

Kirklees Council

Air Quality Action Plan 2026 - 2031

**In fulfilment of Part IV of the Environment Act 1995, as
amended by the Environment Act 2021**

Local Air Quality Management 2026

DRAFT

Information	Kirklees Council Details
Local Authority Officer	Natalie Heaney
Department	Pollution & Noise Control
Address	Kirklees Council Environmental Health
Telephone	01484 221000
E-mail	natalie.heaney@kirklees.gov.uk
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Executive summary

This Air Quality Action Plan (AQAP) has been produced as part of our statutory duties required by the Local Air Quality Management framework. It outlines the actions we will take to improve air quality in Kirklees between 2026 and 2031. The AQAP sets out how the local authority will exercise its functions in order to secure the achievement of the air quality objectives.

This action plan is a draft version and will be adopted from <dd/mm/yyyy>. Implementation of the outlined measures will result in the relevant objective(s) being attained by 2028.

The relevant Air Quality Management Areas (AQMAs) addressed by this action plan are outlined below:

- AQMA 3 Ainley Top, declared 01/11/2017 for Nitrogen Dioxide (NO₂) exceedance;
- AQMA 5 Eastborough, declared 01/11/2017 for NO₂ exceedance;
- AQMA 6 Edgerton, declared 01/11/2017 for NO₂ exceedance;
- AQMA 7 Liversedge, declared 01/11/2017 for NO₂ exceedance;
- AQMA 8 Outlane, declared 01/11/2017 for NO₂ exceedance;
- AQMA 9 Huddersfield Town Centre, declared 01/11/2017 for NO₂ exceedance;
- AQMA 10 Thornton Lodge, declared 15/06/2019 for NO₂ exceedance.

In 2025 Kirklees revoked AQMA 1, 2 and 4, while AQMAs 3, 7 and 10 have been amended to reduce their size, due to significant and sustained improvements to air quality in these locations.

This action plan replaces the previous action plan which ran from 2019-2025¹. Projects delivered through the past action plan include:

- Completed delivery of OLEV (Office for Low Emission Vehicles) funded West Yorkshire Strategic Rapid Charger network for taxis and the general public.
- Kirklees Council have previously installed 34 Rapid Charging Bays within Kirklees, these being 17 Taxi Bays and 17 Public Bays.
- The ECO Stars Fleet Recognition Scheme.
- West Yorkshire regional PM_{2.5} source apportionment exercise to determine non-road PM_{2.5} emission sources within Kirklees and West Yorkshire.
- Procurement of PM_{2.5} sensors to determine PM_{2.5} and concentrations within Kirklees and West Yorkshire.
- Upgrade of the of the Cycle Offset Optimisation technique (SCOOT) Traffic Management System within AQMA 1 in 2023, resulting in a reduction of the

¹ Kirklees Council. (2019). Air quality action plan. Retrieved May 5, 2026, from <https://www.kirklees.gov.uk/beta/crime-and-safety/pdf/air-quality-action-plan.pdf>

pollutant concentrations by 12 µg/m³ and contributing to achieving sustained compliance in AQMA 1 and its subsequent revocation.

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 and older people, and those with 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^{2,3}.

The UK Health Security Agency (formally Public Health England) has estimated that the costs of air pollution in England to health and social care services could reach between £5.3 and £18.6 billion between 2018 and 2035⁴. Kirklees Council is committed to reducing the exposure of people in Kirklees to poor air quality in order to improve health.

We have carried out a Source Apportionment assessment to understand the current sources of Nitrous Oxides (NOx) emissions within Kirklees AQMAs. From this we have developed actions that can be considered under nine broad topics:

- Planning and policy
- Reducing emissions from buses
- Reducing emissions from cars
- Improving traffic flow
- Active travel
- Public transport
- Council fleet and workplace travel
- Taxis
- Public information and awareness

Our priorities are:

Priority 1 – Reducing emissions from buses: we will work in partnership with West Yorkshire Combined Authority (WYCA) and local bus operators to deliver lower emission Euro VI buses and zero emission electric buses across Kirklees.

Priority 2 – Reducing emission from cars: we will expand the electric vehicle (EV) charging network, including rolling out on-street EV charging, prioritising locations where there are gaps, in addition to improving traffic flow, and encouraging use of active travel (walking, wheeling and cycling), public transport and other alternatives to private car use, by improving service offerings and infrastructure.

Priority 3 – Working with our communities to raise awareness and make changes that lead to cleaner air for everyone: we will hold events, publish information and engage with our local communities to improve understanding and

² Environmental equity, air quality, socioeconomic status and respiratory health, 2010

³ Air quality and social deprivation in the UK: an environmental inequalities analysis, 2006

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

awareness, ensuring two-way communication to deliver air quality improvements that benefit everyone.

