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 work place 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		Implementation	NO2 & PM	See Appendix F	Active	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. 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		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 2023. The draft Strategy will have an emphasis of improving infrastructure within residential areas and will align also with the emerging WYCA EV Strategy

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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		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
G.21	West Yorkshire Electric Vehicle Taxi Scheme	Promoting Low Emission Transport	Taxi emission incentives	2018	2021	West Yorkshire Combined	OLEV Taxi Grant	NO	Funded		Implementation	NO2 & PM	See Appendix F	Active	Currently Kirklees Council have undertaken a number of E.V charging projects to install chargers and also run a green parking permit to reduce the cost of E.V ownership. This project contributes towards the council's ambition towards Electric vehicle adoption in both the domestic and commercial sectors within the district. Installation of 34 Rapid Charging Bays within Kirklees. 17 Taxi Bays and 17 Public Bays now completed
G.22	West Yorkshire Low Emission Strategy Officer	Other	Other	2019	2019	Kirklees Environmental Health	Air Quality Grant	YES	Funded		Completed	NO2 & PM	See Appendix F	Complete	Work now completed with drafting of the West Yorkshire Low Emission Strategy

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G.23	Joint Strategic Assessment for Air Quality	Policy Guidance and Development Control	Other policy	2018	2031	Kirklees Public Health	Council Budget	NO	Funded		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 https://observatory.kirklees.gov.uk/jsna/wider-conditions/air-quality/. This will be reviewed in due course following passing of the Environment Act 2021 and Government consultation on the National Air Quality Strategy in 2022
G.24	Corporate Carbon Reduction Targets	Other	Other	2020-2021	2021	Kirklees Economy and Infrastructure	Council Budget	NO	Funded		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

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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		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.
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		Planning	Primary Target: CO2Secondary reductions in NO2 & PMNO2 & PM	See Appendix F	Active	Kirklees Council adopted its Local Plan in 2019. Following this, Environmental Health and Planning aim to work collaboratively to develop a Supplementary Planning Document (SPD), which will include a robust air quality section which integrates the aims, process and mitigation options outlined in the WYLES Planning Guidance Document.

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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.	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		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.
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		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

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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		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		Implementation	NO2 & PM	See Appendix F	Active	Use of the Master naught 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		Implementation	NO2 & PM	See Appendix F	Active	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 (https://www.cyclecityconnect.co.uk/) 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		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 2022
G.34	Installation of pollution sensor technology within our AQMA's 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		Planning	NO2 & PM	See Appendix F	Active	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

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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		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		Implementation	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.

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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		Planning	PM	See Appendix F	Active	Kirklees Council to work with Environment Agency to discharge requirements of the Medium Combustion Plan Directive staggered process
G.38	Zoning project to identify errant Environmental Permitting businesses	Other	Other	2019	Active	Kirklees Environmental Health	Council Budget	NO	Funded		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.

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G39	Kirklees Walking and Cycling Strategic Framework	Promoting Travel Alternatives	Promotion of walking	2030	Ongoing	Public Health	Council Budget	NO	Funded		Planning	NO2 & PM	See Appendix F	Proposed	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. This policy document is currently under construction and once completed will the primary policy framework for delivering walking and cycling. Therefore, upon adoption, use of this document will be an ongoing process. 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		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.

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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 Authroity Budget	NO	Funded		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 https://www.the-lep.com/business-support/sustainability/travel-plan-network/
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		Planning	NO2 & PM	See Appendix F	on hold	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.

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G.43	Collaborative working with NHS Trusts within District	Other	Other	2019	Ongoing	Kirklees Environmental Health NHS Trusts	Council Budget	NO	Funded		Planning	NO2 & PM	See Appendix F	Active	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		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		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
G.46	Collaborative working with National Highways	Other	Other	2019	Ongoing	Kirklees Environmental Health, National Highways	Council Budget	NO	Funded		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.

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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		Planning	NO2 & PM	See Appendix F	Active	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, e.g., 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
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		Planning	Primary Target: CO2	See Appendix F	Active	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.

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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	Active	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	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.
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	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

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G.52	Development Clusters Research and Solution Systems	Other	Other	TBC	TBC	Kirklees Planning	Source of funding to be confirmed	NO	Not Funded		Planning	NO2 & PM	See Appendix F	Proposed	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	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	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. This is a future project currently going through project planning phase

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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	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
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	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		Implementation	NO2 & PM	See Appendix F	Active	The plan for this project is to undertake an assessment of current E.V infrastructure and devise a funding plan for delivery for future infrastructure. Mapping exercises have been undertaken in collaboration with the Energy Savings Trust to identify suitable locations in the district. There is continued engagement with the Council's Highways Dept., with the aspiration to seek funding to develop a future rollout programme.

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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	2024	Kirklees Environmental Health	Local Transport Plan	NO	Partially Funded		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.
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		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

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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 Hudersfield	Source of funding to be confirmed	NO	Not Funded		Planning	NO2 & PM	See Appendix F	Proposed	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		Planning	NO2 & PM	See Appendix F	Proposed	The plan for this project is to run a comm project to promote working from home, both within the council and for 3rd party companies. This is a future project currently going through project planning phase. Project would promote to companies the benefits of working from home, with the added benefit of emissions reduction.
G.64	E.V research project to identify appropriate demographics and locations within the district.	Promoting Low Emission Transport	Promoting Low Emission Transport	2022	2024	Kirklees Environmental Health & Public Health	Local Transport Plan	NO	Not Funded		Planning	NO2 & PM	See Appendix F	Active	This will be contained within the EV Strategy (see G19).

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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	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	2024	Environmental Health	Council Budget	NO	Not Funded		Planning	NO2 & PM	See Appendix F	Active	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	2024	Environmental Health	Council Budget	NO	Not Funded		Implementation	NO2 & PM	See Appendix F	Active	Provide affordable EVs to council staff to benefit grey fleet and domestic traffic. This will be contained within the EV Strategy (see G19).
G.68	£1million E.V Infrastructure Project	Transport Planning and Infrastructure	Other	2020	2024	Environmental Health	Council Budget	NO	Funded		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).
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		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. Other stages of the project are discussed in actions AQMA.1.3 and P.9

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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		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		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	2021	Kirklees Economy and Infrastructure	Central Transport Fund	NO	Funded		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
AQMA1.5	Resource Smart Corridor	Traffic Management	UTC, Congestion management, traffic reduction	2020	2021	Kirklees Economy and Infrastructure	Central Transport Fund	NO	Funded		Planning	NO2 & PM	See Appendix F	Active	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	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 AQMA's	Traffic Management	UTC, Congestion management, traffic reduction	2021	2022	Kirklees Environmental Health / UTC	Council Budget	NO	Funded		Planning	NO2 & PM	See Appendix F	Active	The project is a Traffic Light improvement scheme within the AQMA and is a future project currently going through project planning phase
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		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

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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		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		Completed	NO2 & PM	See Appendix F	Complete	The project is a Network Rail improvement scheme within the AQMA and is at delivery stage
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		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
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		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 AQMA's	Traffic Management	UTC, Congestion management, traffic reduction	2021	2022	Kirklees Environmental Health / UTC	Council Budget	NO	Funded		Planning	NO2 & PM	See Appendix F	Active	The project is a Traffic Light improvement scheme within the AQMA and is a future project currently going through project planning phase
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		Planning	NO2 & PM	See Appendix F	Active	The project is a highways improvement scheme within the AQMA and is currently at Business Case Stage
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		Planning	NO2 & PM	See Appendix F	Active	The project is a cycling / highways improvement scheme within the AQMA and is currently at Business Case Stage

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AQMA3.3	Feasibility into the development of System Activated Planned Cycles	Promoting Travel Alternatives	Promotion of cycling	No set date	TBC	Kirklees UTC	Estimated to be Council Budgets	NO	Funded		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 reduction tool.	Transport Planning and Infrastructure	Other	2020	TBC	Environmental Health / National Highways	Council Budget	NO	Funded		Planning	NO2 & PM	See Appendix F	Active	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
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		Implementation	NO2 & PM	See Appendix F	Active	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 commenced
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		Implementation	NO2 & PM	See Appendix F	Active	Dewsbury freetownbus | Metro (wymetro.com)
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	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 Pre outline business case stage
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		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. Other stages of the project are discussed in actions AQMA.5.5 and P.9

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AQMA5.5	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		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
AQMA5.6	Trial of Smart UTMC Technology systems within relevant AQMA's	Traffic Management	UTC, Congestion management, traffic reduction	2021	2022	Kirklees Environmental Health / UTC	Council Budget	NO	Funded		Planning	NO2 & PM	See Appendix F	Active	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		Aborted	NO2 & PM	See Appendix F	Active	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		Planning	NO2 & PM	See Appendix F	Active	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

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AQMA6.2	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		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. Other stages of the project are discussed in actions AQMA.5.5 and P.9
AQMA6.3	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		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
AQMA6.4	Trial of Smart UTMC Technology systems within relevant AQMA's	Traffic Management	UTC, Congestion management, traffic reduction	2021	2022	Kirklees Environmental Health / UTC	Council Budget	NO	Funded		Planning	NO2 & PM	See Appendix F	Active	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		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		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
AQMA7.3	Trial of Smart UTMC Technology systems within relevant AQMA's	Traffic Management	UTC, Congestion management, traffic reduction	2021	2022	Kirklees Environmental Health / UTC	Council Budget	NO	Funded		Planning	NO2 & PM	See Appendix F	Active	The project is a Traffic Light improvement scheme within the AQMA and is a future project currently going through project planning phase

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AQMA8.1	Study into the impact of speed control along the national highway as an emissions reduction tool.	Transport Planning and Infrastructure	Other	2020	TBC	Environmental Health / National Highways	Council Budget	NO	Funded		Planning	NO2 & PM	See Appendix F	Active	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
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		Implementation	NO2 & PM	See Appendix F	Active	Huddersfield freetownbus | Metro (wymetro.com)
AQMA9.2	Huddersfield Heat Network Scheme	Other	Other	2020	TBC	Kirklees Economy and Infrastructure	Central Transport Fund	NO	Funded		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	Funded		Planned	NO2 & PM	See Appendix F	Active	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		Planned	NO2 & PM	See Appendix F	Active	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/huddersfield-southern-corridors.aspx
AQMA9.5	Huddersfield Ring Road Junction Improvements	Traffic Management	UTC, Congestion management, traffic reduction	2021	2023	Kirklees Economy and Infrastructure	Central Transport Fund	NO	Funded		Planned	NO2 & PM	See Appendix F	Active	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/huddersfield-southern-corridors.aspx XXXX
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	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		Implementation	NO2 & PM	See Appendix F	Active	Currently at Business Case Stage https://www.networkrail.co.uk/running-the-railway/railway-upgrade-plan/key-projects/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		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
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		Implementation	NO2 & PM	See Appendix F	Active	The Huddersfield Blueprint | Kirklees Council
AQMA9.10	Trial of Smart UTMC Technology systems within relevant AQMA's	Traffic Management	UTC, Congestion management, traffic reduction	2021	2022	Kirklees Environmental Health / UTC	Council Budget	NO	Funded		Planning	NO2 & PM	See Appendix F	Active	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	TBC	Kirklees Economy and Infrastructure	Central Transport Fund	NO	Funded		Planned	NO2 & PM	See Appendix F	Active	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/huddersfield-southern-corridors.aspx
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		Completed	NO2 & PM	See Appendix F	Active	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.

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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		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
AQMA10.4	Trial of Smart UTMC Technology systems within relevant AQMA's	Traffic Management	UTC, Congestion management, traffic reduction	2021	2022	Kirklees Environmental Health / UTC	Council Budget	NO	Funded		Planning	NO2 & PM	See Appendix F	Active	The project is a Traffic Light improvement scheme within the AQMA and is a future project currently going through project planning phase

$PM_{2.5}$ – Local Authority Approach to Reducing Emissions and/or Concentrations

As detailed in Policy Guidance LAQM.PG22 (Chapter 8), local authorities are expected to work towards reducing emissions and/or concentrations of $PM_{2.5}$ (particulate matter with an aerodynamic diameter of 2.5µm or less). There is clear evidence that $PM_{2.5}$ 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 been updated to a "new method" of calculation by the UK Health Security Agency (UKHSA)[10] [11]. Consequently, we are reporting these data within this and future ASRs. Based on the new method calculation mortality in Kirklees for 2021 (currently the last year of reporting) is estimated to be at 5.2%, which is below the England average of 5.5%, but above the regional average of 5.0%.

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
- 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.
- $PM_{2.5}$ monitors have been installed at two locations within the district. Due to a previous database corruption and subsequent lack of funded service and maintenance contracts, data capture was previously limited to a period in 2020 during the last five years. Following purchase of appropriate service and maintenance support, data are available for the last four months of 2022 and subsequently reported in this ASR. Furthermore, a $PM_{2.5}$ monitor was installed at the Dewsbury Ashworth Grange AURN monitoring site in the Kirklees district in 2022, and subsequently these data are all also detailed in this report.

[10] Formerly Public Health England

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

- Kirklees Council has purchased five sensors to increase monitoring capability of $PM_{2.5}$ within the district and intend to purchase further sensors, which will include a comparison of subsequent databases with data from local reference monitors to further establish optimum use of sensor $PM_{2.5}$ data, along with a project to determine the most effective way of sharing this information with local stakeholders. This forms part of wider regional project involving the West Yorkshire Combined Authority (WYCA) and West Yorkshire local authorities and will also link into another regional project investigating the spatial distribution of non-road $PM_{2.5}$ emissions, along with consideration of appropriate measures to reduce these emissions. These projects will be reported in next years' ASR. Some of this work has been part-funded by Defra air quality grant.
- The WYCA regional work is partly in response to the assessing of compliance with the new $PM_{2.5}$ targets[12] within West Yorkshire.
- Kirklees Council is a smoke control area and continues to enforce smoke control legislation within the district.
- Kirklees Council plan to review current practices under smoke control in order to reflect changing guidance and new legislation, when produced, following passing of the Environment Act 2021 and consultation on the Government's draft Air Quality Strategy in 2022.

[12] Air Quality Targets in the Environment Act - Defra, UK

3 Air Quality Monitoring Data and Comparison with Air Quality Objectives and National Compliance

This section sets out the monitoring undertaken within 2022 by Kirklees Council and how it compares with the relevant air quality objectives. In addition, monitoring results are presented for a five-year period between 2018 and 2022 to allow monitoring trends to be identified and discussed.

Summary of Monitoring Undertaken

3.1.1 Automatic Monitoring Sites

Kirklees Council undertook automatic (continuous) monitoring at two roadside sites during 2022. Table A.1 in Appendix A shows the details of the automatic monitoring sites.

Due to the age of real-time monitors within the district, which resulted in major breakdowns and loss / corruption of data, Kirklees Council undertook the process of modernising the data collection system and equipment in February 2020. Further issues occurred with the two continuous monitoring stations however, which were only resolved with the further overhaul of the stations and subsequent procuring of a service and maintenance contract in the second half of 2022.

Consequently, annualised data are only available for the period September to December 2022 and detailed elsewhere in this chapter.

In addition, we are now reporting data from the Government's Automatic Urban and Rural Network (AURN) monitoring station within Kirklees within our ASRs. This is the urban background monitoring station at Dewsbury Ashworth Grove. Continuous NOx-NO-NO_2 monitoring commenced in 2018 at this site, with the subsequent installation of FIDAS particulate monitor (PM_{10} and $PM_{2.5}$) in July 2022. Consequently, we are taking the opportunity to report these data as this urban background monitoring site is a good indicator of urban background concentrations (and subsequent exposure) within Kirklees.

In addition to our real-time monitors, Kirklees Council previously purchased five Zephyr "low-cost" sensors to provide real-time data. Upon completion of testing and understanding outputs the Council will begin reporting the data in appropriate reports / medium.

This will include a comparison of subsequent databases with data from local reference monitors to further establish optimum use of sensor $PM_{2.5}$ data, along with a project to determine the most effective way of sharing this information with local stakeholders.

Use of these Zephyrs will also form part of wider Defra Air Quality grant funded regional project involving the West Yorkshire Combined Authority (WYCA) and West Yorkshire local authorities. This will also link into another regional project investigating the spatial distribution of non-road $PM_{2.5}$ emissions, along with consideration of appropriate measures to reduce these emissions. These projects will be reported in next years' ASR.

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

3.1.2 Non-Automatic Monitoring Sites

Kirklees Council undertook non- automatic (i.e., passive) monitoring of NO_2 at over 100 sites during 2022. Table A.2 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.

Individual Pollutants

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

3.1.3 Nitrogen Dioxide (NO_2)

Table A.3 and Table A.4 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).

For diffusion tubes, the full 2022 dataset of monthly mean values is provided in Appendix B. Note that the concentration data presented in Table B.1 includes distance corrected values, only where relevant.

Due to the age of real-time monitors within the district, which resulted in major breakdowns and loss / corruption of data, Kirklees Council undertook the process of modernising the data collection system and equipment in February 2020. Further issues occurred with the two continuous monitoring stations however, which were only resolved with the further overhaul of the stations and subsequent procuring of a service and maintenance contract in the second half of 2022.

Consequently, annualised data are available for the period September – December 2022 and detailed elsewhere in this chapter. In addition, we are now reporting data from the Government's Automatic Urban and Rural Network (AURN) monitoring station within Kirklees within our ASRs. This is the urban background monitoring station at Dewsbury Ashworth Grove. Continuous NOx-NO-NO_2 monitoring commenced in 2018 at this site.

Figure A.1 in Appendix A shows aggregated concentration trends over the last ten 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.

Within these figures these data have been divided into three categories, these being i) average of all our diffusion tubes; ii) the average of diffusion tubes within our most recently declared AQMAs (2017 and 2019) and iii) average of diffusion tubes within our longstanding AQMAs (declared in 2008 and 2009). The "overall" component consists of data from both within and outside of our AQMAs.

In accordance with Figure A.2 and Table A.2b in Appendix A we note over the general trend since 2016 is that of falling NO_2 annual mean concentrations across the district in line with an average of 13% over the period 2015-2019, and within AQMAs this was higher at between 14-19%.

Using the data, concentrations within our AQMAs and the district have fallen year on year by 2-8% on average for the period 2015-2019.

Table A.2b in Appendix A then shows the impact of the pandemic and post pandemic periods on NO_2 annual mean concentrations. Our 2021 and 2022 ASRs discussed in detail the reduction in concentrations due to the pandemic lockdowns. In 2021 increases of 12-15% for NO_2 annual mean concentrations indicated returns to broadly similar traffic

emissions compared to pre-pandemic due to return to more typical levels of societal activity, coupled with the remains of pandemic behaviour change such as home delivery and use of personal vehicles over public transport. These changes in concentrations in 2020 and 2021 were replicated elsewhere in the UK.

We have therefore undertaken the same exercise as described above for our 2022 diffusion data. Compared to 2021 data, Figure A.2 and Figure A.2b demonstrate an overall 4% decrease in diffusion tube NO_2 annual mean concentrations throughout the district in 2022 compared to 2021, a 3% decrease in concentrations within AQMAs 3–10% whilst in AQMAs 1 and 2 a 3% increase in concentrations is suggested.

We therefore conclude that there is has been a levelling off with road traffic emissions in 2022 following the post pandemic increase in traffic in 2021.

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.10 in Appendix A detail NO_2 annual mean concentrations for the five-year period from 2018 to 2022 within our nine AQMAs originally declared for exceedance of the annal mean objective.

In 2022, three diffusion tube monitoring locations within the Kirklees district exceeded the annual mean NO_2 objective after bias adjustment, annualisation and distance correction, these being K28 (AQMA 9), K40 (AQMA 5) and K48 (AQMA 7). Coincidentally, distance corrected data in 2021 also highlighted exceedance within these three AQMAs. Using distance corrected diffusion tube data for the five year period 2018-2022, we note compliance within AQMAs 1, 3 and 4, whilst AQMAs 6,8, and 10 have all shown exceedance for at least one of the last five years. AQMAs 6, 8 and 10 exhibited exceedances in 2018 at receptor facade, with exceedance also in AQMA 8 in 2019.

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."

Over the coming twelve months therefore, we will actively consider the feasibility for revocation of several of AQMAs declared for exceedance of the annual mean objective for NO_2. We would however welcome commentary from Defra, as part of this ASR appraisal on the use of appropriately appropriate bias adjusted, annualised and distance corrected diffusion tube data as part of the detailed assessment process prior to formal revocation.

We previously reported in previous ASRs our intention to amend our AQMA 1 (Bradley / Leeds Road junction). We will now however postpone any detailed assessment for this AQMA with a view for either variation or revocation, to wait for further information. The area encompassing this AQMA is subject to a proposed major road scheme, partially to alleviate current levels of congestion. Therefore, whilst the scheme is expected to be beneficial regarding reduction in overall road traffic emissions within the AQMA, we await the formal air quality assessment to confirm that the scheme does not result in significant increase in concentrations in certain areas within this AQMA due to proposed changes in highways configurations. We will continue to report on this AQMA in future ASRs.

Outside of our AQMAs there are no exceedances of the objectives where relevant exposure exists in 2022.

Table A.5 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.

Annualised continuous monitoring data from 2022 indicated no exceedances of the NO_2 hourly mean air quality mean objective. Furthermore, as all annual mean diffusion tube concentrations were below 60 µg/m^3, it is unlikely that the 1-hour mean objective will have been exceeded in 2022 and these locations also, based on current guidance[13].

[13] Relationship between the Annual Mean and 1-hour NO2 Objectives | LAQM (defra.gov.uk)

3.1.4 Particulate Matter (PM_{10})

Table A.6 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.7 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 2022 indicated no exceedances of the PM_{10} annual mean and PM_{10} daily mean objectives.

3.1.5 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.

Due to the age of real-time monitors within the district, which resulted in major breakdowns and loss / corruption of data, Kirklees Council undertook the process of modernising the data collection system and equipment in February 2020. Further issues occurred with the two continuous monitoring stations however, which were only resolved with the further overhaul of the stations and subsequent procuring of a service and maintenance contract in the second half of 2022. Consequently, data are available for the period September – December 2022 and detailed elsewhere in this report. In addition, we are now reporting data from the Government's Automatic Urban and Rural Network (AURN) monitoring station within Kirklees within our ASRs. This is the urban background monitoring station at Dewsbury Ashworth Grove, following installation of FIDAS particulate monitor (PM_{10} and $PM_{2.5}$) in July 2022. Consequently, we are taking the opportunity to report these data as this urban background monitoring site is a good indicator of urban background concentrations (and subsequent exposure) within Kirklees.

We are currently unable to comment on longer term trends regarding PM_{10} and $PM_{2.5}$ due to the lack of data. Nor can Kirklees comment on the impact of the pandemic on PM_{10} and $PM_{2.5}$ concentrations.

We note that, whilst $PM_{2.5}$ concentration data have not been available locally previously, national mapping notes that concentrations with the district are compliant with existing objectives. Furthermore, we can present 2022 PM_{10} and $PM_{2.5}$ data from the Dewsbury Ashworth Grove AURN site and the Council's two Huddersfield roadside sites, following

annualisation of these data in accordance with Box 7.9 of LAQM. TG (22), annualising continuous monitoring data. All data show compliance with the relevant objectives in 2022.

3.1.6 Sulphur Dioxide (SO_2)

Kirklees Council does not undertake monitoring of sulphur dioxide gas within the district.

Appendix A: Monitoring Results

Table A.1 – Details of Automatic Monitoring Sites

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 Grove	Urban Background	424060	421912	NO_2, PM_{10}, $PM_{2.5}$	No	Chemiluminescent FIDAS	13	0	2
CM2	RS3 - Bradley	Roadside	417255	420761	NO_2; PM_{10}	Yes, AQMA 1	Chemiluminescent; Met-One BAM	3	3	1.5
CM3	RS6 - Ainley Top	Roadside	411739	419007	NO_2; PM_{10}	Yes, AQMA 3	Chemiluminescent; Met-One BAM	8	5	1.5

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	Huddersfield Road Ravensthorpe	Roadside	422443	420380	NO2	No	1.6	1.9	No	2.0
K6	Leeds Road - Cooper Bridge	Roadside	417878	421054	NO2	AQMA 1	7.6	4.0	No	2.0
K6a	Leeds Road - Cooper Bridge-historic	Roadside	417872	421050	NO2	AQMA 1	5.2	6.0	No	2.0
K7	Westgate Huddersfield	Urban Centre	414434	416744	NO2	AQMA 9	0.5	0.5	No	2.5
K8	Bradford Road Fartown 1-Charmaines	Roadside	414498	417798	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	411861.22	418270.28	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

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)
K12	Whitechapel Road Cleckheaton	Kerbside	417302.12	425960.9	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, K16, K17	Ainley Top 3	Other	411715	419032	NO2	AQMA 3	8.0	6.0	Yes	1.5
K18	Huddersfield Road Birstall - lampost 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	Leeds Road Bradley 3	Kerbside	417424	420490	NO2	AQMA 1	22.5	0.1	No	2.0
K23	Leeds Road Mirfield 2	Roadside	418483	420978	NO2	No	14.1	1.6	No	2.0
K24	Lindley Moor Road	Roadside	409775	418397	NO2	No	6.7	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)
K25, K26, K27	Leeds Road - RS3 - 3	Other	417255	420360	NO2	AQMA 1	1.5	7.0	Yes	1.8
K28	Ring Road Huddersfield-Southgate	Roadside	414745	416710	NO2	AQMA 9	0.1	3.1	No	2.0
K29	Dewsbury Bus Station 2	Other	424425	421499	NO2	No		2.5	No	2.0
K30	Dewsbury Bus Station 3	Other	424457	421510	NO2	No		2.5	No	2.0
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	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	Leeds Road Liversedge	Roadside	420853	423866	NO2	No	9.4	1.9	No	2.0
K36	Huddersfield Road Mirfield 1	Kerbside	420304	419766	NO2	No	2.9	0.9	No	2.0
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

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)
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	Chain Bar Roundabout	Roadside	418285	426630	NO2	No	12.5	3.4	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
K44	Caulmswood Road Eastborough	Roadside	425179	422116	NO2	No	façade	façade	No	2.0
K45	Bradford Road Fartown 2	Roadside	414483	417726	NO2	No	5.7	5.0	No	2.0
K46	Willow Lane Fartown-lamppost 03 opposite Perrys	Roadside	414402	417806	NO2	No	9.7	2.5	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	413414	415981	NO2	AQMA 10	1.6	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)
K51	High Street Heckmondwike	kerbside	421898	423576	NO2	No	4.9	0.5	No	2.0
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	Roadside	425196	421566	NO2	No	2.7	3.2	No	2.0
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
K59	Westbourne Road, Marsh - Outside Marsh DIY	Roadside	412944	417244	NO2	No	3.7	2.5	No	2.0
K60	Huddersfield Road, Birstall Smithies - the greyhound public house - lamppost 231	Roadside	422435	425889	NO2	No	7.5	2.3	No	2.0
K61	Bradford Road - Birkenshaw .	Roadside	420441	427353	NO2	AQMA 4		3.3	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)
	Lamppost 85-BD19 4AY									
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
K64	Whitehall Road West 2 - Birkenshaw-lamppost 60	Other	419914	427588	NO2	No		0.1	No	2.0
K65	Whitehall Road West 3 - Birkenshaw - lamppost 56	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	Moor Lane 1 - Birkenshaw-lamppost 27	Roadside	421128	427298	NO2	No		0.4	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	Roadside	418237	426555	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 - Thornton Lodge 4	Roadside	413455	416013	NO2	AQMA 10	1.2	2.2	No	2.0
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

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)
K81	Gelderd Road, Hawthorne House, lamppost 276	Roadside	422991	426992	NO2	No		1.8	No	2.0
K82	Grange Moor	Roadside	422036	415941	NO2	No	1.7	1.5	No	2.0
K83	Flockton	Roadside	424203	414975	NO2	No	3.2	1.4	No	2.0
K84	Denby Dale	Roadside	422923	408553	NO2	No	2.3	1.8	No	2.0
K85	Shepley	Roadside	419380	409777	NO2	No		1.5	No	2.0
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. Lamppost 229	Roadside	422403	425845	NO2	No		2.5	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
K91	Halifax Road, Edgerton, outside Harlequins	Roadside	412647	418008	NO2	No	14.0	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)
	nursery- lamppost 58									
K92	Bradford Road, Cleckheaton	Roadside	418656	426078	NO2	No	3.9	1.8	No	2.0
K93	Wyke Lane, Oakenshaw	Roadside	427802	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	Kerbside	414227	408161	NO2	No		0.8	No	2.0
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
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	Trinity Street, Huddersfield	Roadside	413531	417137	NO2	No	4.9	2.5	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

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)
K104	Bradley Road, Bradley	Roadside	415810	420554	NO2	No	12.3	6.8	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 (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 2022 (%) (2)	2018	2019	2020	2021	2022
CM1	424060	421912	Urban Background	98.5	98.5	**n/a**	**n/a**	16	17	18
CM2	417255	420761	Roadside	n/a	n/a	**n/a**	**n/a**	25.5	**n/a**	**n/a**
CM3	411739	419007	Roadside	99.9	33.4	**n/a**	**n/a**	36.2	**n/a**	18.3

☒ **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.**

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**.

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 (µg/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 2022 (%) (2)	2018	2019	2020	2021	2022
K1	424506	421535	Other	100	100.0	**41.1**	**41.0**	**46.0**	**45.1**	**45.5**
K2	414214	416504	Other	100	100.0	39.3	38.5	34.2	**42.4**	36.9
K3	413504	417439	Roadside	100	100.0	**51.9**	**42.7**	36.3	**40.3**	**41.5**
K4	424464	424395	Roadside	92	92.3	28.5	27.0	24.2	27.9	25.9
K5	422443	420380	Roadside	100	100.0	35.5	36.1	23.6	27.4	27.5
K6	417878	421054	Roadside	50	50.0					36.8
K6a	417872	421050	Roadside	50	50.0	36.3	37.9	27.0	34.9	32.5
K7	414434	416744	Urban Centre	100	100.0	38.5	**40.8**	28.9	36.7	**40.0**
K8	414498	417798	Roadside	100	100.0	36.1	36.0	30.5	33.4	32.7
K9	417280	420482	Kerbside	100	100.0	27.5	34.4	28.3	21.7	24.6
K10	411861.22	418270.28	Roadside	58	57.7					12.3
K11	414359	416277	Roadside	100	100.0	39.6	35.0	27.7	31.3	32.0
K12	417302.12	425960.9	Kerbside	58	57.7					16.4

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 2022 (%) (2)	2018	2019	2020	2021	2022
K13	420377	427871	Roadside	100	100.0	33.9	31.4	23.0	28.2	28.5
K14	413667	416467	Urban Background	100	100.0	16.2	17.7	13.9	14.5	13.0
K15, K16, K17	411715	419032	Other	92	100.0	37.7	36.5	29.4	33.8	30.7
K18	422686	426229	Roadside	100	100.0	37.9	36.8	32.2	35.8	34.4
K19	423563	421014	Roadside	100	100.0	38.8	31.6	29.6	35.7	35.4
K20	424858	421904	Roadside	100	100.0	34.0	28.4	29.5	33.1	32.3
K21	414149	416686	Roadside	100	100.0	**42.5**	34.7	33.4	39.3	37.8
K22	417424	420490	Kerbside	100	100.0	**40.6**	33.4	22.7	34.7	34.9
K23	418483	420978	Roadside	92	90.4	38.5	35.3	31.7	36.0	35.5
K24	409775	418397	Roadside	100	100.0	**40.0**	34.1	27.5	32.3	28.7
K25, K26, K27	417255	420360	Other	100	100.0	30.4	27.4	22.6	24.5	23.8
K28	414745	416710	Roadside	100	100.0	**43.2**	**46.4**	37.6	**41.4**	**41.0**
K29	424425	421499	Other	100	100.0	**N/A**	**N/A**	24.4	26.5	28.4

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 2022 (%) (2)	2018	2019	2020	2021	2022
K30	424457	421510	Other	100	100.0	**N/A**	**N/A**	25.6	31.4	30.1
K31	413400	417495	Roadside	100	100.0	33.8	30.5	17.1	25.0	24.6
K32	413513	417481	Roadside	100	100.0	**45.9**	35.5	-	36.1	38.1
K33	420727	423668	Roadside	100	100.0	34.3	31.1	26.8	31.4	30.2
K34	420845	423770	Roadside	100	100.0	38.4	33.6	29.9	30.5	33.6
K35	420853	423866	Roadside	100	100.0	**44.4**	**45.3**	34.7	**44.3**	**44.7**
K36	420304	419766	Kerbside	100	100.0	**42.2**	**49.4**	21.1	31.5	28.3
K37	420356	427810	Roadside	100	100.0	33.1	31.2	21.3	25.7	26.4
K38	420222	427764	Roadside	100	100.0	37.8	37.1	27.3	33.3	36.6
K39	424526	424326	Roadside	100	90.4	30.5	31.1	26.7	33.6	32.9
K40	424922	421972	Roadside	100	100.0	**52.4**	**55.8**	**42.1**	**50.2**	**47.5**
K41	418285	426630	Roadside	100	100.0	36.4	34.0	26.7	32.0	28.8
K42	424969	422002	Roadside	100	100.0	39.6	35.1	34.7	37.9	33.7
K43	425093	422024	Roadside	100	100.0	**42.9**	37.2	33.1	39.0	36.3

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 2022 (%) (2)	2018	2019	2020	2021	2022
K44	425179	422116	Roadside	100	100.0	35.1	30.8	24.9	30.1	31.0
K45	414483	417726	Roadside	100	100.0	36.3	36.4	25.1	33.2	34.3
K46	414402	417806	Roadside	100	100.0	37.0	34.8	29.2	22.5	21.3
K47	407942	417261	Other	100	100.0	**44.9**	**40.5**	32.0	34.4	32.8
K48	421039	423673	Roadside	100	100.0	36.1	36.1	38.1	**41.2**	**43.0**
K49	413659	416182	Roadside	100	100.0	38.1	33.1	33.1	36.4	33.6
K50	413414	415981	Roadside	100	100.0	**45.3**	38.2	33.1	39.8	**40.6**
K51	421898	423576	kerbside	100	100.0	38.9	34.5	28.6	30.0	31.2
K52	417627	416472	Roadside	100	100.0	34.2	30.7	20.9	27.4	28.1
K53	411564	415902	Roadside	100	100.0	29.4	**53.7**	24.6	30.6	28.0
K54	425196	421566	Roadside	100	92.3	33.9	32.1	29.4	37.2	38.0
K55	414187	408264	Roadside	100	100.0	34.2	29.9	23.8	25.2	25.7
K56	415009	416420	Roadside	100	100.0	39.5	34.9	30.3	37.4	36.1
K57	414291	417281	Roadside	100	100.0	29.7	22.2	18.5	20.1	20.7

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 2022 (%) (2)	2018	2019	2020	2021	2022
K58	414350	417270	Roadside	92	92.3	**44.9**	39.6	34.9	37.4	35.9
K59	412944	417244	Roadside	100	100.0	**N/A**	**N/A**	**N/A**	**N/A**	25.5
K60	422435	425889	Roadside	100	100.0	**N/A**	**N/A**	22.2	29.0	27.9
K61	420441	427353	Roadside	100	100.0	35.1	29.7	23.2	28.3	27.7
K62	420472	427360	Roadside	100	100.0	31.6	26.4	22.1	25.5	26.2
K63	419866	427561	Roadside	100	100.0	33.6	27.3	24.3	26.7	24.1
K64	419914	427588	Other	100	100.0	**51.6**	**45.1**	36.5	**42.5**	**43.7**
K65	419981	427623	Roadside	100	100.0	**44.3**	**41.1**	28.4	32.6	34.9
K66	420349	427434	Other	100	100.0	26.7	24.8	19.8	18.7	18.0
K67	421128	427298	Roadside	100	100.0	25.9	24.4	18.7	20.0	21.3
K68	425185	423684	Roadside	100	100.0	27.3	23.6	20.1	23.8	23.8
K69	418237	426555	Roadside	100	100.0	35.3	28.4	21.1	24.6	24.3
K70	423247	420761	Roadside	92	92.3	37.0	31.8	33.4	32.9	31.4
K71	411007	419190	Roadside	100	100.0	39.3	30.7	22.6	28.8	24.1

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 2022 (%) (2)	2018	2019	2020	2021	2022
K72	410227	418653	Roadside	100	100.0	35.3	32.2	24.3	26.2	26.1
K73	410080	418568	Roadside	100	100.0	**46.7**	34.2	19.4	31.0	28.6
K74	410095	418559	Roadside	100	100.0	30.5	23.7	20.1	21.5	20.0
K75	413153	415894	Roadside	100	100.0	37.8	**Insufficient Data**	25.5	28.9	27.1
K76	413198	415957	Roadside	100	100.0	35.0	28.5	25.4	28.9	27.1
K77	413455	416013	Roadside	100	100.0	**46.9**	38.9	33.2	**42.6**	**41.9**
K78	413478	415953	Roadside	100	100.0	28.0	24.1	18.4	21.3	21.1
K79	423903	427756	Roadside	100	100.0	**42.5**	**Insufficient Data**	30.2	33.2	31.5
K80	425566	423696	Roadside	100	100.0	**43.3**	24.4	22.7	25.7	26.5
K81	422991	426992	Roadside	100	100.0	36.6	29.8	28.4	29.5	28.2
K82	422036	415941	Roadside	100	100.0	20.3	17.5	16.1	16.6	16.2
K83	424203	414975	Roadside	100	100.0	29.4	24.7	18.9	21.6	23.1
K84	422923	408553	Roadside	100	100.0	28.4	20.6	18.6	20.6	19.1
K85	419380	409777	Roadside	100	100.0	23.9	21.1	16.3	17.5	17.9

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 2022 (%) (2)	2018	2019	2020	2021	2022
K86	415164	416323	Roadside	100	100.0	32.6	29.1	22.8	26.3	24.4
K87	424409	421271	Roadside	100	100.0	37.4	31.3	29.4	32.5	31.4
K88	422403	425845	Roadside	100	100.0	N/A	N/A	24.5	31.1	30.1
K89	419362	427203	Roadside	100	100.0	N/A	N/A	23.2	27.5	28.2
K90	419262	427060	Roadside	92	92.3	N/A	N/A	21.8	27.1	27.6
K91	412647	418008	Roadside	83	84.6	N/A	N/A	-	29.0	27.9
K92	418656	426078	Roadside	92	90.4	N/A	N/A	-	21.1	24.0
K93	417501	427802	Roadside	100	100.0	N/A	N/A	23.5	27.3	26.9
K94	426242	423106	Roadside	100	100.0	N/A	N/A	25.5	33.5	32.2
K95	414170	408118	Roadside	100	100.0	N/A	N/A	21.0	24.0	22.6
K96	414227	408161	Kerbside	100	100.0	N/A	N/A	16.8	20.0	20.1
K97	409762	418019	Roadside	100	100.0	N/A	N/A	14.0	16.6	15.6
K98	414092	408133	Roadside	100	100.0	N/A	N/A	19.7	22.2	21.3
K99	426312	422830	Roadside	100	100.0	N/A	N/A	18.7	21.4	21.0

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 2022 (%) (2)	2018	2019	2020	2021	2022
K100	412477	417290	Roadside	100	100.0	**N/A**	**N/A**	17.0	23.1	21.0
K101	413531	417137	Roadside	100	100.0	**N/A**	**N/A**	22.8	27.1	25.6
K102	418540	421188	Roadside	100	100.0	**N/A**	**N/A**	18.8	24.4	25.2
K103	419426	420293	Roadside	100	100.0	**N/A**	**N/A**	19.4	23.3	21.7
K104	415810	420554	Roadside	100	100.0	**N/A**	**N/A**	17.4	19.9	21.2

☒ **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%).