In this AQAP, we outline how we plan to effectively tackle air quality issues within our control. However, we recognise that there are a large number of air quality policy areas that are outside of our influence (such as vehicle emissions standards) but for which we may have useful evidence, and so we will continue to work with regional and central government on policies and issues beyond Kirklees' direct influence.

Responsibilities and commitment

This AQAP was prepared by the Environmental Health, Public Protection department of Kirklees Council with the support and agreement of the following officers and departments:

- Environmental Health (Pollution and Noise Control Team)
- Environment Strategy and Climate Change
- Fleet Services,
- Highways (UTMC)
- Licencing,
- Operational Services,
- Planning and Planning Policy,
- Public Health,
- Transport / Major Projects,
- Transport Strategy

The final AQAP will be approved by the Deputy Chief Executive and Executive Director for Public Health and Corporate Resources:

<e-signature>.

This AQAP will be signed off by the Deputy Chief Executive and Executive Director for Public Health and Corporate Resources.

The following Air Quality Partners / stakeholders have contributed to the development of the AQAP and will be committed to delivery of actions:

- National Highways
- The Environment Agency
- Neighbouring Authorities (Leeds City Council, Wakefield Council, City of Bradford Metropolitan District Council, Calderdale Council, Oldham Council and High Peak Borough Council and Barnsley Council)
- National Parks Authority (Peak District National Park)
- Internal Local Authority Representatives including Environmental Health, Environment Strategy and Climate Change, Fleet Services, Highways (UTMC), Licencing, Operational Services, Planning and Planning Policy, Public Health, Transport / Major Projects, and Transport Strategy.
- Public Authorities (Yorkshire and Humber Health Protection Team (Y&H HPT))
- Bodies representing local business interests (West & North Yorkshire Chamber of Commerce)

- Other organisations / representatives (Kirklees Climate Commission)

This AQAP will be subject to an annual review, appraisal of progress and reporting to the relevant Council Committee (applicable scrutiny panel and senior leadership team). Progress each year will be reported in the Annual Status Report (ASR) produced by Kirklees Council, as part of our statutory Local Air Quality Management duties.

If you have any comments on this AQAP please send them to Natalie Heaney at:

Environment & Climate Change
Kirklees Council, Civic Centre 1,
High Street
Huddersfield
HD1 2NF
Telephone: 01484 221000
Email: air.quality@kirklees.gov.uk

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1 Introduction

This report outlines the actions that Kirklees will deliver between 2026-2031 in order to reduce concentrations of air pollutants and exposure to air pollution; thereby positively impacting on the health and quality of life of residents and visitors to Kirklees. The purpose of the report is to set out how the local authority will exercise its functions in order to achieve the relevant air quality objectives. This action plan is a draft version for the purposes of statutory consultation.

It has been developed in recognition of the legal requirement on the local authority to achieve and maintain Air Quality Objectives under Part IV of the Environment Act 1995, as amended by the Environment Act 2021, and to meet the requirements of the Local Air Quality Management (LAQM) statutory process.

This Plan will be reviewed every five years at the latest and progress on measures set out within this Plan will be reported on annually within Kirklees Council's air quality Annual Status Report (ASR).

2 Summary of Current Air Quality in Kirklees Council

2.1 Air Quality Management Areas

The relevant Air Quality Management Areas (AQMAs) addressed by this AQAP are outlined below in Table 2-1. This table presents the level of exceedance across the AQMAs according to the 2023 air quality monitoring data. The 2023 air quality monitoring data is used throughout this AQAP as the latest available baseline dataset. This is due to poor data capture (<75%) across the diffusion tube monitoring network in the 2024 annual air quality data due to a change in contractor. Although 2024 data have been annualised in line with Defra's recommended QA/QC procedures, Kirklees Council consider 2023 to offer a more robust baseline dataset for the purpose of this AQAP.

More recently, in November 2025, the boundaries of AQMAs 3, 7 and 10 were amended in accordance with the guidance set out in Technical Guidance LAQM.TG(22) (LAQM.TG(22))⁵ and following consultation with Defra, to ensure that the designated areas remained representative of the current extent of exceedance risk. Additionally, AQMAs 1, 2 and 4 were revoked following a sustained period of compliance with the relevant AQOs, supported by several years of monitored data demonstrating continued improvement in ambient air quality within these areas.

Maps of the AQMAs within Kirklees can be found in [Appendix F](#).

⁵ Department for Environment, Food and Rural Affairs (Defra) (2025): [LAQM-TG22-May-25-v2.1.pdf](#)

Table 2-1 – Relevant Declared Air Quality Management Areas

AQMA Name	Date of Declaration	Pollutants and Air Quality Objectives	One Line Description	Is air quality within the AQMA influenced by National Highways roads?	Level of Exceedance: Declaration	Level of Exceedance: 2023	Number of Years Compliant with Air Quality Objective ¹
AQMA 3 Ainley Top	Declared 01/11/17 Amended 11/11/2025	NO ₂ 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/m ³	21.6 µg/m ³	Five years
AQMA 5 Eastborough	Declared 01/11/17	NO ₂ 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/m ³	40.1 µg/m ³	Not compliant
AQMA 6 Edgerton	Declared 01/11/17	NO ₂ Annual Mean	The designated area incorporates Edgerton Road (A629) and Blacker Road, which is in close proximity to Huddersfield Town Centre	NO	54 µg/m ³	34 µg/m ³	Five years
AQMA 7 Liversedge	Declared 01/11/17 Amended 11/11/2025	NO ₂ 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/m ³	38 µg/m ³	One year

AQMA Name	Date of Declaration	Pollutants and Air Quality Objectives	One Line Description	Is air quality within the AQMA influenced by National Highways roads?	Level of Exceedance: Declaration	Level of Exceedance: 2023	Number of Years Compliant with Air Quality Objective ¹
AQMA 8 Outlane	Declared 01/11/17	NO ₂ 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/m ³	30.2 µg/m ³	Four years
AQMA 9 Huddersfield Town Centre	Declared 01/11/17	NO ₂ Annual Mean	The designated area incorporates roads bordering and within the Huddersfield Ring Road	NO	55 µg/m ³	44.9 µg/m ³	Not Compliant
AQMA 10 Thornton Lodge	Declared 15/06/2019 Amended 11/11/2025	NO ₂ Annual Mean	The designated area incorporates Manchester Road (A62), Birkhouse Lane and Thornton Lodge Road	NO	47 µg/m ³	35.9 µg/m ³	Five years

1 Number of Years Compliant with Air Quality Objective is based on the 2023 data, as discussed in section 2.1.

2.2 Public Exposure

According to the most recent Office of National Statistics (ONS) population census by Lower layer Super Output Area (LSOA)⁶, the population that might be exposed to the higher pollution levels associated with these AQMAs is 23,800 citizens. A more detailed breakdown of the population exposure by AQMA can be seen in Table 2-2.

Table 2-2 – Table showing population from adjacent LSOAs against AQMA IDs

AQMA ID	Population in adjacent LSOA(s)
AQMA 3	2,195
AQMA 5	2,449
AQMA 6	1,901
AQMA 7	1,814
AQMA 8	1,641
AQMA 9	9,757
AQMA 10	4,050

This methodology is in line with the LAQM.TG(22) guidance, where the area of the individual AQMAs were processed as a whole in order to capture the full impact of the AQMA area, representing a worst-case scenario. Many citizens do not live or regularly visit locations that show higher pollution levels, and it is worth noting that the AQMAs do not encompass the whole of the associated LSOAs.

⁶ Office for National Statistics (ONS) (2025) [Lower layer Super Output Area population estimates \(supporting information\) Dataset](#)