Figure A.1 – Trends in Annual Mean NO_2 Concentrations

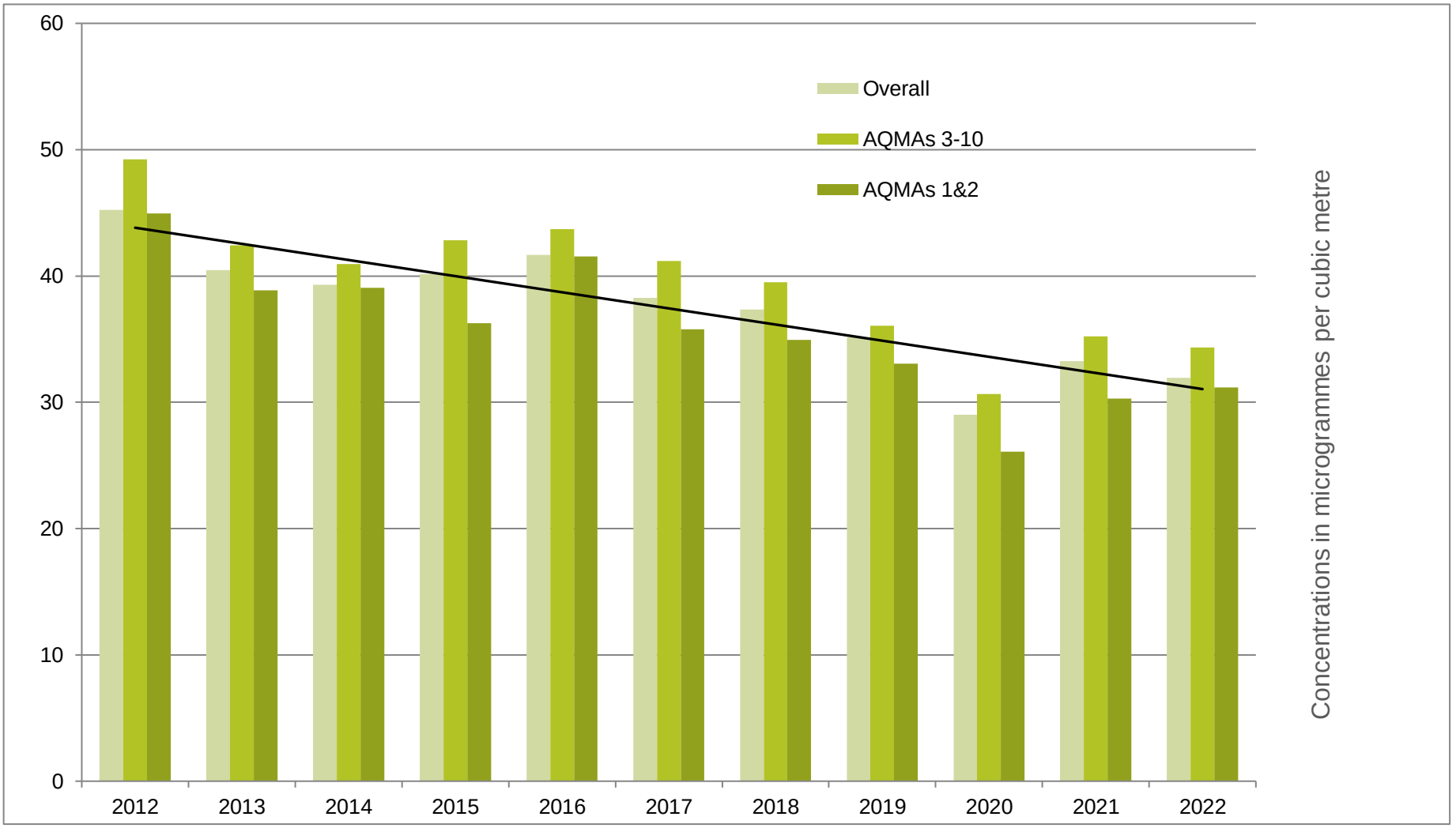


Figure A.2 – Percentage improvement changes in Annual Mean NO_2 Concentrations

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

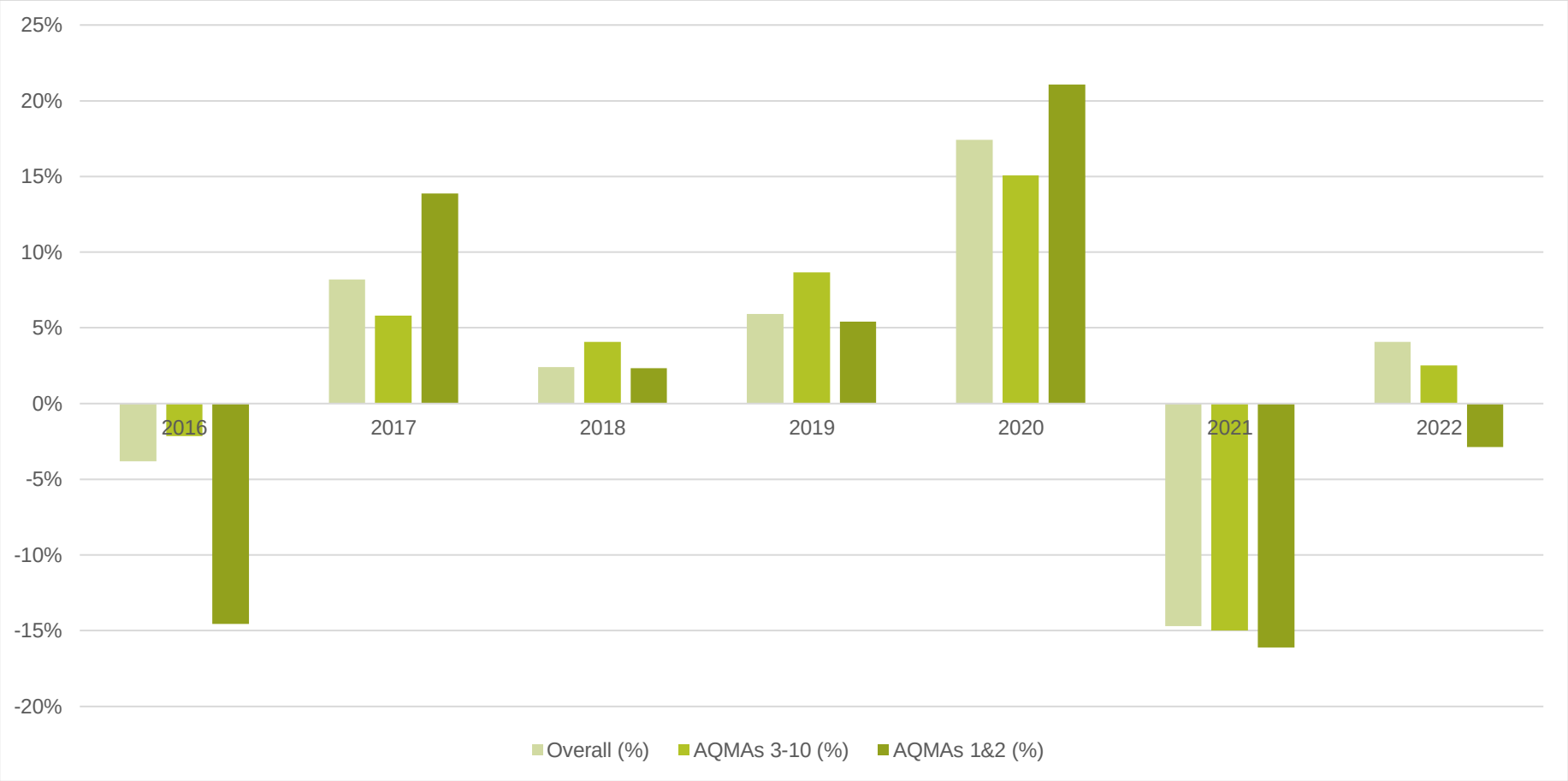
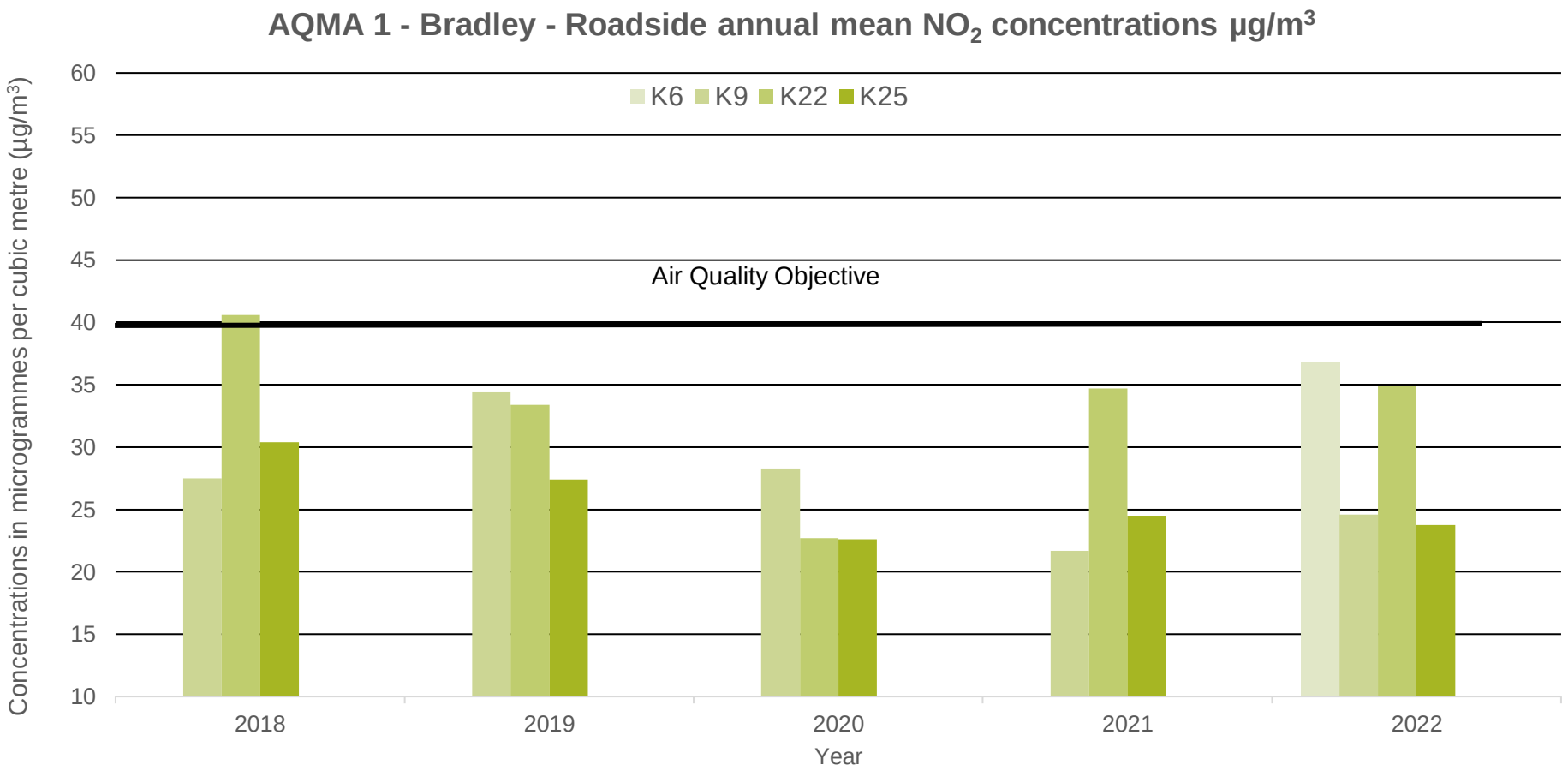


Table A.2b – Percentage reduction of Mean Annual NO_2 concentrations Pre, During & Post Pandemic

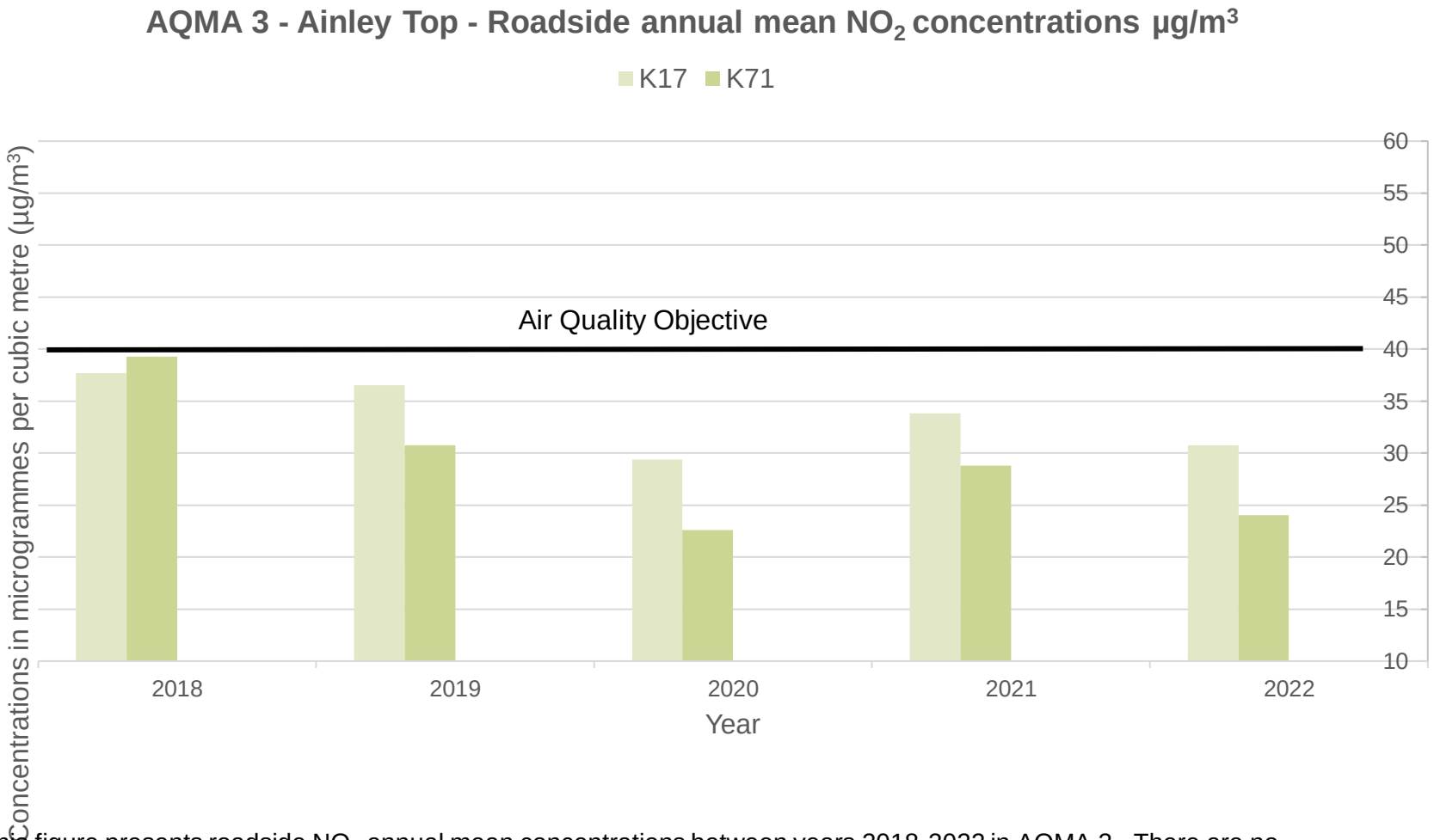
Percentage change in roadside NO_2 concentrations	Over 8 years Pre 2020	Over 5 years Pre 2020	2020 (Pandemic)	2021 (Post Pandemic)	2022 (Post Pandemic)
Overall (%)	22%	13%	17%	-15%	4%
"New" AQMAs	26%	15%	15%	-15%	3%
"Pre-existing" AQMAs	33%	19%	19%	-12%	-3%

Figure A.3 – Trends in Annual Mean NO_2 Concentrations, AQMA 1



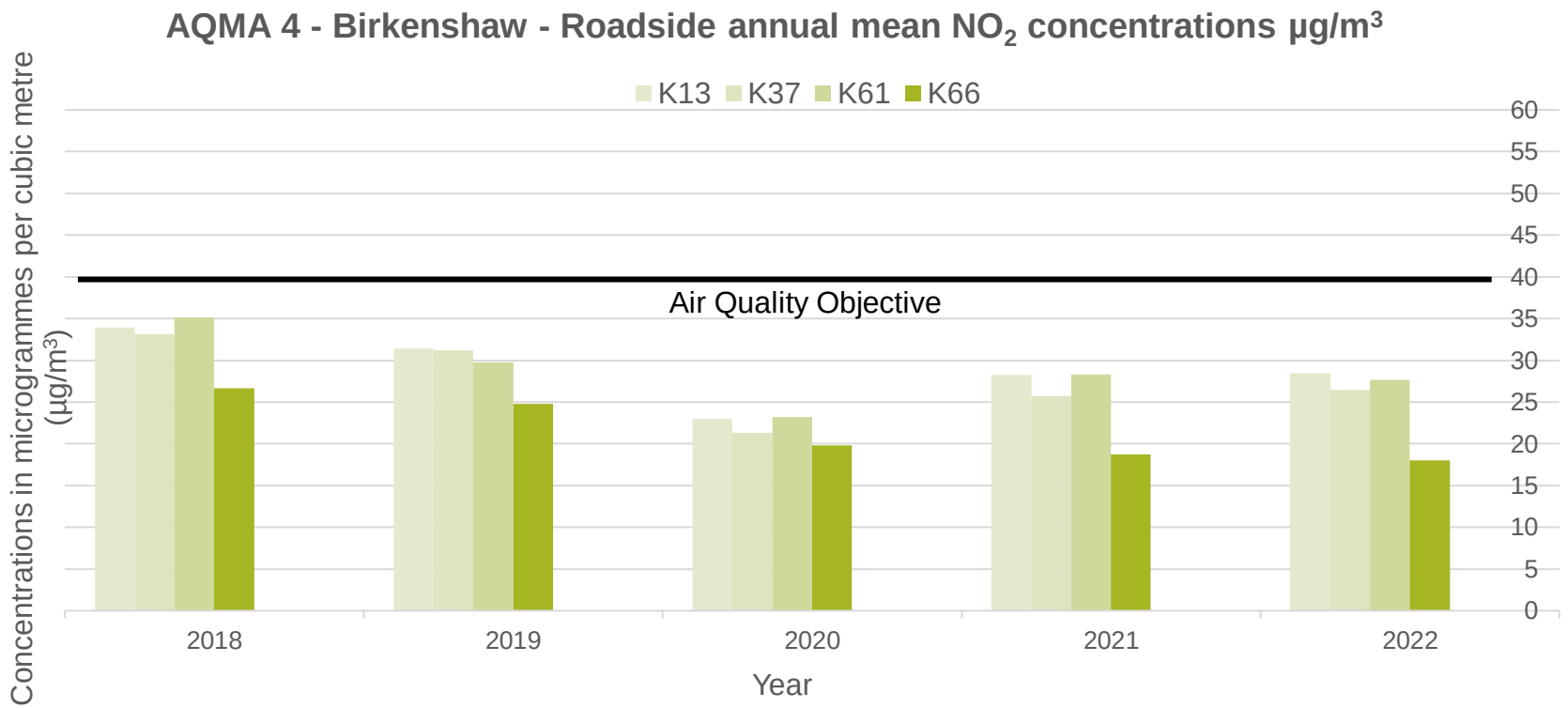
This figure present roadside NO_2 annual mean concentrations between years 2018-2022 in AQMA 1. There are no exceedances in the period 2019 to 2022

Figure A.4 – Trends in Annual Mean NO_2 Concentrations, AQMA 3



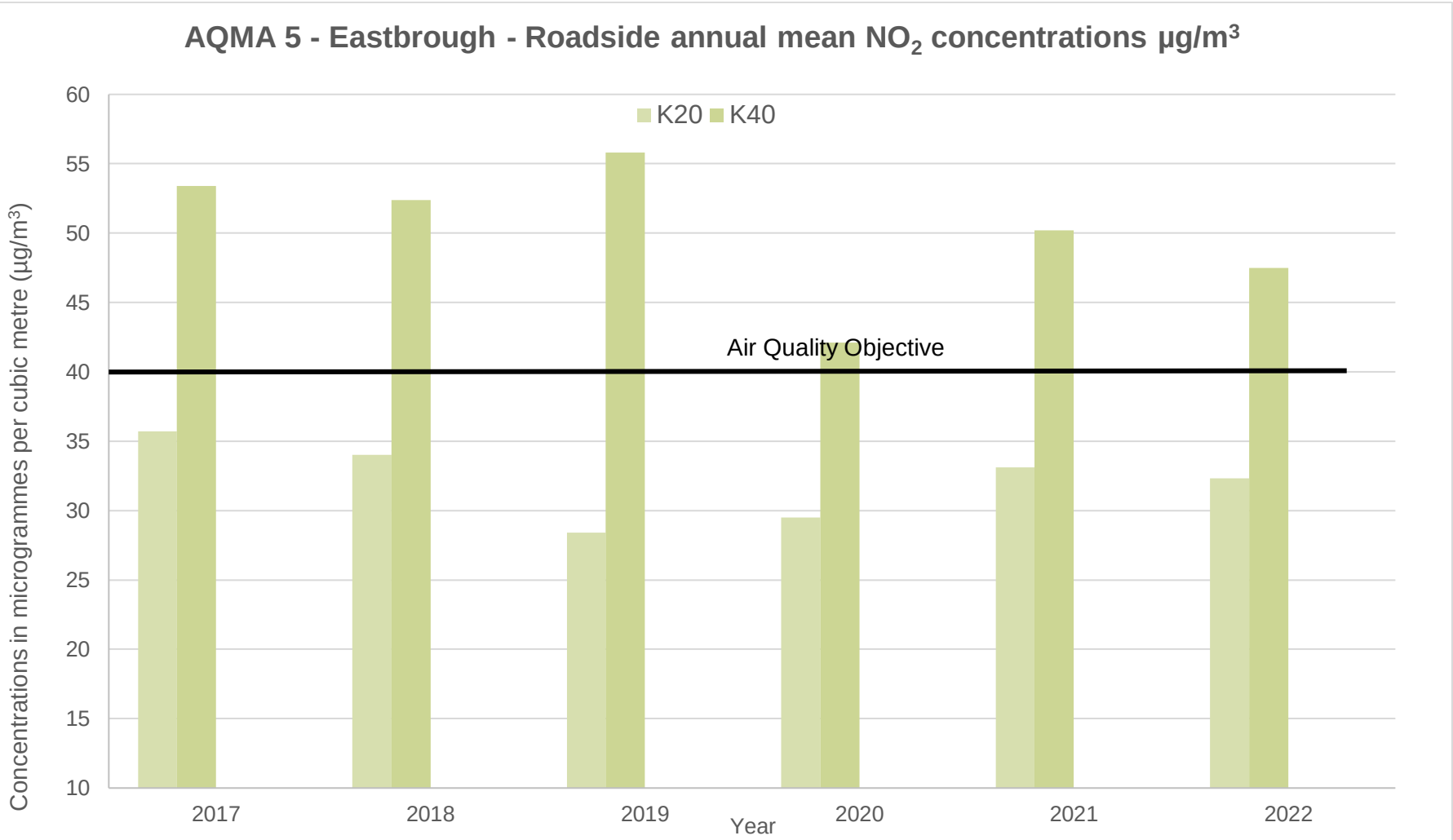
This figure presents roadside NO_2 annual mean concentrations between years 2018-2022 in AQMA 3. There are no exceedances in the period 2018 to 2022

Figure A.5 – Trends in Annual Mean NO_2 Concentrations, AQMA 4



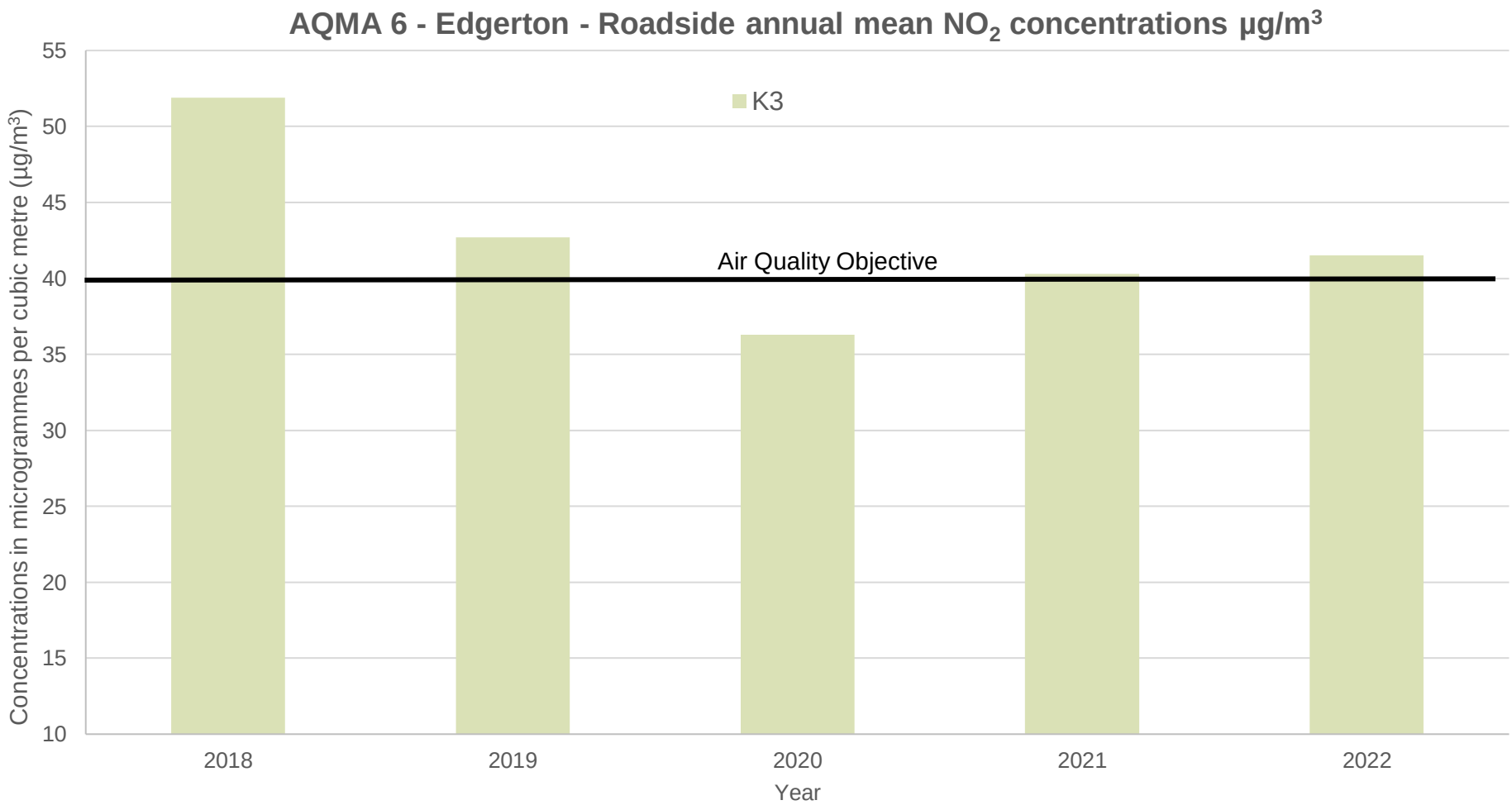
This figure presents roadside NO_2 annual mean concentrations between years 2018-2022 in AQMA 4. There are no exceedances in the period 2018 to 2022

Figure A.6 – Trends in Annual Mean NO_2 Concentrations, AQMA 5



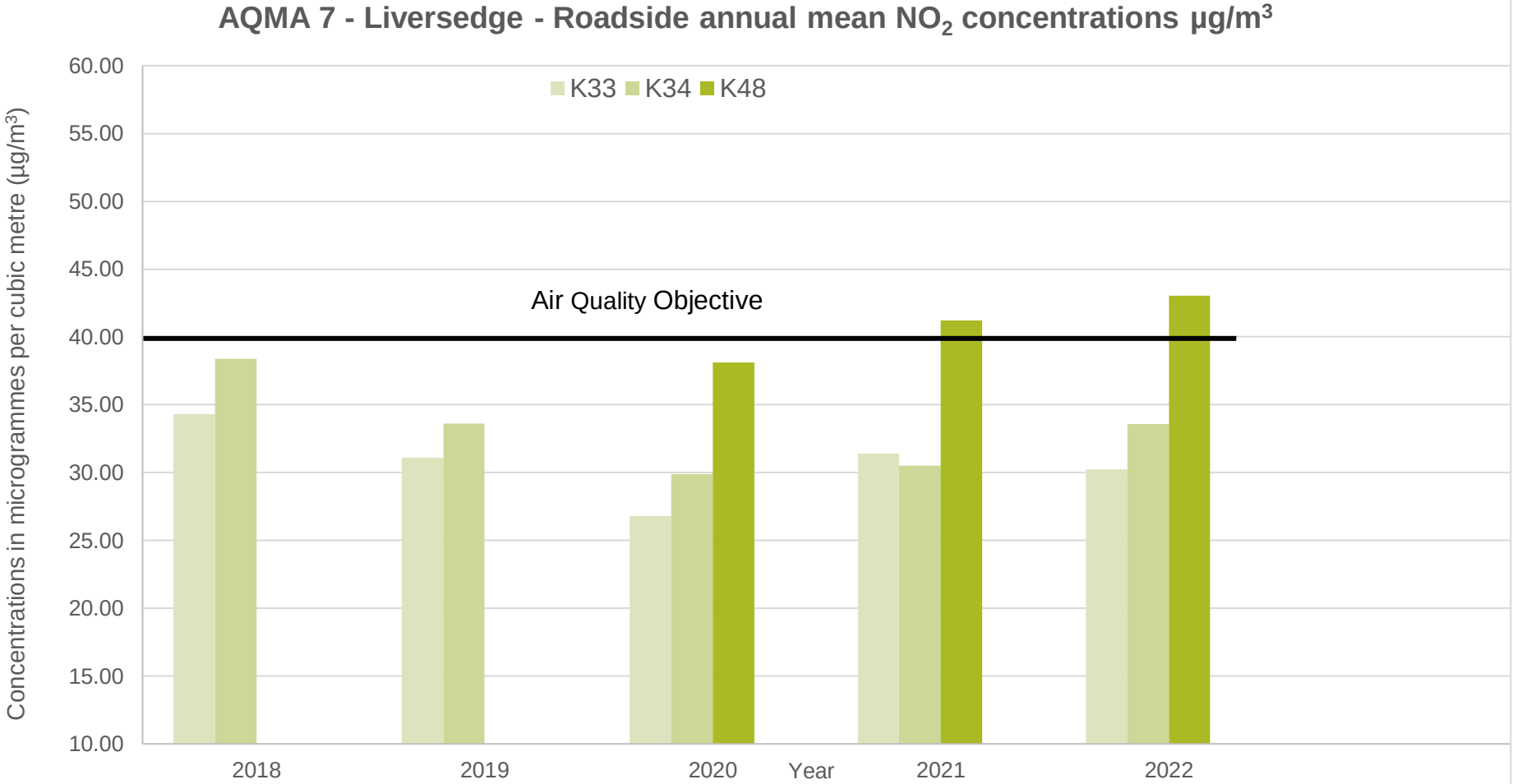
This figure present roadside NO_2 annual mean concentrations between years 2018-2022 in AQMA 5. Concentrations continue to be exceeded at roadside in 2022. Concentrations were also exceeded at the nearest receptor facade to diffusion tube K40 in 2022

Figure A.7 – Trends in Annual Mean NO_2 Concentrations, AQMA 6



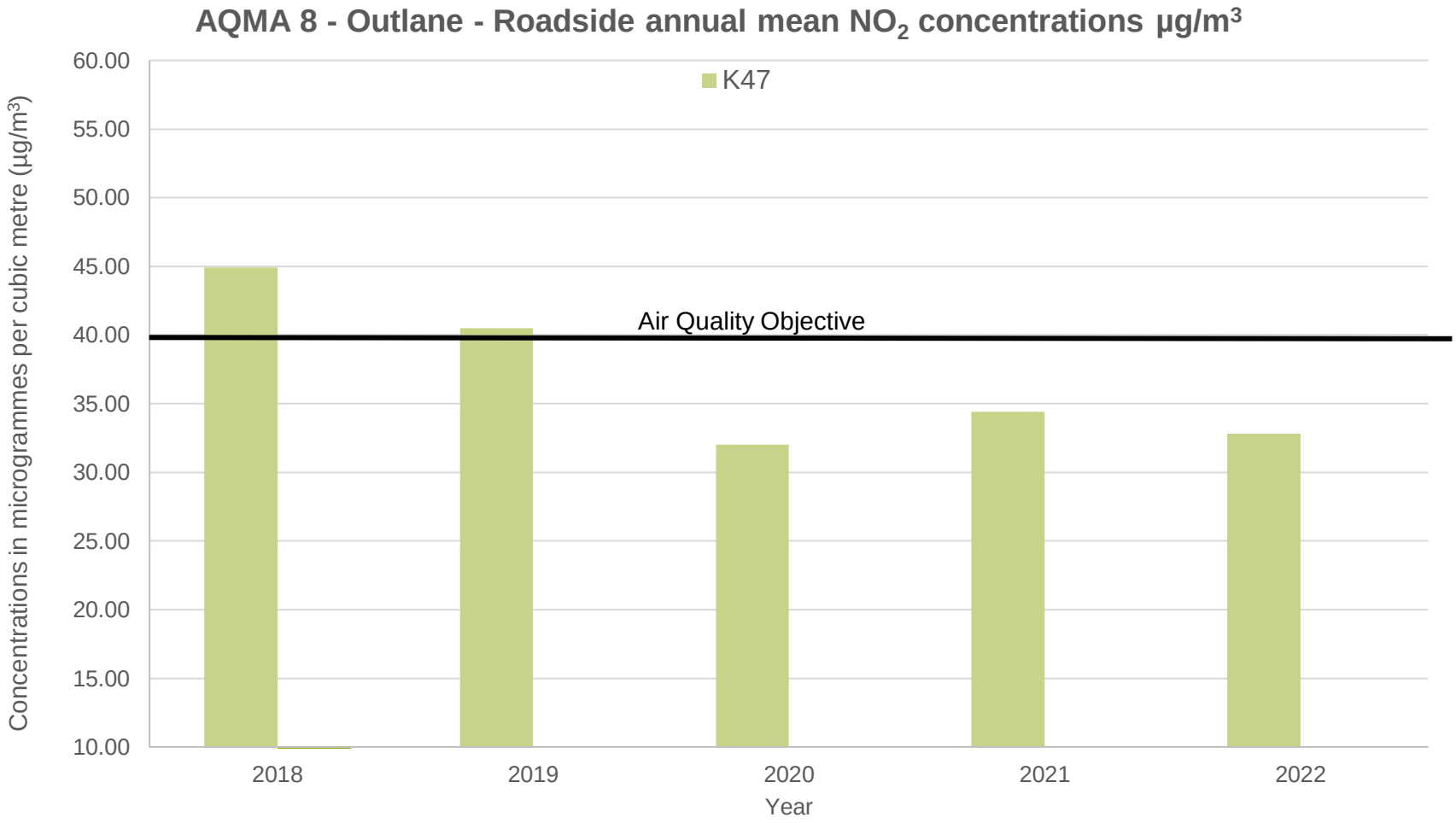
This figure present roadside NO_2 annual mean concentrations between years 2018-2022 in AQMA 6. Concentrations continue to be exceeded at roadside in 2022. Concentrations were not exceeded at the nearest receptor facade to diffusion tube K3 in 2022.

Figure A.8 – Trends in Annual Mean NO_2 Concentrations, AQMA 7



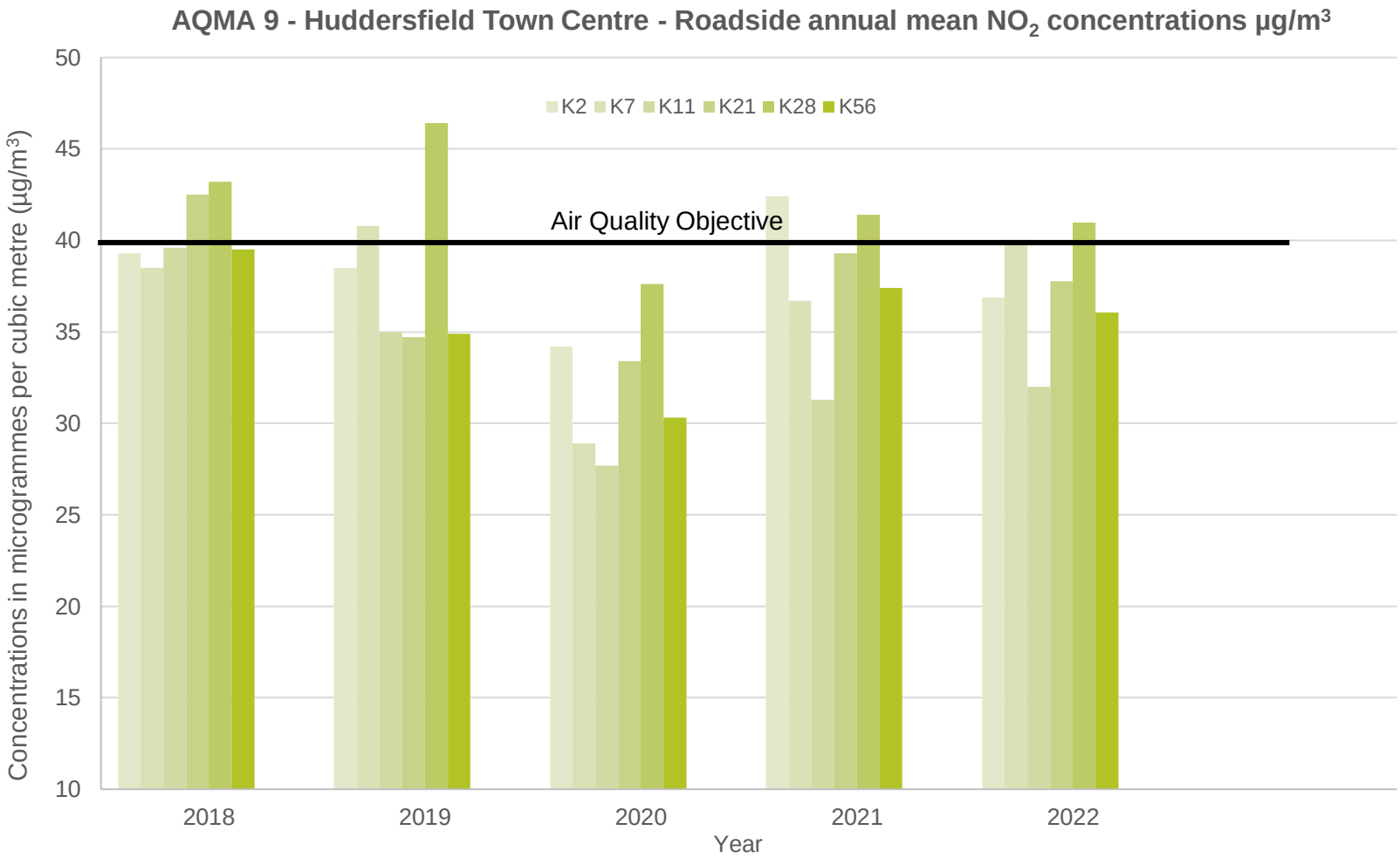
This figure present roadside NO_2 annual mean concentrations between years 2018-2022 in AQMA 7. Concentrations continue to be exceeded at roadside in 2022. Concentrations were also exceeded at the nearest receptor facade to diffusion tube K48 in 2022

Figure A.9 – Trends in Annual Mean NO_2 Concentrations, AQMA 8



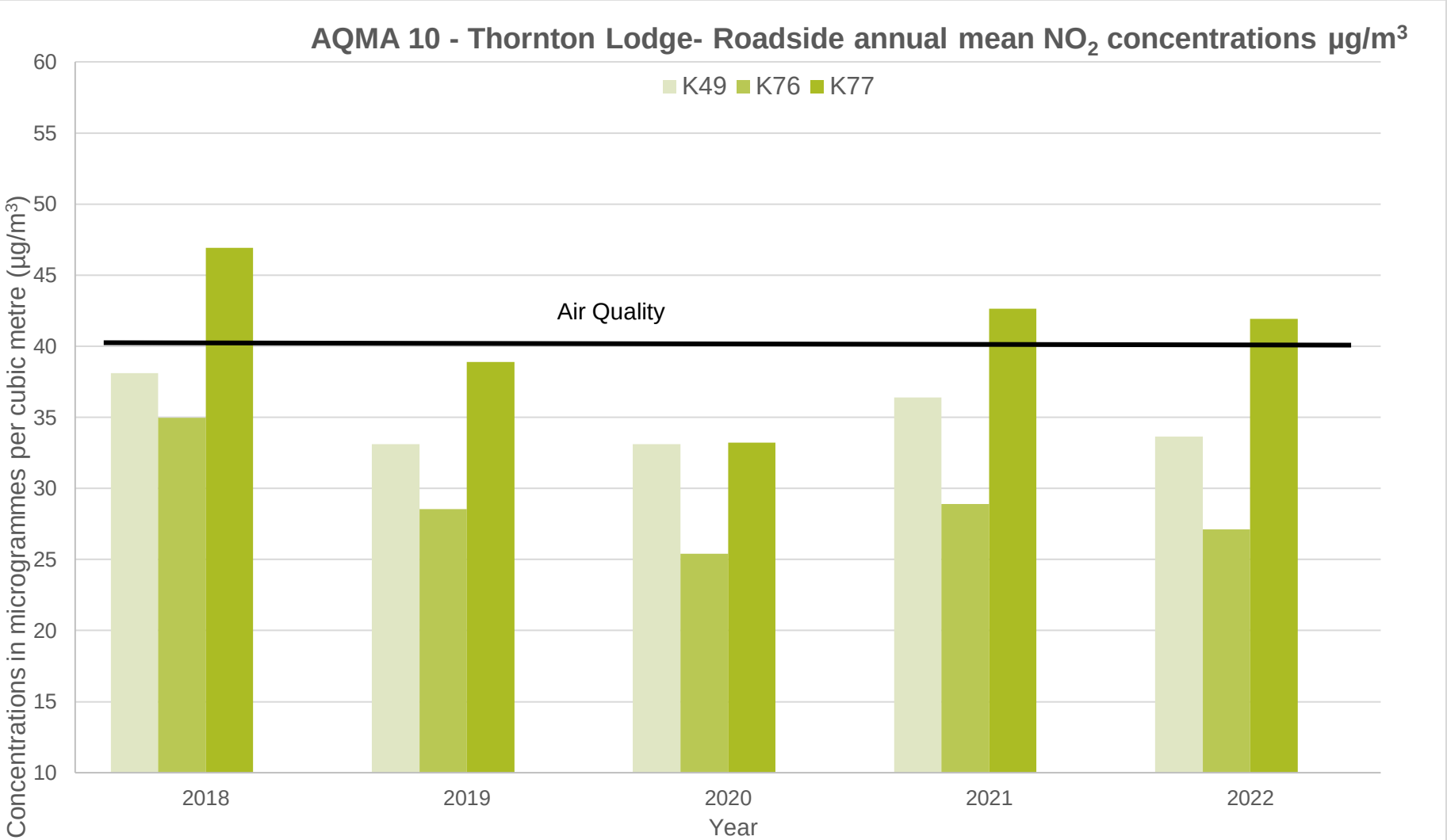
This figure present roadside NO_2 annual mean concentrations between years 2018-2022 in AQMA 8. Concentrations were not exceeded at the nearest receptor facade to diffusion tube K47 in 2022

Figure A.10 – Trends in Annual Mean NO_2 Concentrations, AQMA 9



This figure present roadside NO_2 annual mean concentrations between years 2018-2022 in AQMA 9. Concentrations continue to be exceeded at roadside in 2022. Concentrations were also exceeded at the nearest receptor facade to diffusion tube K28 in 2022

Figure A.11 – Trends in Annual Mean NO_2 Concentrations, AQMA 10



This figure presents roadside NO_2 annual mean concentrations between years 2018-2022 in AQMA 10. Concentrations continue to be exceeded at roadside in 2022. Concentrations were not exceeded at the nearest receptor facade to diffusion tube K77 in 2022, however, with concentrations at receptor facade being marginally below the objective in 2022.

Table A.5 – 1-Hour Mean NO_2 Monitoring Results, Number of 1-Hour Means > 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 2022 (%) (2)	2018	2019	2020	2021	2022
CM1	424060	421912	Urban Background	98.5	98.5	**n/a**	**n/a**	0	0	0
CM2	417255	420761	Roadside	n/a	n/a	**n/a**	**n/a**	0	**n/a**	**n/a**
CM3	411739	419007	Roadside	99.9	33.4	**n/a**	**n/a**	0	**n/a**	**0 (55)**

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 2022 (%) (2)	2018	2019	2020	2021	2022
CM1	424060	421912	Urban Background	99.9	50.3	**n/a**	**n/a**	**n/a**	**n/a**	12.6

☒ **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.7 – 24-Hour Mean PM_{10} Monitoring Results, Number of PM_{10} 24-Hour Means > 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 2022 (%) (2)	2018	2019	2020	2021	2022
CM1	424060	421912	Urban Background	99.9	50.3	**n/a**	**n/a**	**n/a**	**n/a**	0 (20)

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 2022 (%) (2)	2018	2019	2020	2021	2022
CM1	424060	421912	Urban Background	99.9	50.3	**n/a**	**n/a**	**n/a**	**n/a**	8.3
CM2	417255	420761	Roadside	80.2	31.9	**n/a**	**n/a**	12.2	**n/a**	**9.7**
CM3	411739	419007	Roadside	93.9	33.4	**n/a**	**n/a**	9.3	**n/a**	8.9

☒ **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%).

Table A.9 – SO_2 2022 Monitoring Results, Number of Relevant Instances

Kirklees Council does not undertake monitoring of sulphur dioxide gas within the district.

Site ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2022 (%) (2)	Number of 15-minute Means > 266µg/m^3	Number of 1-hour Means > 350µg/m^3	Number of 24-hour Means > 125µg/m^3

Notes:

Results are presented as the number of instances where monitored concentrations are greater than the objective concentration.

Exceedances of the SO_2 objectives are shown in **bold** (15-min mean = 35 allowed a year, 1-hour mean = 24 allowed a year, 24-hour mean = 3 allowed a year).

If the period of valid data is less than 85%, the relevant percentiles are 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%).

Appendix B: Full Monthly Diffusion Tube Results for 2022

Table B.1 – NO_2 2022 Diffusion Tube Results ($\mu g/m^3$)

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 <(x.x)>	Annual Mean: Distance Corrected to Nearest Exposure	Comment
K1	424506	421535	72.6	70.0	69.8	58.2	50.3	34.9	59.1	60.7	54.0	58.4	65.1	65.6	59.9	**45.5**	-	
K2	414214	416504	48.1	53.5	48.4	41.4	40.0	45.9	43.2	41.9	48.1	53.5	56.8	61.6	48.5	36.9	-	
K3	413504	417439	48.7	55.3	54.5	45.6	51.8	59.3	57.6	54.8	53.4	56.7	58.4	59.2	54.6	**41.5**	38.0	
K4	424464	424395	38.8	36.4	45.1	31.2	25.4	25.8	28.6	30.3	35.1	33.5		44.9	34.1	25.9	-	
K5	422443	420380	20.7	32.4	48.9	30.3	29.3	27.2	34.8	33.1	35.1	43.6	48.9	49.2	36.1	27.5	-	
K6	417878	421054							46.0	47.3	50.8	46.3	49.8	56.9	49.5	36.8	31.2	
K6a	417872	421050	51.9	10.1	53.3	53.3	43.2	39.1							41.8	32.5	-	
K7	414434	416744	50.9	43.5	67.0	58.8	46.0	36.8	44.7	51.4	59.4	49.6	57.5	66.4	52.7	**40.0**	37.3	
K8	414498	417798	43.8	40.0	50.9	43.7	38.9	35.9	38.5	38.2	42.2	43.8	48.5	52.3	43.1	32.7	-	
K9	417280	420482	37.7	35.6	45.2	31.8	23.1	22.3	24.6	29.8	29.3	31.7	37.9	39.5	32.4	24.6	-	
K10	411861	418270						9.9	11.9	15.1	13.2	16.2	22.6	20.8	15.7	12.3	-	
K11	414359	416277	52.9	45.3	52.2	33.6	36.2	36.2	37.6	38.7	34.4	40.6	48.6	49.0	42.1	32.0	-	
K12	417302	425961						13.0	16.7	16.3	17.9	23.6	30.6	28.5	20.9	16.4	-	
K13	420377	427871	42.0	39.4	48.3	32.8	34.6	29.0	32.0	32.4	30.1	38.9	45.8	44.0	37.4	28.5	-	
K14	413667	416467	21.9	17.6	30.2	17.2	12.6	9.2	11.1	11.7	14.0	14.9	19.9	25.5	17.2	13.0	-	
K15	411715	419032	51.8	43.5		42.3	37.4	42.8	38.2	39.6	32.0	32.3	35.6	36.4	-	-	-	Triplicate Site with K15, K16 and K17 - Annual data provided for K17 only
K16	411715	419032	33.7	44.3	56.0	43.2	37.8	42.8	39.4	39.1	34.9	32.7	34.9	38.4	-	-	-	Triplicate Site with K15, K16 and K17 - Annual data provided for K17 only

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 <(x.x)>	Annual Mean: Distance Corrected to Nearest Exposure	Comment
K17	411715	419032	51.5	42.7	51.5	43.4	38.0	45.2	40.9	36.6	35.7	32.7	36.8	38.3	40.4	30.7	-	Triplicate Site with K15, K16 and K17 - Annual data provided for K17 only
K18	422686	426229	39.6	43.4	65.2	44.1	35.2	33.5	37.7	46.4	47.0	44.7	53.4	53.5	45.3	34.4	-	
K19	423563	421014	45.2	44.4	63.4	49.5	43.2	32.5	40.7	42.9	45.8	46.9	50.3	54.0	46.6	35.4	-	
K20	424858	421904	30.4	50.9	55.2	38.3	40.7	35.0	40.8	37.0	36.2	46.1	48.8	50.9	42.5	32.3	-	
K21	414149	416686	47.6	44.8	60.3	51.3	46.7	42.3	43.0	48.4	49.1	51.2	53.8	57.7	49.7	37.8	30.9	
K22	417424	420490	47.4	46.6	56.2	44.1	39.6	31.9	41.3	43.9	47.8	46.7	52.4	53.1	45.9	34.9	-	
K23	418483	420978	57.8	46.0	63.5	42.3	42.3	40.9	42.8	45.7	44.3	n/a	39.4	49.3	46.8	35.5	-	
K24	409775	418397	42.4	39.1	35.8	40.4	41.4	37.2	35.6	45.5	30.1	30.9	31.8	43.4	37.8	28.7	-	
K25	417255	420360	36.5	30.3	44.9	34.3	26.0	20.2	24.9	27.5	28.6	30.8	37.5	39.5	-	-	-	Triplicate Site with K25, K26 and K27 - Annual data provided for K27 only
K26	417255	420360	32.3	31.0	45.9	34.4	25.4	18.3	23.8	27.9	27.4	29.2	34.7	35.4	-	-	-	Triplicate Site with K25, K26 and K27 - Annual data provided for K27 only
K27	417255	420360	36.9	30.5	45.6	34.2	26.1	18.5	24.4	27.7	27.5	31.9	37.4	37.6	31.3	23.8	-	Triplicate Site with K25, K26 and K27 - Annual data provided for K27 only
K28	414745	416710	63.7	59.0	60.1	48.0	48.7	50.3	48.6	46.0	46.2	57.3	56.0	63.0	53.9	**41.0**	**40.8**	
K29	424425	421499	41.6	36.4	49.6	38.3	29.5	22.9	31.9	33.8	36.5	38.0	43.8	45.8	37.3	28.4	-	
K30	424457	421510	40.8	39.2	55.9	41.5	32.4	25.2	29.7	38.7	39.5	39.0	44.5	48.3	39.6	30.1	-	
K31	413400	417495	35.5	30.6	45.3	32.5	25.0	26.3	29.4	30.0	29.5	32.4	34.1	37.4	32.3	24.6	-	
K32	413513	417481	59.7	48.3	54.7	46.3	47.6	43.2	47.2	48.0	49.2	51.9	52.1	53.6	50.2	38.1	32.7	
K33	420727	423668	33.6	39.8	52.1	42.4	34.7	29.1	32.4	38.8	39.6	34.2	49.2	51.5	39.8	30.2	-	
K34	420845	423770	45.4	39.8	59.9	47.3	37.0	34.1	37.9	47.8	46.3	42.3	44.2	48.1	44.2	33.6	-	
K35	420853	423866	58.1	53.7	64.1	55.3	56.4	56.0	55.2	63.7	64.1	54.6	63.4	61.5	58.8	**44.7**	33.7	
K36	420304	419766	40.7	32.7	51.1	39.6	33.6	26.8	32.3	37.8	39.4	32.0	37.8	42.5	37.2	28.3	-	