3 Kirklees Council's Air Quality Priorities

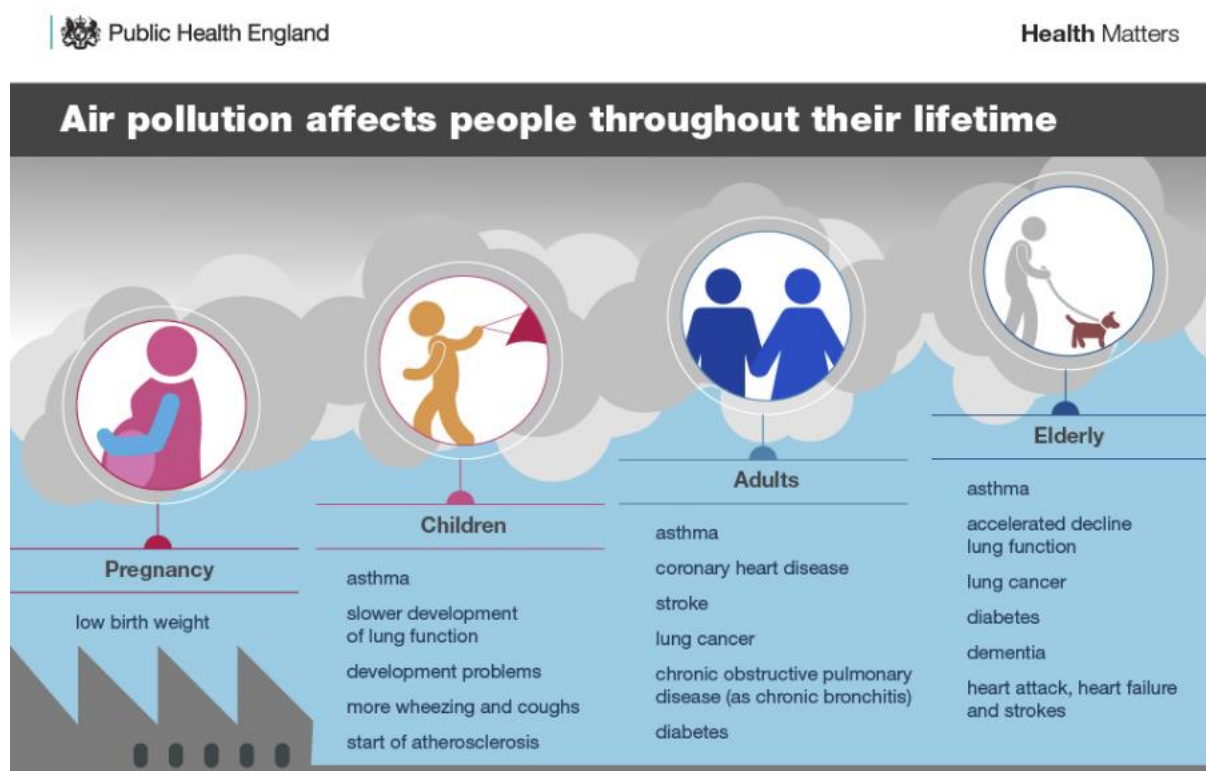
3.1 Public Health Context

Poor air quality represents the largest environmental risk to public health, with the risk of impacts from exposure present across the life course. These impacts can happen as a result of both short and long-term exposure and can accumulate over time, with effects often being gradual and not readily apparent for many years. Long-term exposure to air pollution is a risk factor for all-cause mortality, as well as specific conditions such as stroke, heart disease, chronic obstructive pulmonary disease (COPD), lung cancer and pneumonia. Short-term exposure is linked to a range of potential health impacts, including on lung function, exacerbation of asthma, hospital admissions and mortality. There is also emerging evidence of potential links between exposure and low-birth weight, other cancers, diabetes and dementia.

Health impacts of poor air quality are also felt by health and care systems, as a result of both acute admissions and longer-term impacts. Public Health England's (PHE) cost of air pollution project quantified and estimated potential costs to the NHS and social care system just from PM_{2.5} and NO₂ in England alone as £1.69 billion between 2017 and 2025. This figure is exclusive of wider social and economic costs to society (e.g., productivity costs from ill health caused by air pollution), and the total costs are estimated by the Environmental Audit Committee to be between £8.5 billion and £20.2 billion per year in the UK.

Though air pollution affects everyone, certain groups are more affected as a result of where they live, the concentrations of air pollution they are exposed to, or their inherent susceptibility to health problems caused by air pollution. Those who are more susceptible include older people, children, pregnant women, those with cardiovascular or respiratory conditions.

Figure 3-1– How air pollution affects people’s health throughout their lifetime (Public Health England, 2018⁷)



Generally, more air pollution sources and higher concentrations are found in more socially disadvantaged areas, with these areas often having higher housing density and being close to major roads and industrial areas. This leads to the risk of harm being higher people in socially deprived groups, and communities in deprived areas. These groups and communities are also more likely to be living with pre-existing health conditions that could be exacerbated by exposure and are also less likely to have positive access to the wider determinants of health, e.g., decent housing, employment, healthy food, green and blue space. All of this serves to further compound the health risks from exposure to air pollution.

A range of actions across systems are needed to improve air quality in the district. Action should target pollution and deprivation hotspots to reduce health inequalities, whilst also looking at universal measures that can be applied across the district. Measures must avoid worsening disadvantage, such as through economic impacts or displacement of pollution. Communication strategies should ensure vulnerable groups are effectively reached, as traditional methods may not suffice, e.g., working through the voluntary and community sector or groups like community champions to specifically target groups most impacted by inequalities⁷.

⁷ Public Health England 2018, [Health matters: air pollution](#)

⁷ Institute for Health Equity 2010, [Fair Society, Healthy Lives: The Marmot Report](#) (see pp.15). Proportionate universalism states that 'actions must be universal, but with a scale and intensity that is proportionate to the level of disadvantage'.

3.2 Planning and Policy Context

3.2.1 National Policy Context

The national policy context for air quality in England is shaped by the UK Air Quality Strategy, the Clean Air Strategy (2019), and statutory obligations under the Environment Act 1995 and subsequent amendments. Local authorities are required to manage air quality under the LAQM framework, with a focus on achieving compliance with national air quality objectives for pollutants such as NO₂ and particulate matter (PM₁₀ and PM_{2.5}). The UK Government's Clean Air Strategy sets out measures to tackle emissions from transport, industry, agriculture, and domestic sources, while the Transport Decarbonisation Plan (2021) and Net Zero Strategy (2021) provide a roadmap for reducing emissions from the transport sector, including commitments to phase out petrol and diesel cars and promote active travel and public transport. These national frameworks underpin local and regional strategies, ensuring alignment with statutory targets and contributing to the wider goal of achieving net zero by 2050.