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 <(x.x)>	Annual Mean: Distance Corrected to Nearest Exposure	Comment
K37	420356	427810	37.2	34.8	44.9	30.5	28.4	28.8	30.8	30.9	31.3	35.3	44.5	40.1	34.8	26.4	-	
K38	420222	427764	51.7	39.5	58.2	48.1	47.8	43.7	45.6	47.2	47.4	42.7	55.0	51.2	48.2	36.6	25.5	
K39	424526	424326	47.2	39.7	56.9		34.3	30.6	34.5	41.4	42.5	41.1	53.2	55.0	43.3	32.9	-	
K40	424922	421972	67.2	59.3	69.3	61.5	58.7	54.6	57.2	56.0	61.9	65.8	70.1	68.2	62.5	**47.5**	**43.8**	
K41	418285	426630	32.5	45.7	41.2	34.3	32.9	35.5	35.1	38.3	38.8	37.5	40.2	42.7	37.9	28.8	-	
K42	424969	422002	43.6	40.0	58.8	44.6	33.1	30.0	35.6	41.2	44.5	46.8	57.2	57.1	44.4	33.7	-	
K43	425093	422024	52.5	55.3	46.6	46.0	39.9	38.7	40.4	43.2	45.1	51.8	53.9	59.9	47.8	36.3	30.3	
K44	425179	422116	51.3	45.2	41.4	32.3	34.0	37.8	42.6	33.8	36.0	42.6	46.3	45.7	40.8	31.0	-	
K45	414483	417726	41.3	34.0	53.3	42.1	41.5	42.3	44.7	45.3	49.3	47.9	51.0	48.3	45.1	34.3	-	
K46	414402	417806	27.7	26.1	44.1	31.4	20.8	16.9	21.3	26.9	29.1	26.9	34.0	31.1	28.0	21.3	-	
K47	407942	417261	44.1	52.8	39.0	41.0	43.9	47.5	48.2	46.4	41.2	38.1	37.1	39.1	43.2	32.8	-	
K48	421039	423673	63.4	54.9	65.2	50.7	47.9	45.0	58.3	57.8	52.6	58.1	62.1	63.4	56.6	**43.0**	-	
K49	413659	416182	43.3	44.9	53.5	44.0	33.8	37.4	35.8	40.7	44.2	47.1	50.6	55.8	44.3	33.6	-	
K50	413414	415981	56.7	56.3	64.5	54.0	46.5	46.2	46.4	48.8	47.3	57.4	64.0	53.5	53.5	**40.6**	37.9	
K51	421898	423576	50.5	42.5	49.4	43.7	37.0	31.5	35.0	38.9	41.0	39.4	37.2	47.3	41.1	31.2	-	
K52	417627	416472	43.0	35.1	44.2	37.0	33.6	31.0	34.5	35.2	36.7	34.0	38.7	40.3	36.9	28.1	-	
K53	411564	415902	41.1	38.0	43.9	37.4	32.3	30.7	29.7	33.0	37.5	31.8	42.5	44.7	36.9	28.0	-	
K54	425196	421566	57.4	48.9	52.3	43.8	39.7	41.5		84.0	42.9	44.1	47.6	48.3	50.0	38.0	35.2	
K55	414187	408264	44.2	36.6	30.6	32.7	30.7	31.2	30.3	30.1	31.6	31.7	37.8	38.6	33.8	25.7	-	
K56	415009	416420	38.6	48.0	60.6	50.5	42.9	40.8	42.3	46.5	48.5	43.6	56.8	50.3	47.5	36.1	-	
K57	414291	417281	29.5	30.4	39.5	27.3	20.0	16.1	20.6	20.2	24.2	28.5	37.6	32.7	27.2	20.7	-	

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 <(x.x)>	Annual Mean: Distance Corrected to Nearest Exposure	Comment
K58	414350	417270	54.8		49.5	41.5	45.7	40.0	45.4	43.3	42.6	45.2	55.4	55.5	47.2	35.9	-	
K59	412944	417244	39.3	34.7	41.5	36.4	31.3	12.2	26.7	33.5	37.4	33.2	37.5	39.0	33.6	25.5	-	
K60	422435	425889	50.2	38.9	41.7	31.4	27.4	27.7	30.7	34.0	34.8	35.8	43.0	45.3	36.7	27.9	-	
K61	420441	427353	39.8	38.5	46.6	31.4	29.5	30.1	32.3	28.5	37.7	36.0	43.0	43.4	36.4	27.7	-	
K62	420472	427360	45.3	44.2	40.2	25.8	26.9	28.6	29.9	23.0	25.2	40.0	43.2	41.6	34.5	26.2	-	
K63	419866	427561	26.9	39.0	43.7	38.6	25.3	25.3	27.8	27.7	26.5	26.4	34.6	38.6	31.7	24.1	-	
K64	419914	427588	53.7	62.6	66.4	48.2	51.3	53.7	55.9	53.5	53.4	62.9	67.1	61.1	57.5	**43.7**	-	
K65	419981	427623	53.1	54.5	49.9	42.2	37.2	41.0	41.7	40.5	40.0	43.5	51.9	54.8	45.9	34.9	-	
K66	420349	427434	25.1	27.9	34.5	21.5	18.9	15.7	20.1	18.0	20.7	25.6	31.6	25.3	23.7	18.0	-	
K67	421128	427298	30.7	30.9	34.2	23.9	22.7	21.0	25.1	22.4	24.0	30.6	36.2	35.3	28.1	21.3	-	
K68	425185	423684	39.5	33.6	40.1	27.9	25.1	22.6	24.6	27.7	28.0	30.1	38.0	38.3	31.3	23.8	-	
K69	418237	426555	42.1	35.4	36.4	32.0	25.9	24.0	24.9	29.0	29.6	28.9	37.1	38.9	32.0	24.3	-	
K70	423247	420761	41.5	32.5	50.3	37.8	32.7	31.8	39.9	44.1	44.8	54.3		45.4	41.4	31.4	-	
K71	411007	419190	32.4	33.8	45.0	36.6	31.2	24.4	25.9	31.3	26.7	24.5	32.9	35.1	31.7	24.1	-	
K72	410227	418653	43.9	33.3	36.5	35.3	33.6	33.1	31.6	35.2	32.6	27.4	30.1	39.2	34.3	26.1	-	
K73	410080	418568	48.5	35.2	43.9	39.0	38.4	36.5	34.5	39.0	28.4	30.2	37.0	40.8	37.6	28.6	-	
K74	410095	418559	31.8	31.1	32.5	30.2	24.3	21.2	21.3	25.5	22.6	21.7	22.1	31.7	26.3	20.0	-	
K75	413153	415894	14.9	37.1	52.0	39.2	33.2	28.1	31.2	32.4	37.0	35.4	43.3	44.2	35.7	27.1	-	
K76	413198	415957	40.0	42.1	49.4	39.5	27.5	25.1	26.3	28.2	32.2	30.9	40.4	46.7	35.7	27.1	-	
K77	413455	416013	66.4	55.7	58.0	52.8	52.5	50.5	51.5	56.2	55.9	50.2	53.7	58.8	55.2	**41.9**	39.4	
K78	413478	415953	30.2	24.6	40.1	33.3	22.8	16.1	19.6	25.6	26.4	24.7	32.5	37.2	27.8	21.1	-	

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 <(x.x)>	Annual Mean: Distance Corrected to Nearest Exposure	Comment
K79	423903	427756	30.7	40.6	51.0	52.1	33.9	31.5	35.8	46.3	44.1	34.7	45.5	50.4	41.4	31.5	-	
K80	425566	423696	38.1	38.1	44.1	34.8	29.6	24.3	30.5	30.8	36.0	35.4	37.7	38.9	34.9	26.5	-	
K81	422991	426992	35.0	35.3	44.5	39.0	29.8	25.5	31.7	32.2	37.9	40.2	47.5	46.1	37.1	28.2	-	
K82	422036	415941	23.2	17.8	25.6	22.1	18.1	16.5	17.7	21.8	21.6	20.5	24.8	25.6	21.3	16.2	-	
K83	424203	414975	30.6	25.7	39.5	29.8	27.6	24.9	27.6	30.2	27.2	32.6	35.6	34.0	30.4	23.1	-	
K84	422923	408553	24.1	21.7	35.8	27.4	21.3	18.8	20.2	24.8	26.6	22.4	26.9	31.6	25.1	19.1	-	
K85	419380	409777	25.1	21.8	33.0	24.0	19.0	17.1	19.6	18.1	22.7	23.8	29.1	29.2	23.5	17.9	-	
K86	415164	416323	28.4	31.1	41.6	33.0	28.3	24.5	28.5	31.3	36.0	34.3	39.5	29.3	32.2	24.4	-	
K87	424409	421271	47.9	39.7	50.7	39.5	30.6	32.9	36.4	39.4	37.4	43.2	48.0	50.4	41.3	31.4	-	
K88	422403	425845	41.6	39.4	48.6	38.1	32.5	29.3	32.1	37.5	39.0	39.6	48.2	49.0	39.6	30.1	-	
K89	419362	427203	39.8	34.5	41.7	34.8	30.6	29.9	32.9	34.9	33.1	40.1	51.4	42.0	37.1	28.2	-	
K90	419262	427060	40.7	35.3	42.4	38.5	32.1	30.0		35.0	32.0	36.5	41.3	36.2	36.4	27.6	-	
K91	412647	418008	30.0	25.7	52.5	33.7	33.2		36.1		44.8	35.5	38.1	38.1	36.8	27.9	-	
K92	418656	426078	44.7	31.8	39.3	26.5		21.6	26.1	27.2	27.7	29.5	38.4	34.7	31.6	24.0	-	
K93	427802	427802	35.2	36.9	54.8	44.3	29.8	21.4	27.6	30.0	33.1	32.1	41.9	37.0	35.3	26.9	-	
K94	426242	423106	41.4	46.1	53.6	41.1	32.2	31.9	36.7	36.6	40.0	44.2	55.1	50.3	42.4	32.2	-	
K95	414170	408118	36.0	32.0	36.7	33.9	25.2	20.9	22.6	23.7	27.3	28.6	33.8	36.2	29.7	22.6	-	
K96	414227	408161	31.6	28.1	33.2	25.7	21.7	20.2	21.7	25.3	25.9	25.2	29.4	29.7	26.5	20.1	-	
K97	409762	418019	20.4	20.0	31.4	22.0	16.1	13.8	17.3	19.0	18.6	18.5	23.9	25.0	20.5	15.6	-	
K98	414092	408133	33.2	28.6	34.1	33.4	26.9	21.2	21.9	24.9	26.7	25.8	30.1	30.1	28.1	21.3	-	
K99	426312	422830	20.0	24.1	46.2	30.3	19.6	17.0	19.7	26.7	29.9	25.4	36.1	36.7	27.6	21.0	-	

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 <(x.x)>	Annual Mean: Distance Corrected to Nearest Exposure	Comment
K100	412477	417290	36.2	27.0	39.6	29.0	20.0	20.4	21.7	24.5	23.7	25.1	30.1	33.7	27.6	21.0	-	
K101	413531	417137	32.7	26.7	49.7	40.8	27.7	22.7	26.2	32.6	37.8	30.8	35.8	40.3	33.7	25.6	-	
K102	418540	421188	41.7	43.9	39.8	32.6	28.2	24.7	23.6	29.5	31.6	28.9	35.0	38.5	33.2	25.2	-	
K103	419426	420293	35.5	30.8	39.1	30.8	21.7	19.4	21.8	23.3	24.3	26.9	32.1	36.8	28.5	21.7	-	
K104	415810	420554	34.2	25.6	34.7	22.5	21.2	22.1	25.8	27.0	25.5	30.5	32.6	33.6	27.9	21.2	-	

☒ **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 2022 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 During 2022

Kirklees Council has identified the following significant sources relating to air quality within the reporting year of 2022. These formally approved planning applications were all assessed for their operational phase air quality impact and suitable mitigation of impact conditioned in accordance with the WYLES AQ and Emissions Technical Planning Guidance document:

- Chidswell, Dewsbury, 2020/92331, (full application approved 2022), hybrid application including 1350 residential units
- Blackmoorfoot, Huddersfield, 2020/19546 (outline application, approved 2022), 770 residential units, including ancillary development
- Huddersfield Cultural Heart, 2022/92348 (full application, approved 2022), proposed redevelopment of Huddersfield town centre

The Councils' Environmental Planning team review all planning applications for air quality impact in accordance with the WYLES guidance, along with the issuing of S106 planning agreements to offset impact, when appropriate.

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

Additional Air Quality Works Undertaken Kirklees Council During 2022

Kirklees Council has not completed any additional works within the reporting year of 2022

QA/QC of Diffusion Tube Monitoring

Nitrogen dioxide diffusion tubes for 2022 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 2022 was based two of the AIR PT annual performance criteria for NO_2 diffusion tubes used in Local Air Quality Management[14]. For these AIR PT rounds (AR049 January-February 2022 and AR050 May-June 2022), the results of measurements based on a satisfactory z-score of < +/- 2 were 100%. Changing of tubes adhered to the 2022 Diffusion Tube Monitoring Calendar.

Diffusion Tube Annualisation

Annualisation is required for any site with data capture less than 75% but greater than 25%. Our Kirklees Council 2022 diffusion tube data have been annualised where required using Defra's Diffusion Tube Data Processing Tool v3.0, following guidance within Chapter 7 of LAQM.TG22: NOx and NO2 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 Barnsley Gawber, Dewsbury Ashworth Grove, Leeds Centre and Bradford Mayo Avenue. Annualised data are presented in Table C.1 below. The diffusion tubes sites requiring annualisation of 2022 data are K6, K6a, K10 and K12.

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

Table C.1 – Annualisation Summary (concentrations presented in µg/m^3)

Site ID	Annualisation Factor Leeds Centre	Annualisation Factor Dewsbury Ashworth Grove	Annualisation Factor Bradford Mayo Avenue	Annualisation Factor Barnsley Gawber	Average Annualisation Factor	Raw Data Annual Mean	Annualised Annual Mean
K6 (NO_2)	0.9778	0.9804	1.0003	0.9526	0.9778	49.5	48.4
K6a (NO_2)	1.0225	1.0204	0.9996	1.0527	1.0238	41.8	42.8
K10 (NO_2)	1.0264	1.0485	1.0384	1.0140	1.0318	15.7	16.2
K12 (NO_2)	1.0264	1.0485	1.0384	1.0140	1.0318	20.9	21.6
CM3 (NO_2)	0.8671	0.8500	0.9147	0.8224	0.8635	21.2	18.3
Site ID	Annualisation Factor Leeds Centre	Annualisation Factor Hull Freetown	Annualisation Factor York Bootham	Annualisation Factor Sheffield Devonshire Green	Average Annualisation Factor	Raw Data Annual Mean	Annualised Annual Mean
CM1 (PM_{10})	1.132625	1.194688	1.090536	1.177479	1.148832	11	12.6
CM1 ($PM_{2.5}$)	1.136096	1.245804	1.183249	1.200659	1.191452	7	8.3
CM2 ($PM_{2.5}$)	0.989205	1.146109	1.013192	1.086154	1.058665	9.1	9.7
CM3 ($PM_{2.5}$))	0.989205	1.146109	1.013192	1.086154	1.058665	8.2	8.7

Diffusion Tube Bias Adjustment Factors

The diffusion tube data presented within the 2022 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 0.76 to the 2022 monitoring data. A summary of bias adjustment factors used by Kirklees Council over the past five years is presented in Table C.2.

Kirklees Council currently have two co-location studies conducted at our monitoring stations, but due to inadequate data capture in 2022, none of our studies had data capture >75% and are therefore not valid to be used to generate a local bias adjustment factor.

Consequently, we interrogated the National Bias Adjustment Factor Spreadsheet[15] for co-location studies in 2022 using Socotec analysis of diffusion tubes (50% TEA in acetone). There were 26 co-location studies to subsequently generate our 2022 bias adjustment factor.

In 2021 previously we also used a nationally derived bias adjustment factor (Socotec, 50% TEA in acetone), and note the similarity of the factors for 2021 and 2022 (0.78 and 0.76 respectively).

Table C.2 – Bias Adjustment Factor

Monitoring Year	Local or National	If National, Version of National Spreadsheet	Adjustment Factor
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
2018	National - WY Analytical Services	09/17	0.8

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 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 Table B.1.

[15] National Bias Adjustment Factors | LAQM (defra.gov.uk)

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 Grove: the other being the use of Defra's 1 km grid square data[16]. 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.

Table C.3 – NO_2 Fall off With Distance Calculations (concentrations presented in µg/m^3)

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		45.5	20.7		
K2	4.1		36.9	18.0		
K3	2.4	4.4	41.5	18.0	38.0	
K6	4.0	11.6	36.8	18	31.2	
K7	0.5	1.0	40.0	18	37.3	
K13	2.6	4.7	28.5	18	27.1	Additional calculation outside of diffusion tube processing tool to inform Table 2.1 (current concentrations within AQMA 4)
K17	6	14	30.7	18	27.3	Additional calculation outside of diffusion tube processing tool to inform Table 2.1 (current concentrations within AQMA 3)
K21	2.1	9.0	37.8	18.0	30.9	
K28	3.1	3.2	41.0	19.3	40.8	
K32	2.6	7.6	38.1	18.0	32.7	
K35	1.9	11.3	44.7	18.0	33.7	
K38	1.0	19.3	36.6	18.0	25.5	
K40	1.6	2.8	47.5	18.0	43.8	
K43	1.9	7.9	36.3	18.0	30.3	
K50	2.5	4.1	40.6	18.0	37.9	

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

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
K54	3.2	5.9	38.0	20.7	35.2	
K56	2.8		36.1	18.0		
K64	0.1		43.7	18.6		
K77	2.2	3.4	41.9	18.0	39.4	

QA/QC of Automatic Monitoring

Continuous monitoring for 2022 have been scaled, validated and ratified in house, including the removal of erroneous data (in accordance with paragraph 7.153 of LAQM.TG (22)) and applying relevant scaling calculations in line with LAQM.TG (22).

Tables C5 and C6 below detail the QA/QC regime for each of our continuous monitoring stations.

Table C.5 Roadside 3 – Bradley Details

Station	Roadside 3 – Bradley
Analyser Model	Horiba: APNA-360CE, MET-One BAM
Logging system	Each analyser has a data distribution board and communicates directly via modem for data several times per day per day
Calibration Gas	450 ppb NO in N_2, zero air scrubber
Routine Calibration	Onsite LSO calibration every two to four weeks
Daily zero and span Check	No
Air Conditioning	Yes
Service Contract	Horiba: 2 x 6 monthly service and breakdown/repair call out.

Table C.6 Roadside 6– Ainley Top Details

Station	Roadside 6 – Ainley Top
Analyser Model	Horiba: APNA-360CE, MET-One BAM
Logging system	Each analyser has a data distribution board and communicates directly via modem for data several times per day per day
Calibration Gas	450 ppb NO in N_2, zero air scrubber
Routine Calibration	Onsite LSO calibration every two to four weeks
Daily zero and span Check	No
Air Conditioning	Yes
Service Contract	Horiba: 2 x 6 monthly service and breakdown/repair call out.

PM_{10} and $PM_{2.5}$ Monitoring Adjustment

Kirklees Council currently use MET-One Heated Beta Attenuation Monitors for $PM_{2.5}$. In accordance with LAQM.TG (22) paragraph 7.155 a correction factor is not required.

Automatic Monitoring Annualisation

Automatic monitoring annualisation data is presented in Table C.1. Annualisation is has been undertaken for the automatic monitoring data capture less than 75% but greater than 25%.

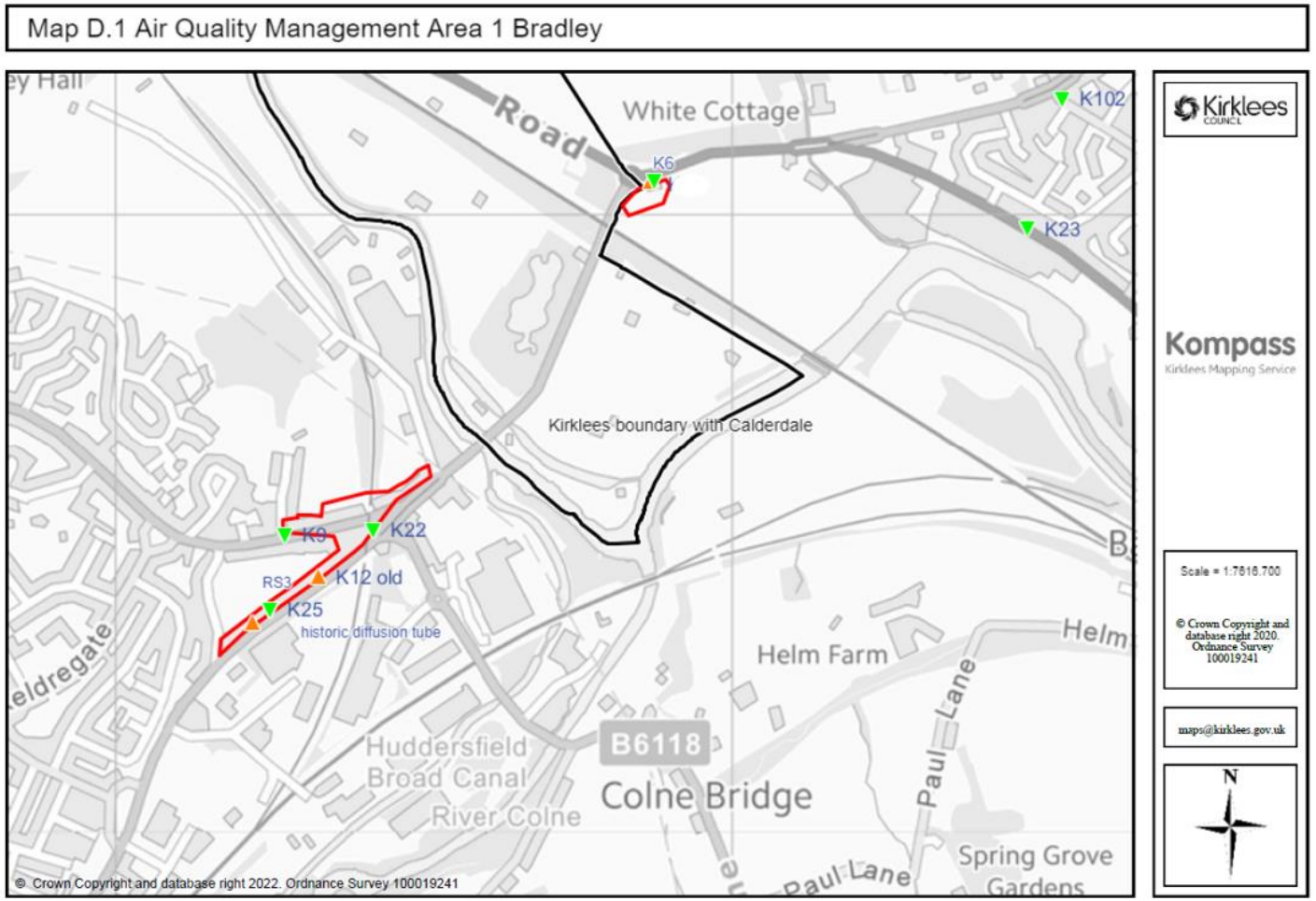
Automatic monitoring annualisation was undertaken for the 2022 Dewsbury Ashworth Grove (CM1) PM_{10} and $PM_{2.5}$ data and for $PM_{2.5}$ for our CM2 (Bradley) and CM3 (Ainley Top) datasets. These data were annualised against the appropriate 2022 particulate matter data for Leeds Centre, Hull Freetown, York Bootham and Sheffield Devonshire Green AURN urban centre and urban background monitoring stations. Automatic monitoring annualisation was also undertaken for the 2022 NO_2 dataset for our CM3 (Ainley Top) monitoring station. Relevant annual and period monitoring data capture rates can be found in tables A.6, A.7 and A.8. Annualisation was undertaken in accordance with LAQM.TG (22).

NO_2 Fall-off with Distance from the Road

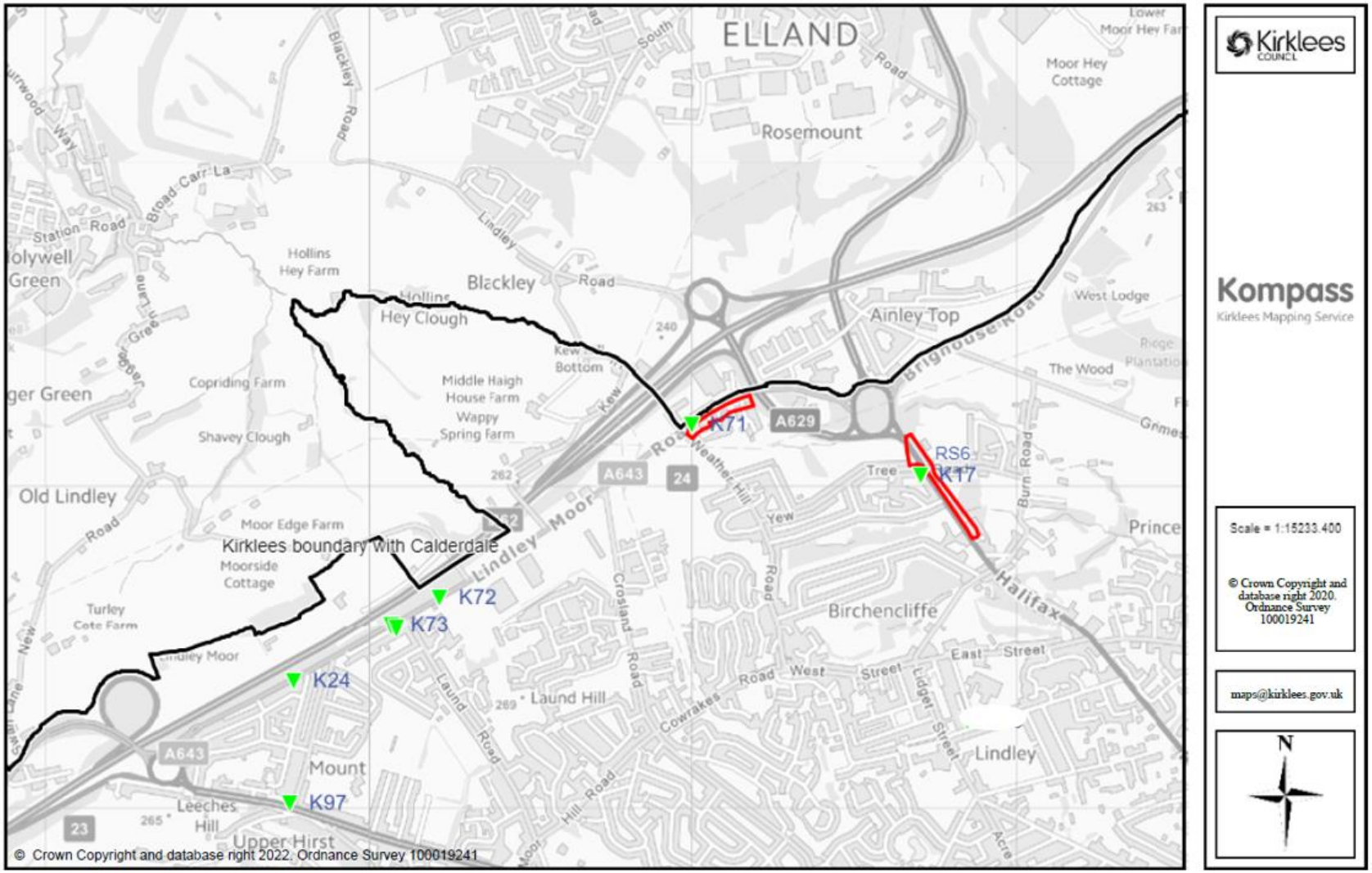
Wherever possible, monitoring locations are representative of exposure. However, where this is not possible, the NO_2 concentration at the nearest location relevant for exposure has been estimated using the NO_2 fall-off with distance calculator available on the LAQM Support website. Where appropriate, non-automatic annual mean NO_2 concentrations corrected for distance are presented in Table B.1.

Appendix D: Map(s) of Monitoring Locations and AQMAs

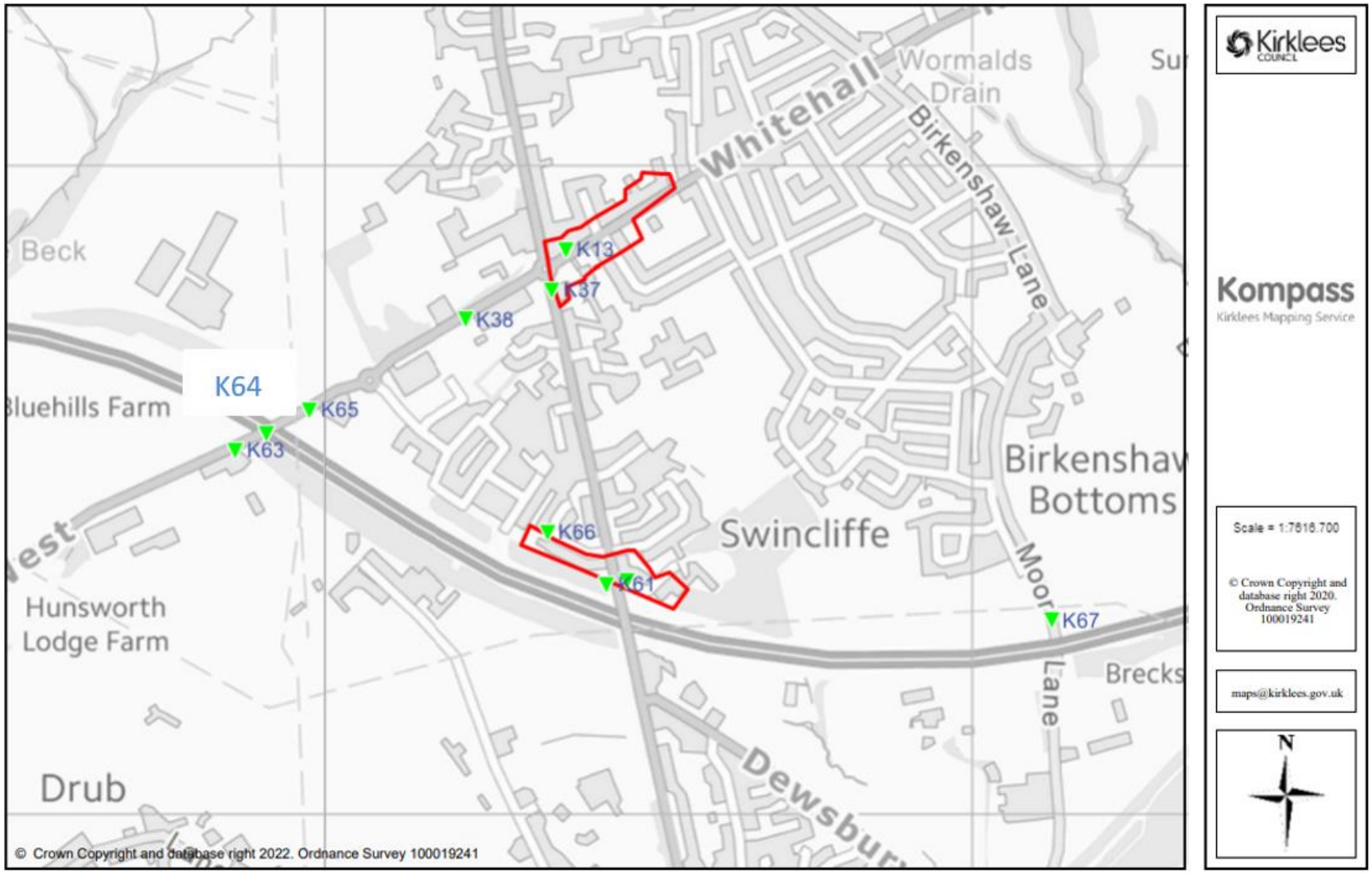
Figure D.1 – Map of Non-Automatic Monitoring Site



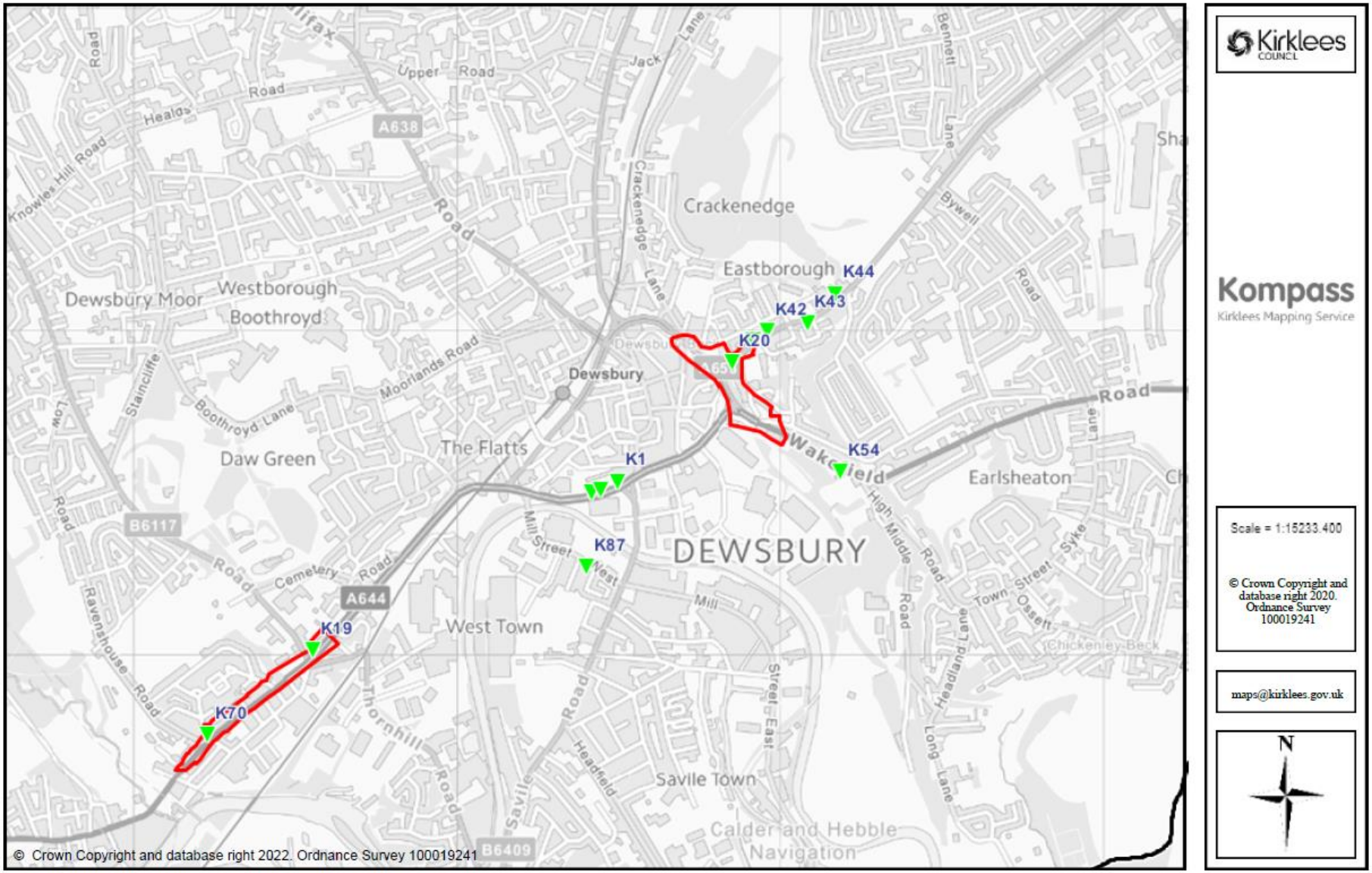
Map D.2 Air Quality Management Area 3 Ainley Top



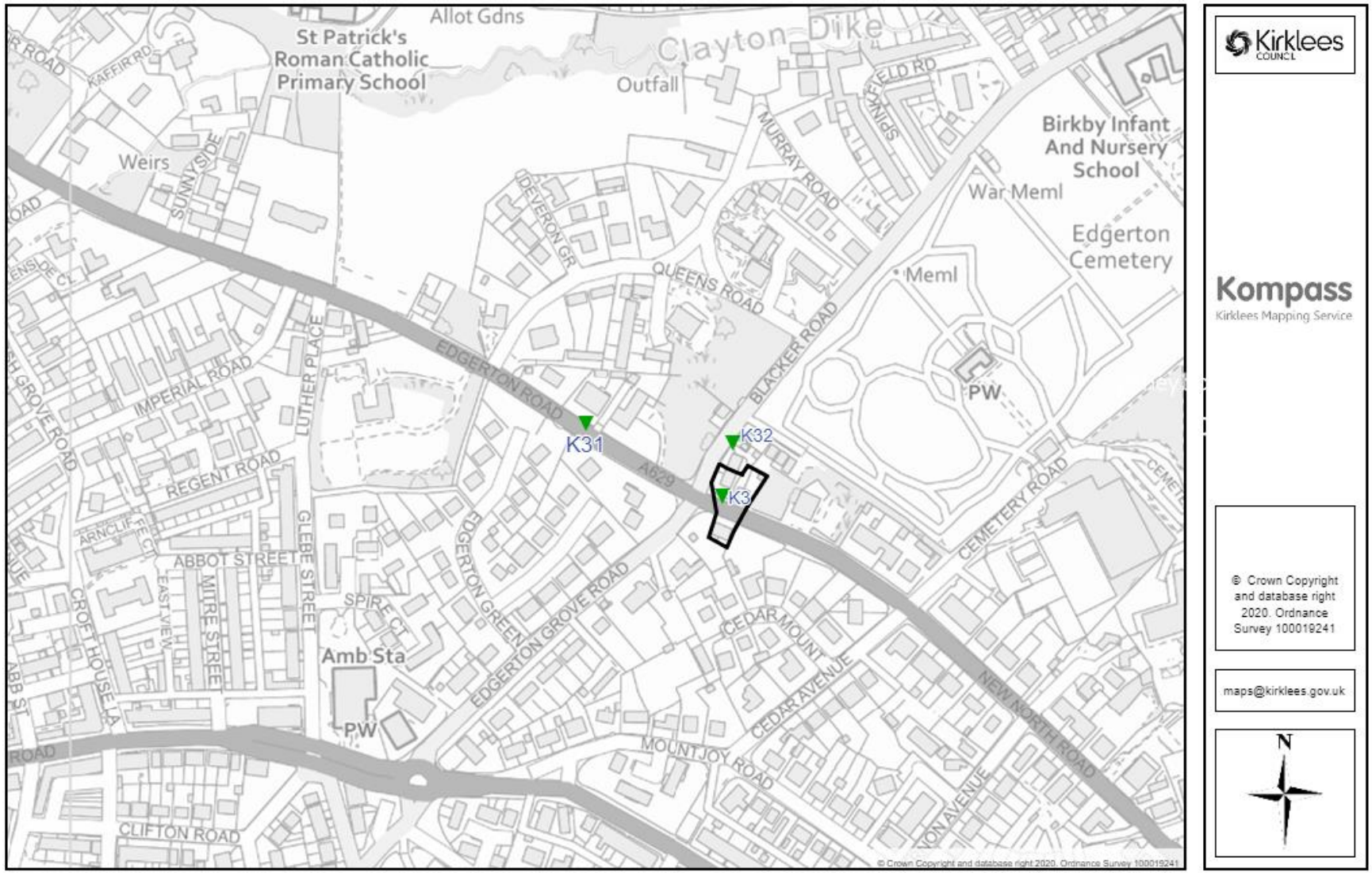
Map D.3 Air Quality Management Area 4 Birkenshaw



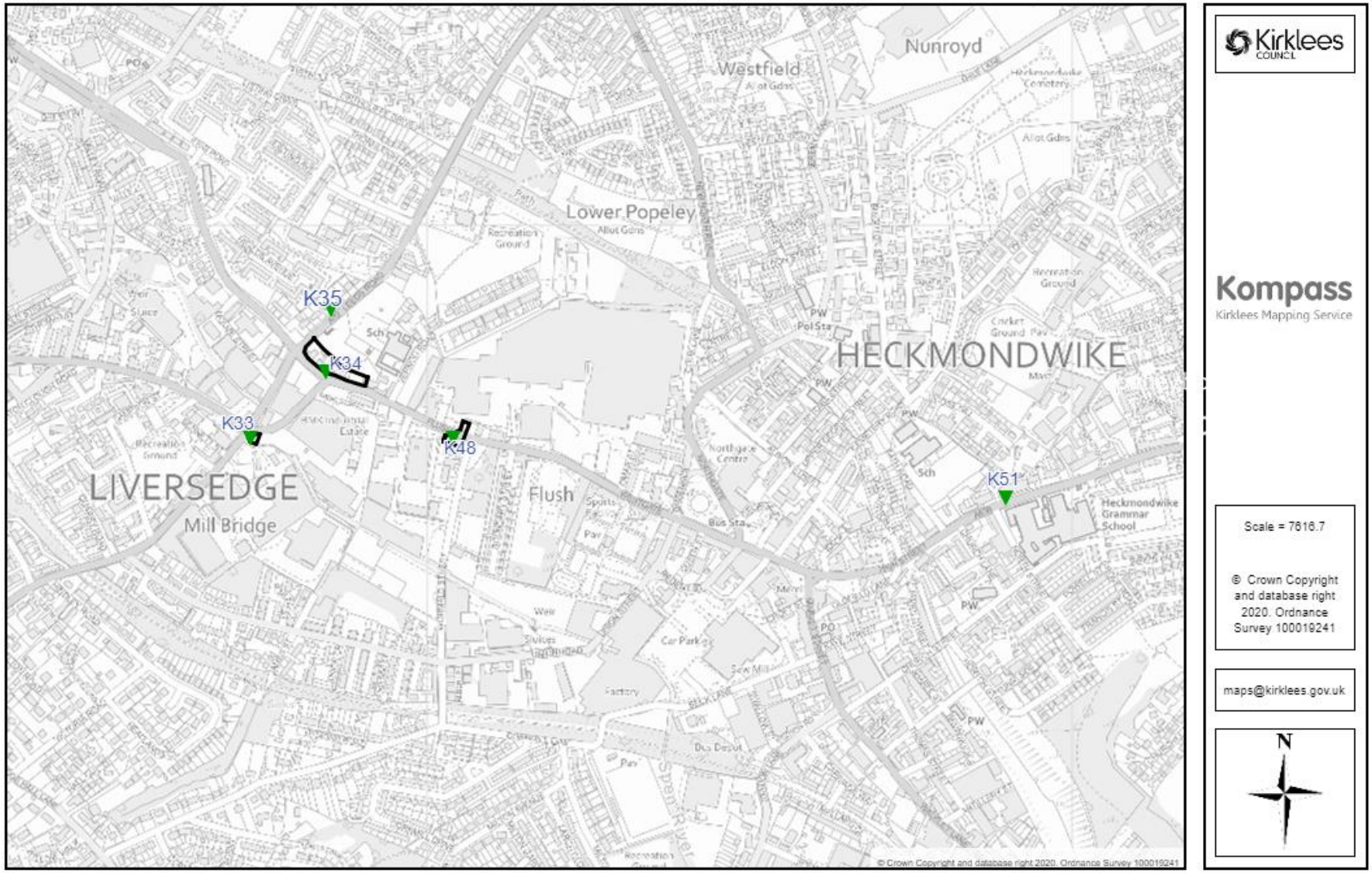
Map D.4 Air Quality Management Area 5 Eastborough