3.2.2 Local and Regional Policy Context

Kirklees Council and the WYCA have adopted a range of policies and strategies that directly or indirectly support improvements in air quality. These include statutory plans, climate strategies, transport frameworks, and active travel initiatives. Collectively, these policies aim to reduce emissions from transport and development, promote sustainable travel, and accelerate the transition to low-emission technologies. Table 3-1 summarises regional and local policies relevant for air quality policy and actions in Kirklees

Table 3-1 – Regional and local policies for Kirklees with relevance for air quality

Local plans and policies (Kirklees)	Regional plans and policies (WYCA)
<u>Previous Air Quality Action Plan (2019–2024)</u>	<u>West Yorkshire Low Emissions Strategy (WYLES)</u>
<u>Air Quality Strategy (2019)</u>	<u>West Yorkshire Transport Strategy 2040</u>
<u>Kirklees Local Plan</u>	<u>West Yorkshire Climate & Environment Plan (2025–2038)</u>
<u>Climate Change Action Plan (Phase 2)</u>	<u>West Yorkshire EV Infrastructure Strategy (LEVI)</u>
<u>Kirklees Environment Strategy</u>	<u>Carbon Emissions Reduction Pathways - West Yorkshire 2024</u>
<u>Walking & Cycling Strategic Framework (2018–2030)</u>	<u>Low emission procurement guide</u>
<u>Active Travel Interim Position Statement (2025)</u>	<u>Air Quality & Emissions Technical Planning Guidance 2023</u>

Local plans and policies (Kirklees)**Regional plans and policies (WYCA)**[Kirklees Transport Strategy \(2025\)](#)

This AQAP consolidates and enhances some of the measures from existing policies already embedded within Kirklees and West Yorkshire strategies, ensuring that air quality objectives are complemented and strengthened.

Key plans and policies from Table 3-1 are discussed below.

3.2.2.1 Kirklees Environment Strategy⁸

The strategy sets out a vision and themes, encompassing 12 headline targets and 31 objectives. Those with direct or indirect impact to air quality include:

- Increase Kirklees tree canopy cover to 21% by 2050.
- All people who live work and study in Kirklees to have access to high quality green and blue space within 5-10minutes/ 500m walk by 2038.
- Good buildings – all buildings in Kirklees to be energy efficient at a minimum of EPC C by 2030.
- Net zero energy supply by 2038
- Sustainable neighbourhoods programme launched by 2026
- 60% of journeys within Kirklees to be sustainable journeys by 2030.
- 100% of fleet vehicles to be zero carbon by 2038
- All of Kirklees homes to be within 1km of a public transport connection point via safe pedestrian route by 2038.

The framework is monitored and evaluated by a number of mechanisms, including quarterly “Environmental Strategy Partnership Group” meetings.

3.2.2.2 Kirklees Climate Change Action Plan⁹

The vision of the Climate Change Action Plan (CCAP) is to achieve Net Zero and climate ready by 2038, with actions in eight areas: buildings, energy, natural environment, sustainable food, transport, waste, water, and cross-cutting actions. Some key actions which will directly or indirectly impact air quality include:

- Building measures to improve energy efficiency by retrofitting existing buildings, require highest energy efficiency standards of new buildings, and installation of low-carbon heating systems.
- Investing in renewable and zero carbon energy technologies (E.2), including completion of a Local Area Energy Plan for Kirklees (E2.1).
- Restoring nature within Kirklees (NEB.1) increased tree planting and vegetation, which can help mitigate air pollution by interception and/or filtration.

⁸ <https://www.kirklees.gov.uk/beta/environment-strategy/index.aspx>

⁹ <https://www.kirklees.gov.uk/beta/climate-emergency/pdf/kirklees-climate-change-action-plan.pdf>

- Transport actions to improve uptake and quality of active travel options and public transport (e.g. T.1, T.3 and T.4 actions), and low-emission vehicles (T.2, T.5 and T.6 actions).

3.2.2.3 Kirklees Transport Strategy 2025¹⁰

Kirklees Transport Strategy sets out a vision and policy framework for a more inclusive and sustainable transport network, to help meet the Net Zero by 2038 target. It was developed in fulfilment of the action “Develop a Kirklees Transport Strategy that is consistent with the outcomes of this CCAP and the Net Zero and Climate ready by 2038 goal”, from Kirklees CCAP. The Strategy includes:

- Active travel actions to provide more high-quality cycling routes and address barriers and gaps in our urban and rural networks for walking, wheeling and cycling, e.g. “Improve walking, wheeling, and cycling connections, especially across severed junctions / major roads, to shift journeys away from motor vehicles” (AT-1) and “Develop a strategic cycling and walking network plan (Local Cycling and Walking Infrastructure Plan) that sets out a prioritised future network for Kirklees” (AT-3).
- Travel demand management actions to alleviate traffic congestion and improve air quality. E.g. “Provide parking management measures across Kirklees that help promote more sustainable travel options than private cars, as well as Car Club locations, Electric Vehicle charging points and cycle parking” (TD-1).
- Multi-modal interchange actions to improve overall experience of public transport users. E.g. “Deliver quality mobility hubs alongside improved active travel links and community facilities at key locations to enable seamless transition between transport modes” (I-6).
- Freight actions to work with businesses and regional partners to consolidate freight and delivery options, adopting a bottom-up approach to reduce the number of vehicles on the road. E.g. Exploring opportunities for e-cargo bikes in last mile delivery (F-1); options for freight facilities including parking and rest (F-2); opportunities for supporting delivery hubs (F-3); working to consolidate freight and delivery operations in poor air quality and congested areas (F-4); and incorporating loading and delivery spaces into the design of new streetscapes and developments (F-7). The Strategy also commits to exploring opportunities to shift freight from road to rail, though not secured with a specific policy.
- Efficient network management actions to make sure residents and businesses get the maximum possible from Kirklees highways assets, supporting a range of transport modes, and reducing congestion. E.g. “Target capacity constraints and deliver high quality infrastructure to provide safer, quicker and more reliable journeys which integrates active travel and bus priority and improves air quality” (N-1).
- Alternative fuel actions to help transition to a sustainable, low emission and low-carbon transport system, e.g. “Support the development of comprehensive

¹⁰ https://democracy.kirklees.gov.uk/documents/s65269/7d.%20Kirklees%20Transport%20Strategy_Issued%2030072025.pdf

electric charging networks to encourage a transition to low/zero emission vehicles” (AF-1).

The Transport Strategy 2025 includes a monitoring and evaluation plan.

3.2.2.4 West Yorkshire Low Emission Strategy¹¹

WYCA’s West Yorkshire Low Emission Strategy (WYLES) 2016-2021 brings together joint working across the five West Yorkshire Authorities with the vision to deliver “Cleaner Air for all in West Yorkshire”. WYLES is being updated to align with the region’s 2038 net zero target and to address air quality concerns.

Actions delivered by the current WYLES have included:

- Delivery of new, lower emissions buses
- EV charging infrastructure expansion and delivery of the West Yorkshire Electric Vehicle (EV) Strategy
- ECO stars fleet recognition scheme
- Strategies and improvements for walking, cycling and public transport
- Delivery of the West Yorkshire Air Quality and Planning Technical Guide
- Delivery of the Low Emission Procurement Guide.
- Increased awareness campaigns.

3.2.2.5 West Yorkshire Climate and Environment Plan (2025–2038)¹²

WYCA’s draft Climate and Environment Plan (2025–2038) sets out a framework to achieve a net zero carbon region by 2038, and includes many actions that deliver significant co-benefits for air quality. The Plan recognises that transport and domestic heating are the largest contributors to emissions and poor air quality in the region, and prioritises interventions that reduce pollutants such as nitrogen dioxide (NO₂) and PM. The Plan is structured around five objectives, each with measures that directly or indirectly improve air quality:

1. Secure, cost effective, clean energy for all. Actions include establishing a West Yorkshire Climate Fund (WYCF) to finance renewable energy projects, implementing Local Area Energy Plans (LAEP), and supporting hydrogen deployment for industry and transport. Decarbonising energy supply reduces reliance on fossil fuels, lowering emissions that contribute to poor air quality.
2. Reliable, affordable, integrated zero-emission transport, including decarbonisation of transport, with key actions such as:
 - Up to 200 zero-emission buses by 2027.
 - Progressing a mass transit system.
 - Local Cycling and Walking Infrastructure Plans (LCWIPs).

¹¹ <https://new.calderdale.gov.uk/business-services/pollution/air-quality/low-emissions-strategy>

¹² <https://www.westyorks-ca.gov.uk/place/environment-and-regeneration/climate/west-yorkshire-climate-and-environment-plan/>

- Expanding EV charging infrastructure through the £17m Local Electric Vehicle Infrastructure (LEVI) programme and developing an ambitious EV Infrastructure Strategy.
3. Climate-resilient and nature-rich region, including measures for urban greening, tree planting, and peatland restoration which can mitigate air pollution.
 4. Warm, comfortable, low-carbon homes, including provision of a “one-stop” for advice and an installation service, a long-term social housing retrofit programme, and financial incentives to overcome cost barriers. Increased adoption of heat pumps and insulation should help reduce emissions from domestic combustion.
 5. Decarbonised Businesses, good green jobs and skilled workforce to enable businesses to reduce emissions from heating, transport, and waste.

3.2.3 Preventing trade-offs

The regional and local policy objectives and actions for zero-emission transport, active travel, clean energy, and retrofit are generally expected to help reduce emissions of NO₂ and PM across West Yorkshire, and many policies and plans clearly integrate with air quality, highlighting where there are benefits to air quality. However, it will be important in the roll-out of Kirklees and West Yorkshire’s environmental policies to be mindful of possible trade-offs between air quality and other environmental issues.

For example, there are measures in Kirklees CCAP and West Yorkshire Climate and Environment Plan (Draft) March 2025 to explore opportunities to support the expansion of green hydrogen production and use, and other alternative energy commissioning. The potential trade-offs are that hydrogen combustion technologies can produce NO_x emissions, which would contribute to NO₂ concentration levels. Bioenergy can also result in increased PM and sometimes NO_x emissions.

Delivery of this AQAP will be supported by ongoing collaboration with relevant departments across the local and combined authorities. This collaboration and the AQAP Steering Group will ensure that potential trade-offs are considered, prevented where possible and mitigated where prevention is not possible.

3.3 Source Apportionment

The AQAP measures presented in this report are intended to be targeted towards the predominant sources of NO_x within the Kirklees’ area.

A source apportionment exercise was carried out by Ricardo on behalf of Kirklees Council in 2026 to better understand the current sources of emissions in existing AQMAs. For AQMAs 3, 5, 6, 7, 8 and 10, a combination of local Department for Transport (DfT) traffic counts, and Defra background concentration maps were used to inform the source apportionment. Emission contributions from local traffic and background sources were aggregated and normalised at each of the diffusion tube

sites within the respective AQMAs in order to understand the percentage share from each emission source at that site.

For AQMA 9 Huddersfield Town Centre, where a road transport model was present, local modelling inputs alongside the Defra background concentration maps were used to establish emission contributions. Transport and background sources were then aggregated and normalised following the same methodology as for AQMAs 3, 5, 6, 7, 8 and 10. The full technical baseline modelling report can be found in Appendix C: 2023 Baseline Model for AQMA 9, Source Apportionment and Scenario Modelling Study.

The following Table 3-2 displays the diffusion tube IDs where source apportionment was carried out against the AQMA within which they are present:

Table 3-2 – Table presenting the diffusion tube site IDs, descriptions of the sites, and associated AQMAs in Kirklees

Diffusion Tube ID	Description	AQMA
K16	Ainley Top 2	AQMA 3 Ainley Top
K17	Ainley Top 3	AQMA 3 Ainley Top
K20	Rockley Street Dewsbury	AQMA 5 Eastborough
K40	Leeds Road Dewsbury - outside 35	AQMA 5 Eastborough
K3	Edgerton Road	AQMA 6 Edgerton
K34	Frost Hill Liversedge	AQMA 7 Liversedge
K47	Roundings Road Outlane	AQMA 8 Outlane
K2	Bus Station Huddersfield	AQMA 9 Huddersfield Town Centre
K7	Westgate Huddersfield	AQMA 9 Huddersfield Town Centre
K11	Chapel Hill Huddersfield	AQMA 9 Huddersfield Town Centre
K21	Castlegate Huddersfield	AQMA 9 Huddersfield Town Centre
K28	Ring Road Huddersfield - Southgate	AQMA 9 Huddersfield Town Centre
K56	Wakefield Road Huddersfield	AQMA 9 Huddersfield Town Centre
K58	St John's Road	AQMA 9 Huddersfield Town Centre
K86	Kings Mill Lane	AQMA 9 Huddersfield Town Centre
K50	Manchester Road Thornton Lodge 1	AQMA 10 Thornton Lodge
K76	Manchester Road - Thornton Lodge 3	AQMA 10 Thornton Lodge
K77	Manchester Road - Thornton Lodge 4	AQMA 10 Thornton Lodge

Figure 3-2 – which presents the source apportionment results for AQMAs 3,5,6,7,8, and 10 demonstrates that despite slight variability between the diffusion tube sites, at all sites, diesel cars are the highest contributors to the total NO_x emissions in the aforementioned AQMAs. The second highest contributor tends to be diesel Light Goods Vehicles (LGVs), followed by Heavy Goods Vehicles (HGVs). Generally, road transport emissions, when considered as an entirety are far higher in their

contribution to emissions within AQMAs 3,5,6,7,8 and 10 than background sources, averaging between approximately 60 to 80% of the total emissions at each site.

Figure 3-3 – which presents the source apportionment results for AQMA 9 shows much more variability between the top emission sources. Sites K2 and K7 show a significant contribution from buses and coaches, both with approximately 70% of NO_x emissions coming from buses. The next highest contributors at these sites are diesel cars. The significant deviation of these two sites from the other sites in AQMA 9, as well as the sites in AQMAs 3,5,6,7,8 and 10 can be explained by the sites' proximity to bus stops. Both K2 and K7 are located at bus stops, where idling emissions from buses which have stopped near the site is disproportionately high as compared to the other diffusion tube locations.