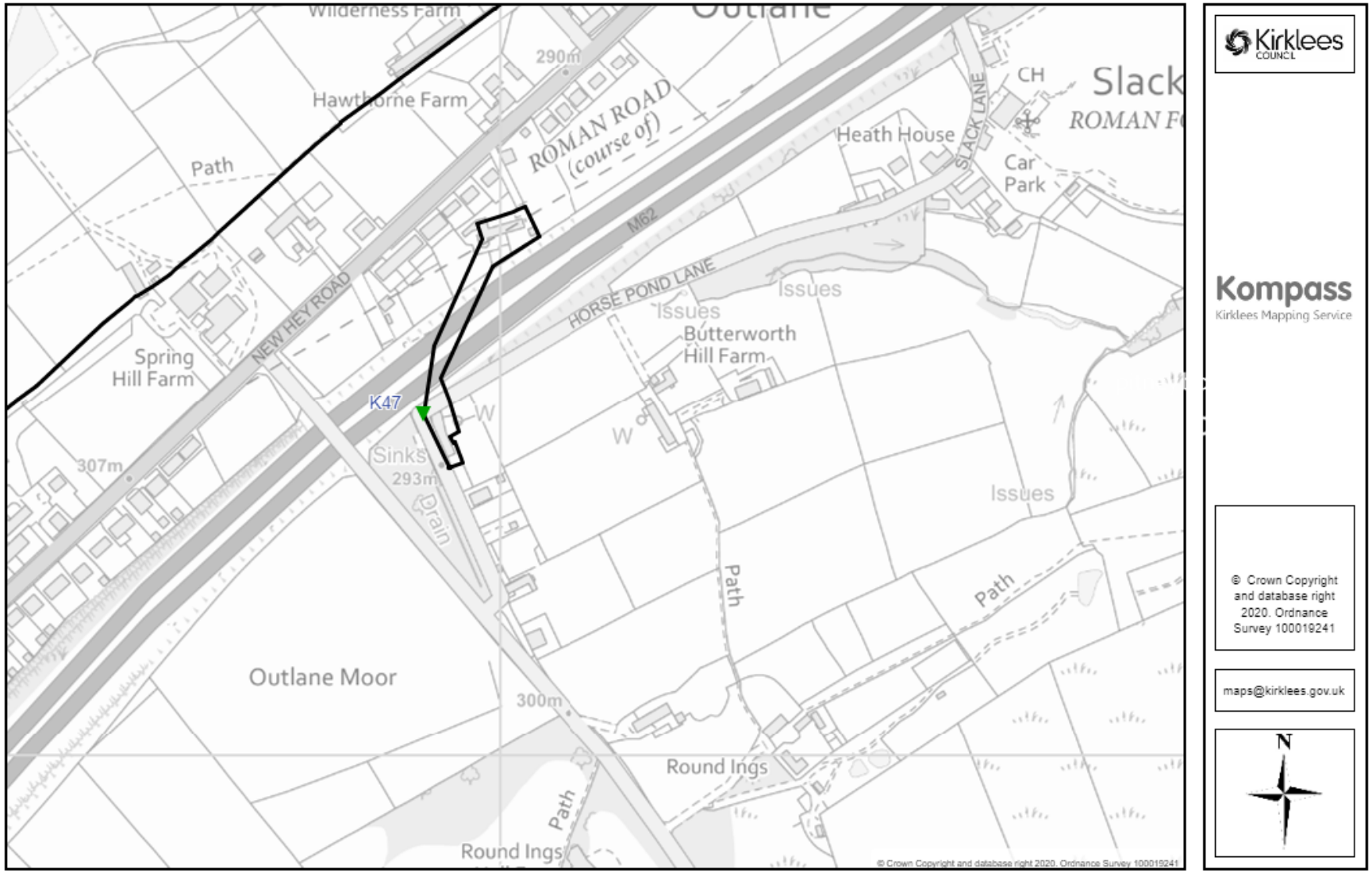
Map D.5 Air Quality Management Area 6 Edgerton



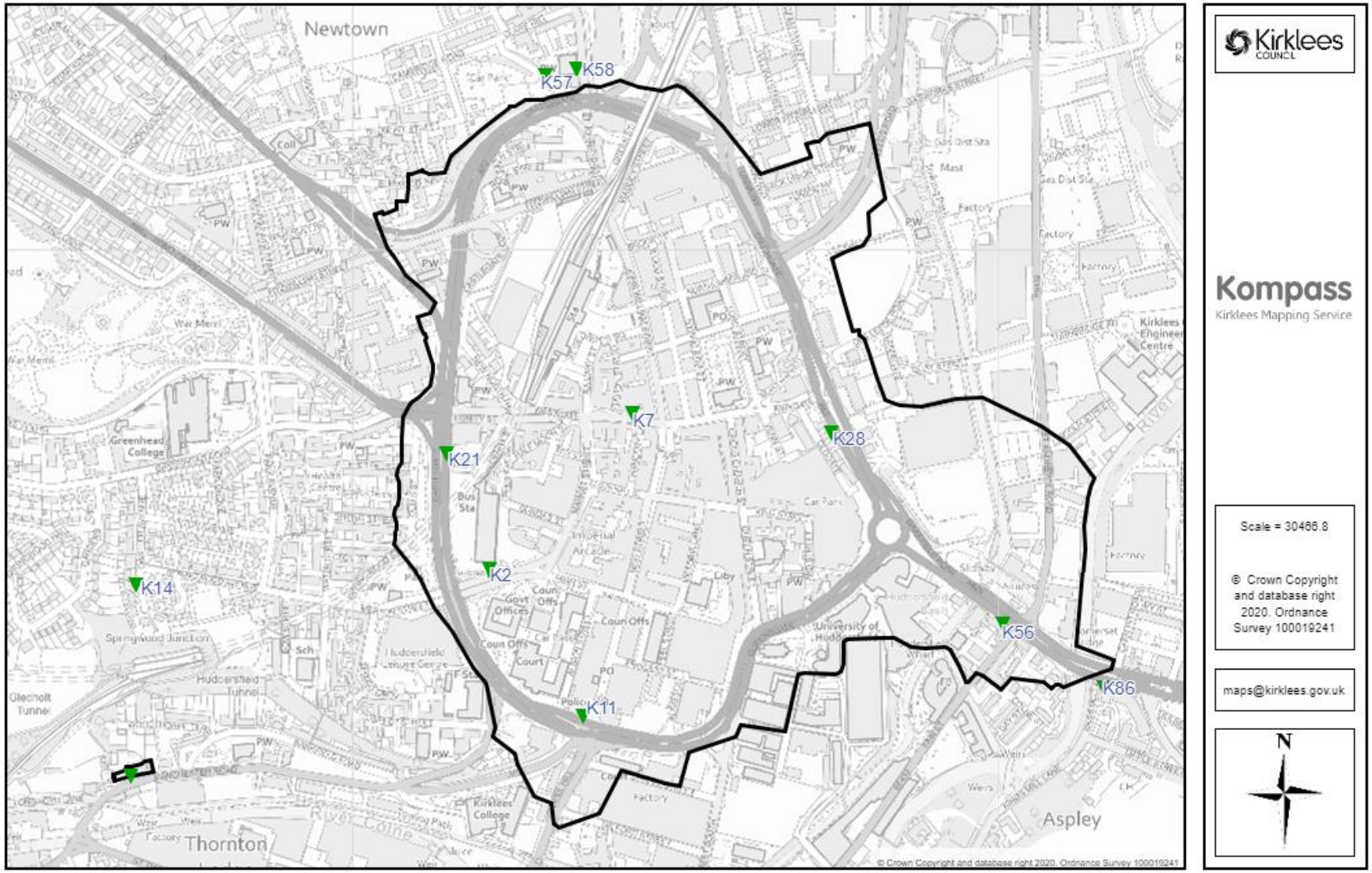
Map D.6 Air Quality Management Area 7 Liversedge



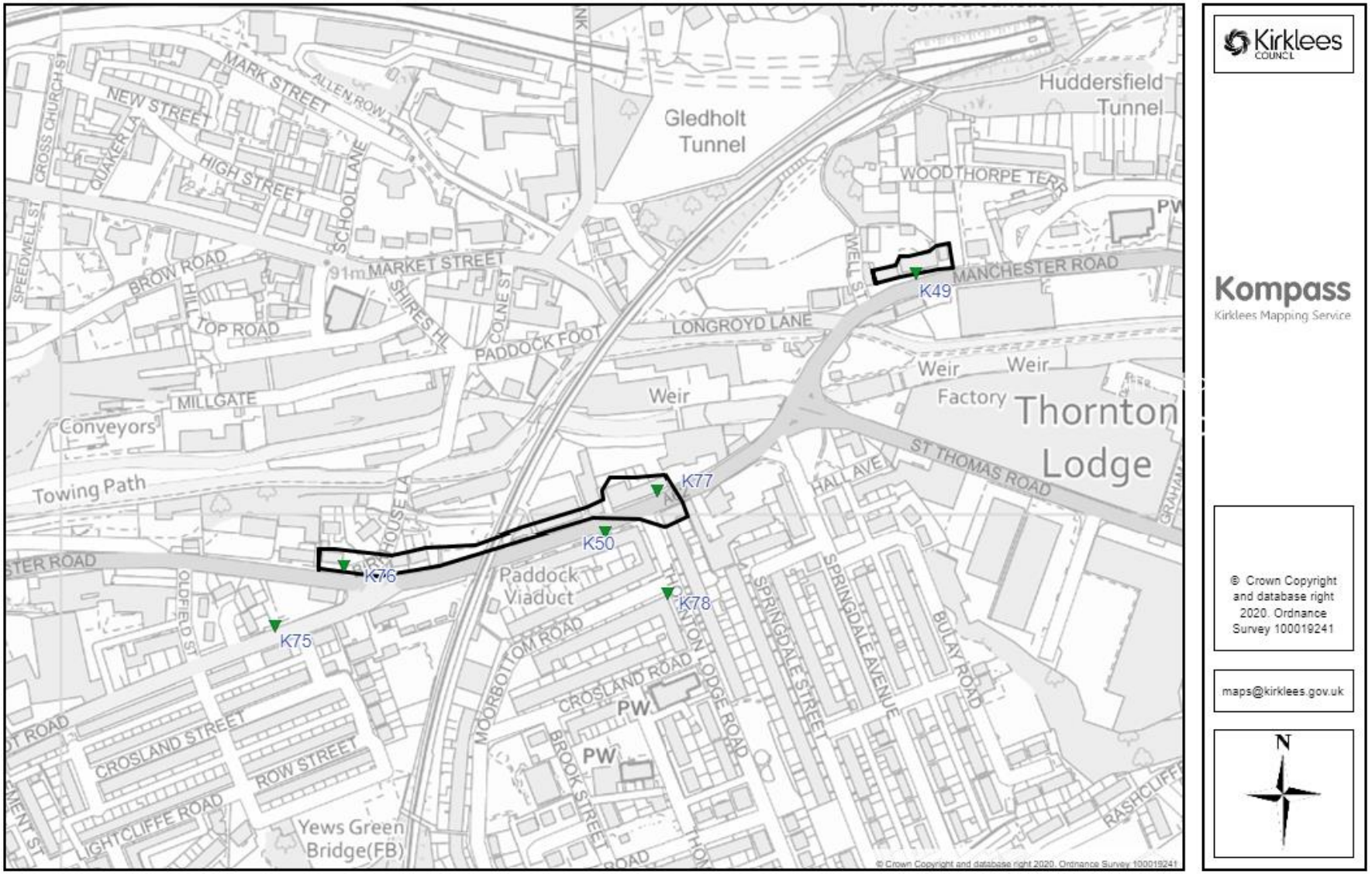
Map D.7 Air Quality Management Area 8 Outlane



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



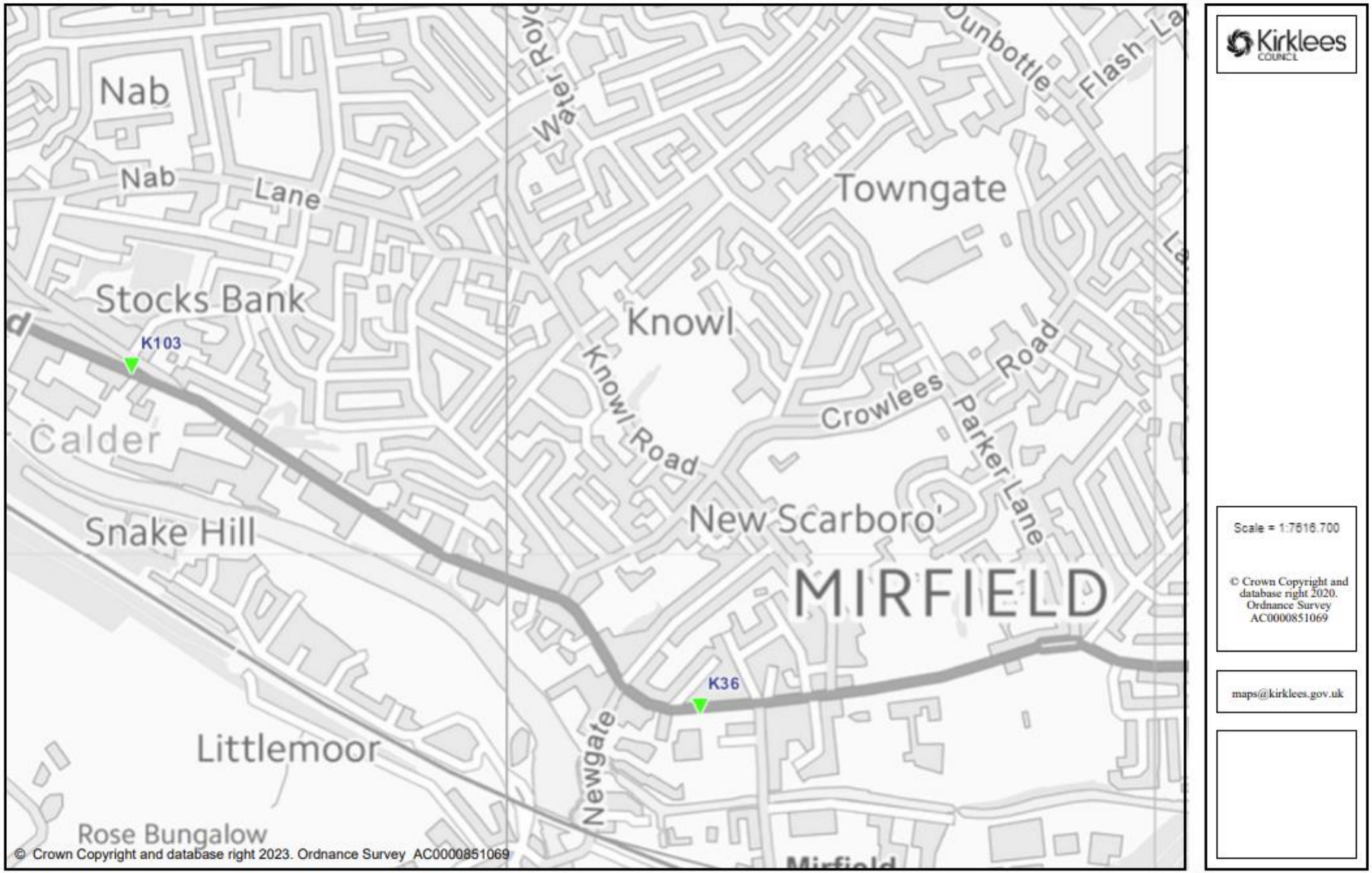
Map D.9 Air Quality Management Area 10 Thornton Lodge



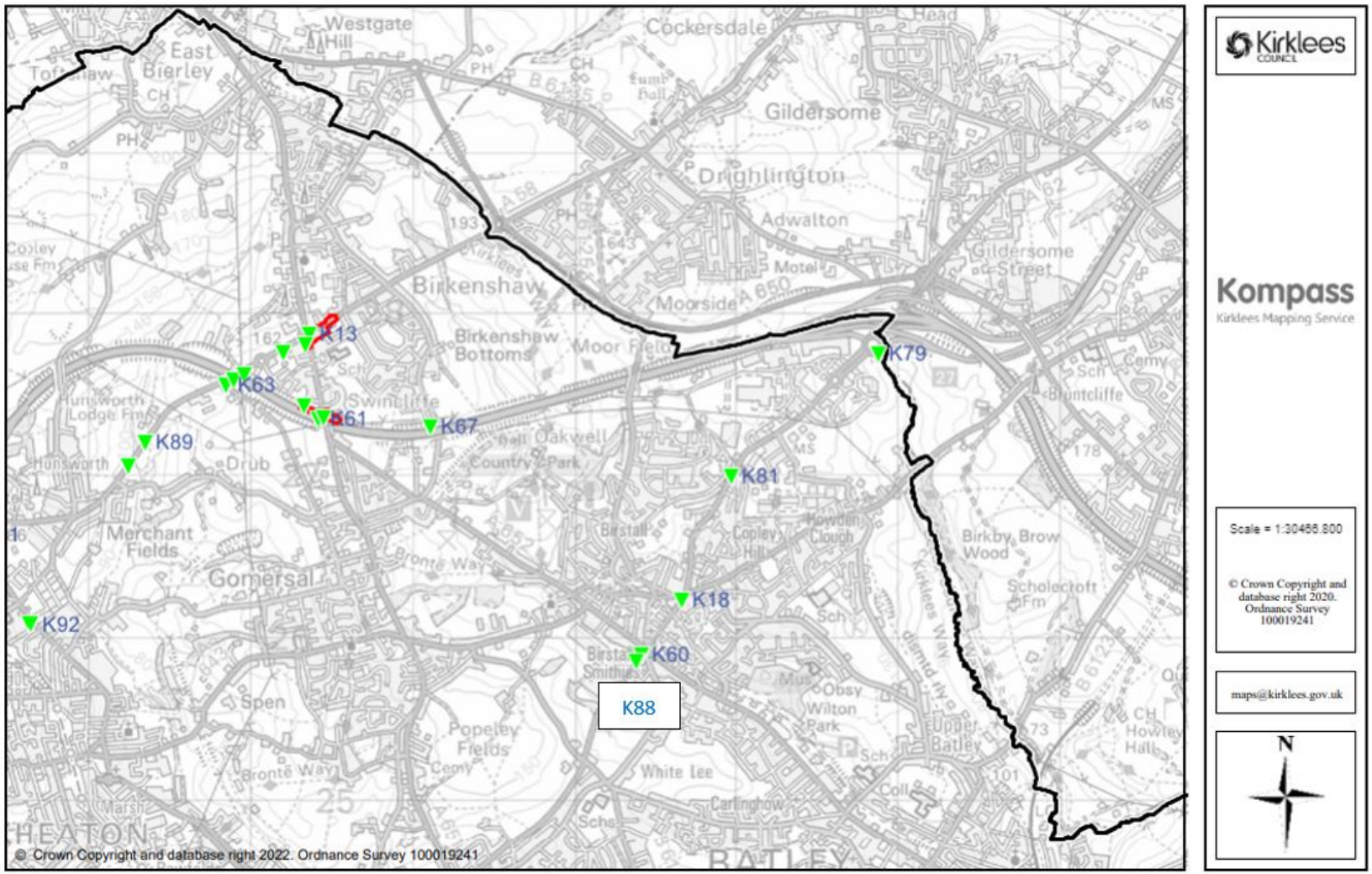
Map D.10 Air Quality Monitoring in Batley

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

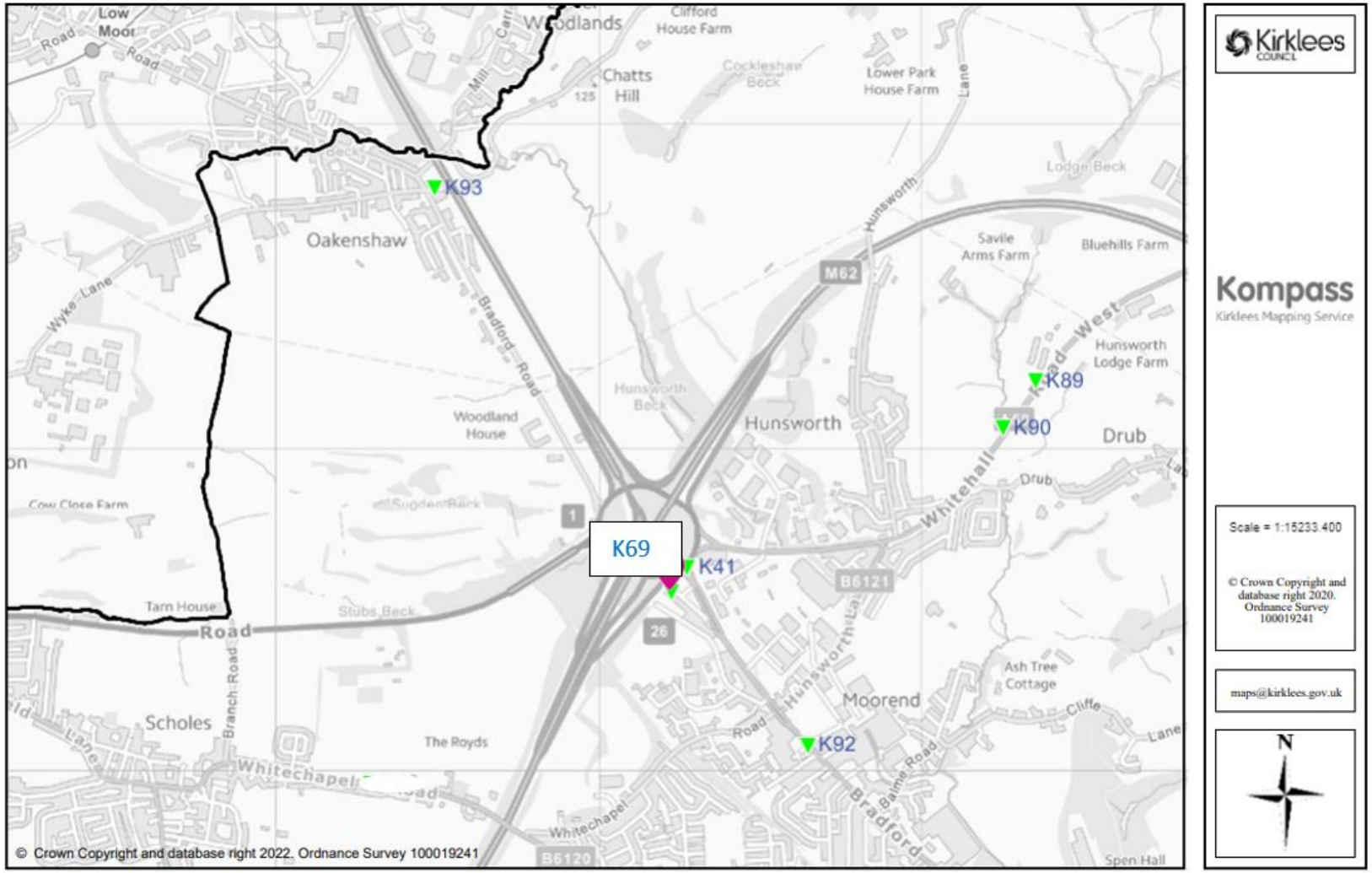
Map D.12 Air Quality Monitoring in Mirfield



Map D.13 Air Quality Monitoring in Birstall



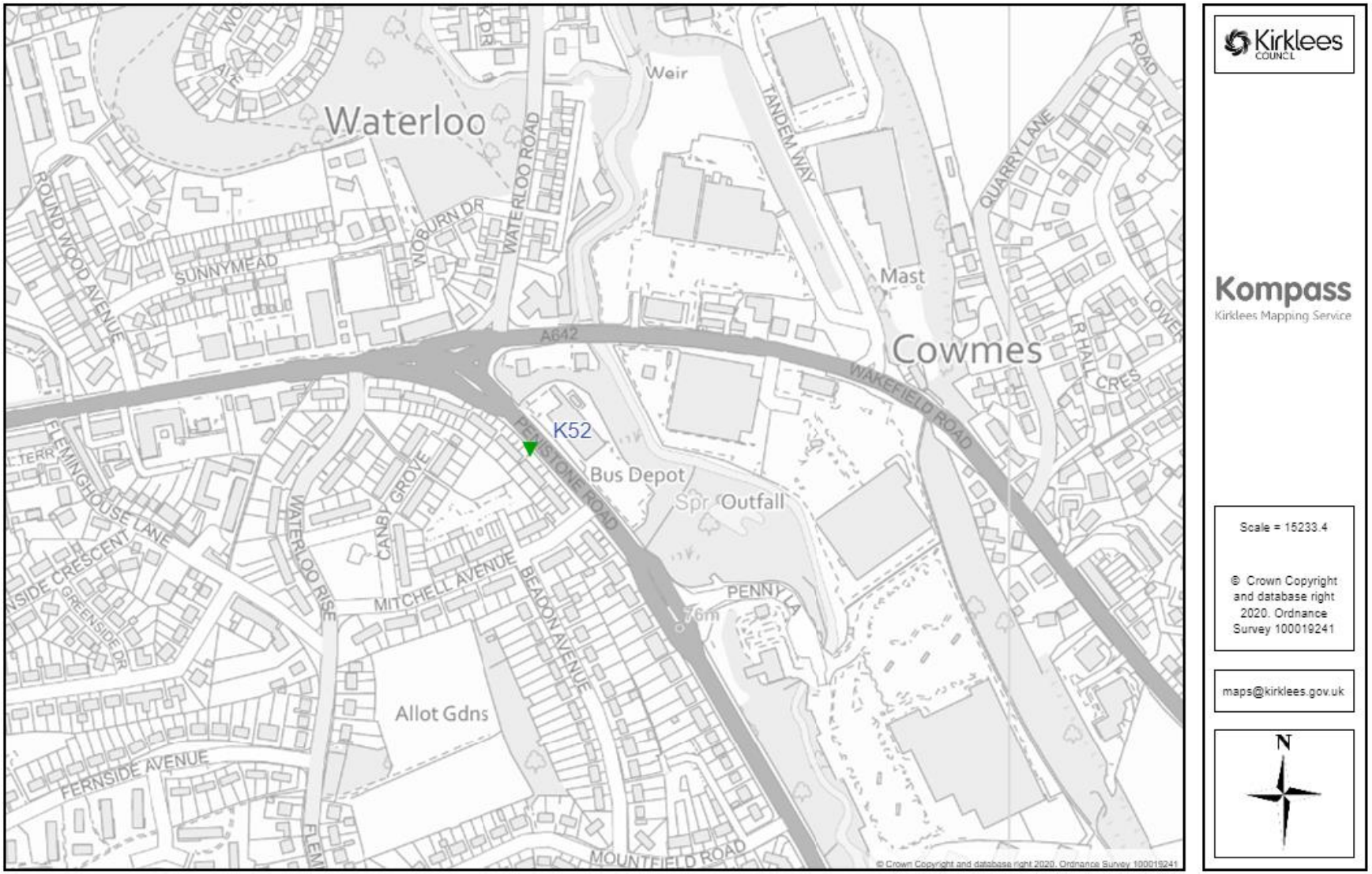
Map D.14 Air Quality Monitoring in Cleckheaton, Hunsworth & Oakenshaw



Map D.15 Air Quality Monitoring in Fartown

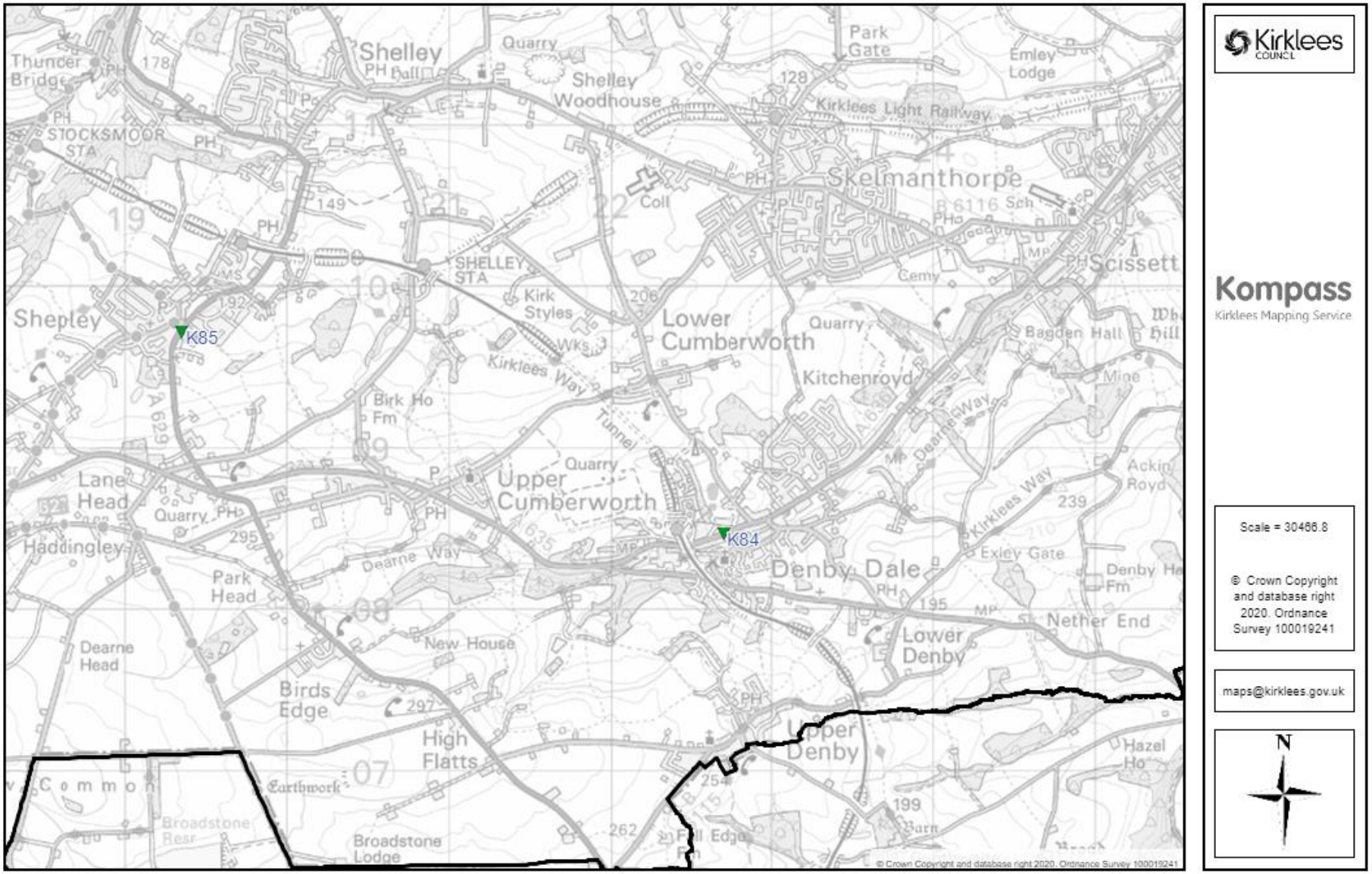
Map D.16 Air Quality Monitoring in Grange Moor and Flockton

Map D.17 Air Quality Monitoring in Waterloo

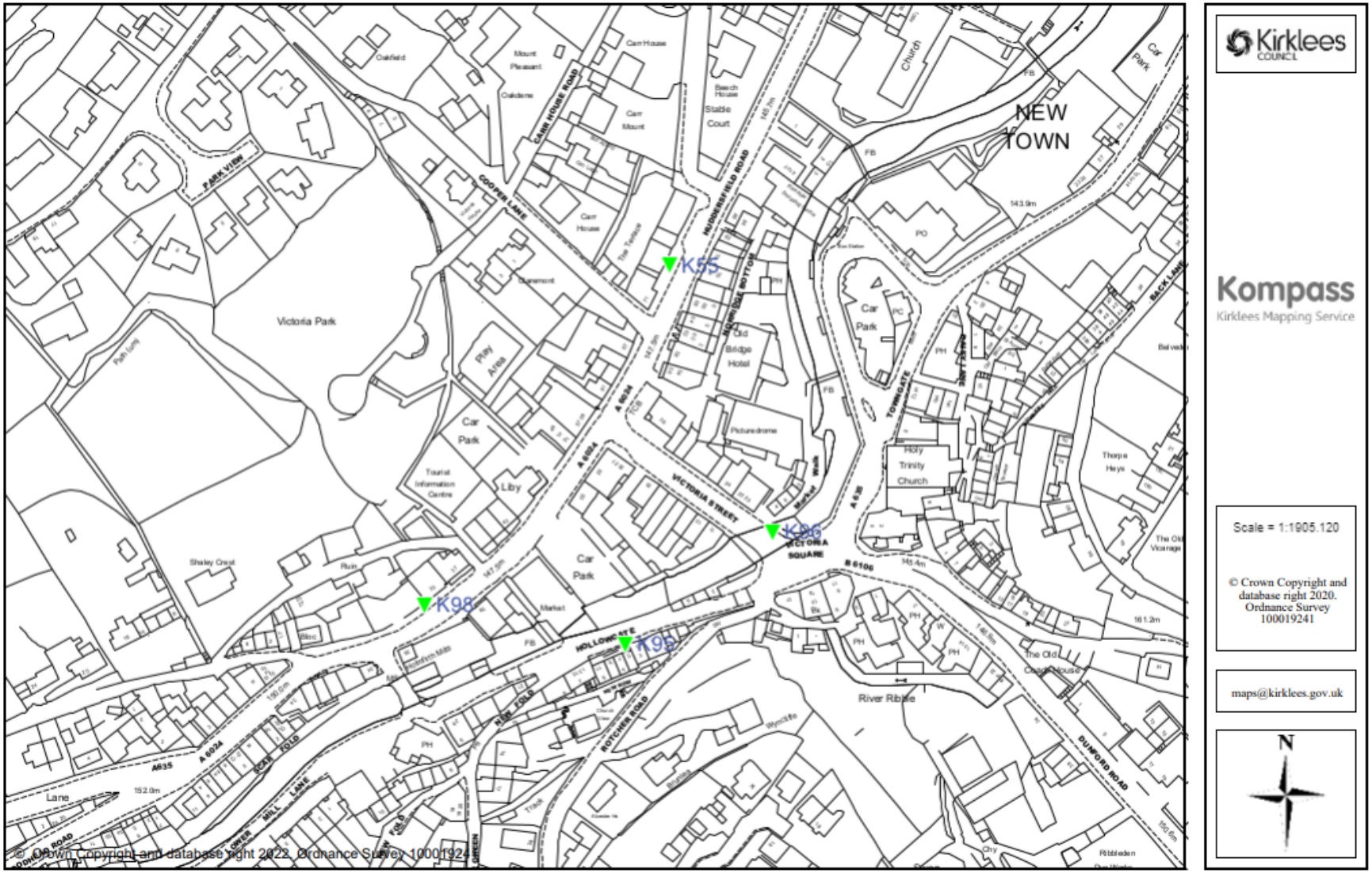


Map D.18 Air Quality Monitoring in Milnsbridge

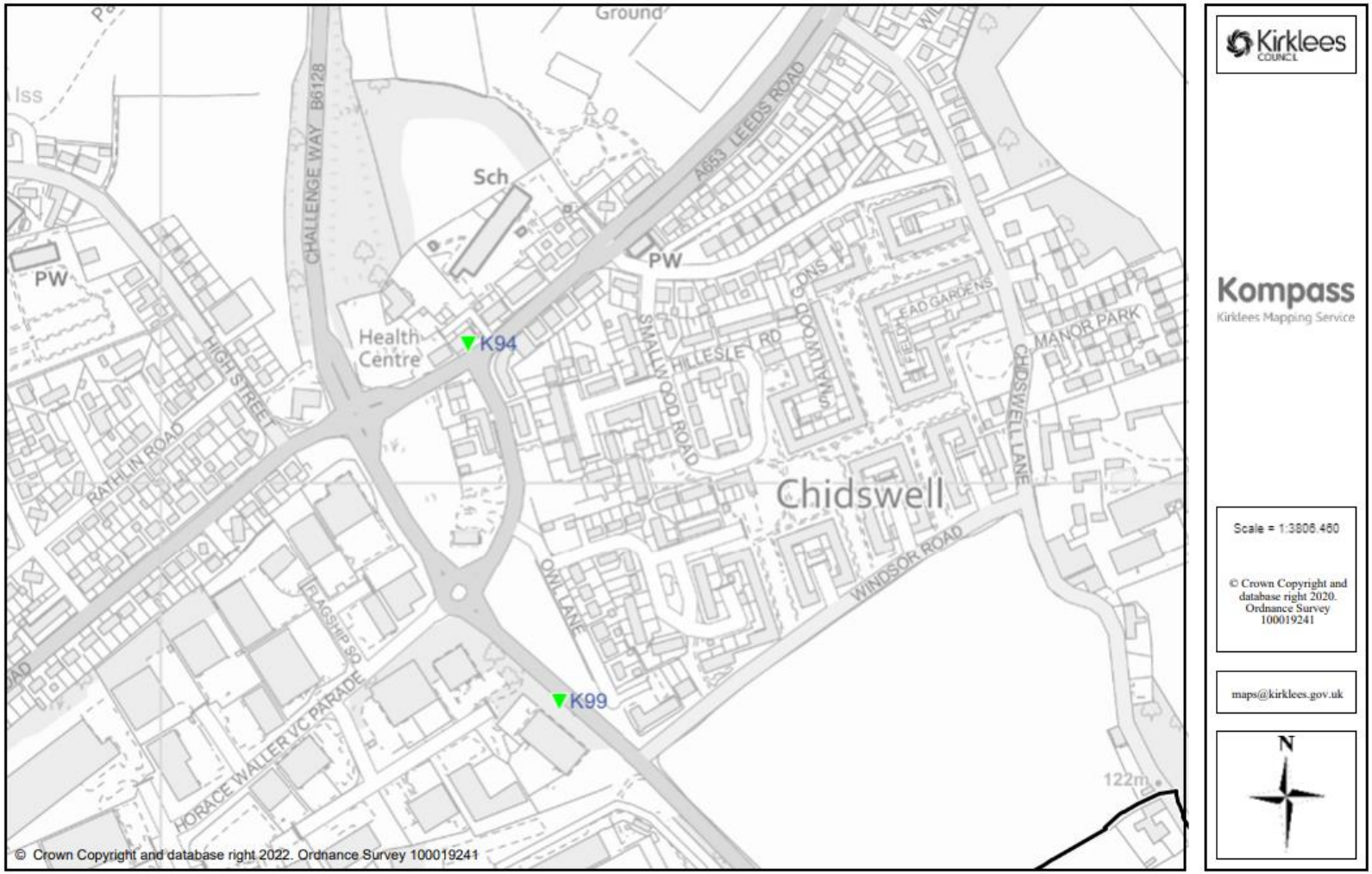
Map D.19 Air Quality Monitoring in Shepley and Denby Dale



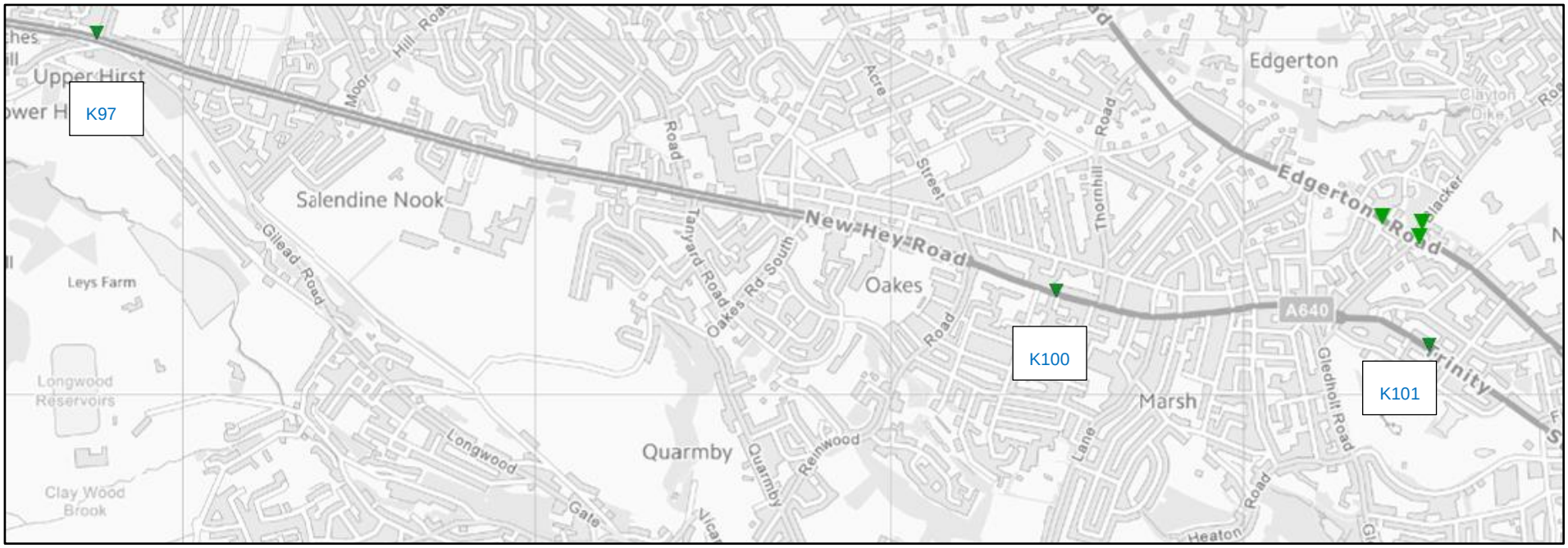
Map D.20 Air Quality Monitoring in Holmfirth



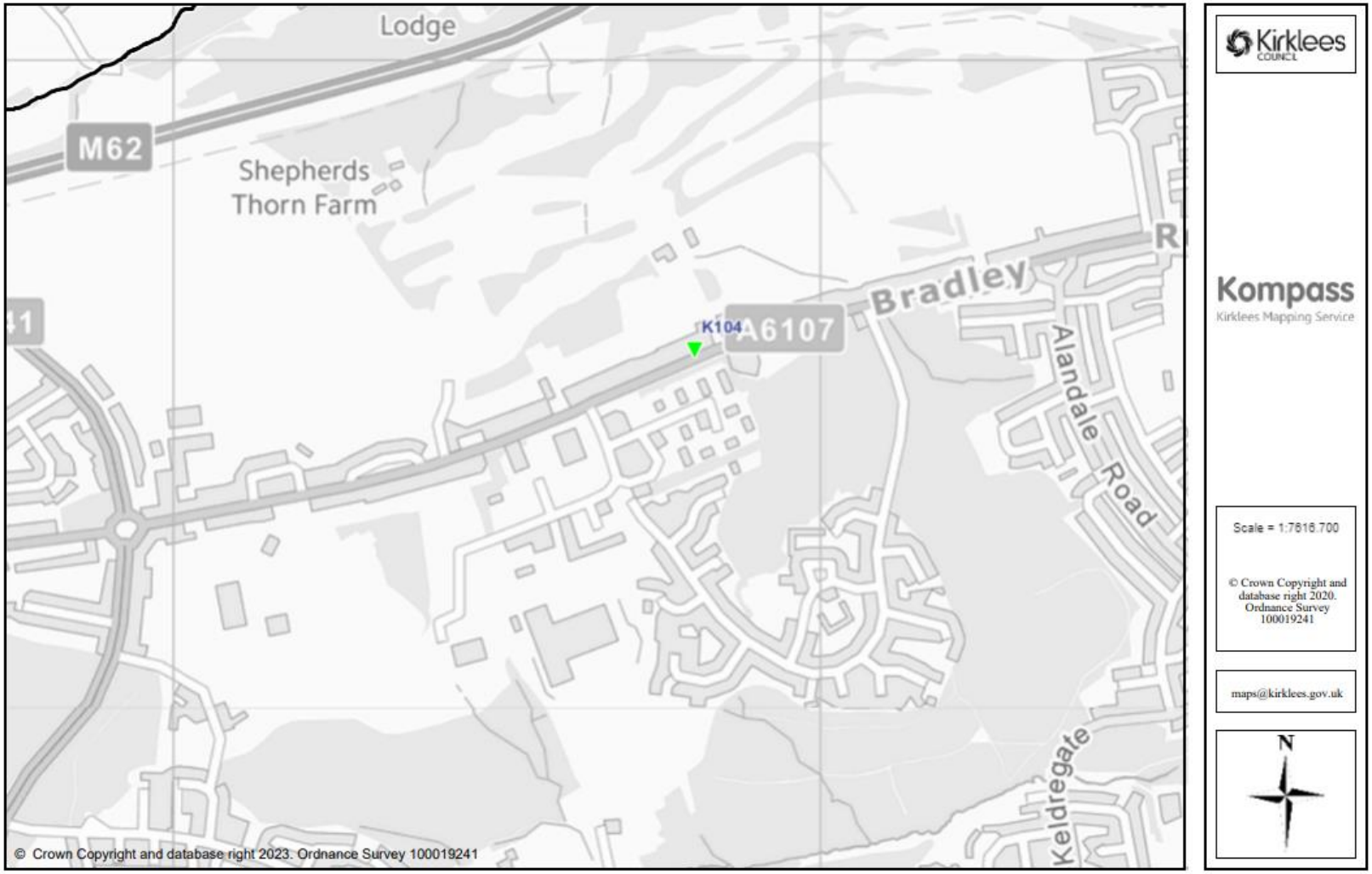
Map D.21 Air Quality Monitoring in Shaw Cross



Map D.22 Air Quality Monitoring in Oakes & Marsh



Map D.23 Air Quality Monitoring in Bradley



Appendix E: Summary of Air Quality Objectives in England

Table E.1 – Air Quality Objectives in England[17]

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

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

Appendix F: 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 UptakeMeasured 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 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:

Measure No	Measure	Key Performance Indicator
		+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. 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

Measure No	Measure	Key Performance Indicator
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; + 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 be ULEV's within by 2040 in line with national government targets. Kirklees Council Measurable: + Creation and adoption of Electric Vehicle Charging Strategy

Measure No	Measure	Key Performance Indicator
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
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

Measure No	Measure	Key Performance Indicator
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 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

Measure No	Measure	Key Performance Indicator
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
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 AQMA's 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

Measure No	Measure	Key Performance Indicator
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
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;

Measure No	Measure	Key Performance Indicator
		+Strategy document outlining plans to promote Air 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 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

Measure No	Measure	Key Performance Indicator
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: + 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

Measure No	Measure	Key Performance Indicator
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
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
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.

Measure No	Measure	Key Performance Indicator
		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
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.

Measure No	Measure	Key Performance Indicator
		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
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

Measure No	Measure	Key Performance Indicator
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
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 AQMA's	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

Measure No	Measure	Key Performance Indicator
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
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 AQMA's	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
AQMA5.6	Trial of Smart UTMC Technology systems within relevant AQMA's	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
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
AQMA6.4	Trial of Smart UTMC Technology systems within relevant AQMA's	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

Measure No	Measure	Key Performance Indicator
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 AQMA's	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
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

Measure No	Measure	Key Performance Indicator
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
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

Measure No	Measure	Key Performance Indicator
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
AQMA9.10	Trial of Smart UTMC Technology systems within relevant AQMA's	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

Measure No	Measure	Key Performance Indicator
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 AQMA's	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

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
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 10µm or less
$PM_{2.5}$	Airborne particulate matter with an aerodynamic diameter of 2.5µm or less
QA/QC	Quality Assurance and Quality Control
SCOOT	Split Cycle Offset Optimisation Techniques, a real adaptive traffic control system
SO_2	Sulphur Dioxide

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