By contrast, diffusion tube sites K11, K21, K28, K56, K58 and K86 present trends which can be more closely compared to the results from AQMAs 3,5,6,7,8 and 10. The top emission sources at these sites are diesel cars, representing between 30-45% of the total NO_x emissions. The second highest sources at each of the sites vary with either buses and coaches, HGVs or LGVs representing the 2nd highest source, although these tend to contribute significantly less as an individual source than diesel cars. For all sites located in AQMA 9, road traffic emissions have a more significant contribution than background emissions, representing between 70 to 85% of total NO_x emissions.

Figure 3-2 – Stacked bar chart showing NOx source apportionment for road transport and background sources within Kirklees' AQMAs 3 (K16, K17), 5 (K20, K40), 6 (K3), 7 (K48), 8 (K47) and 10 (K50, K76, K77) as a percentage of total contributions.

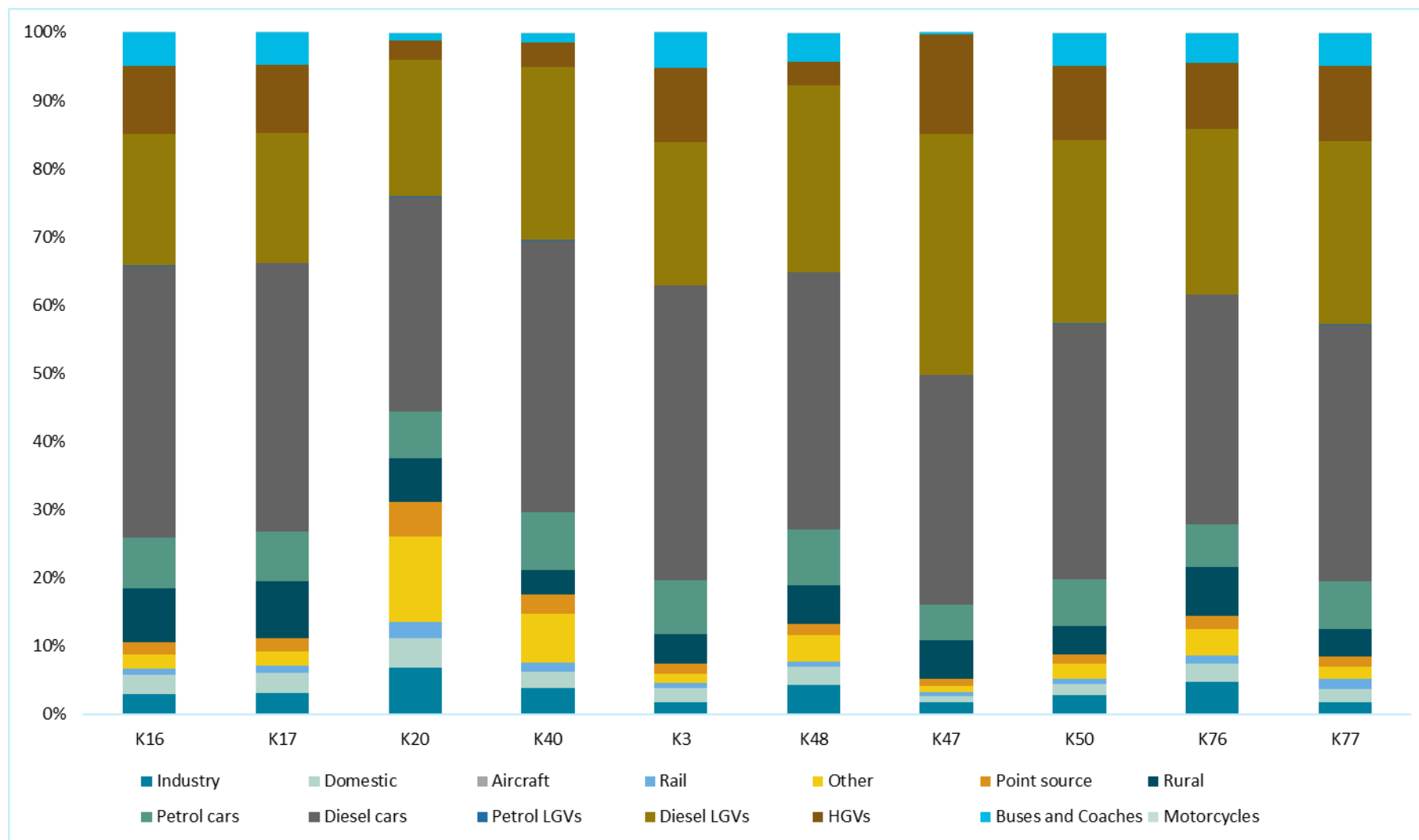
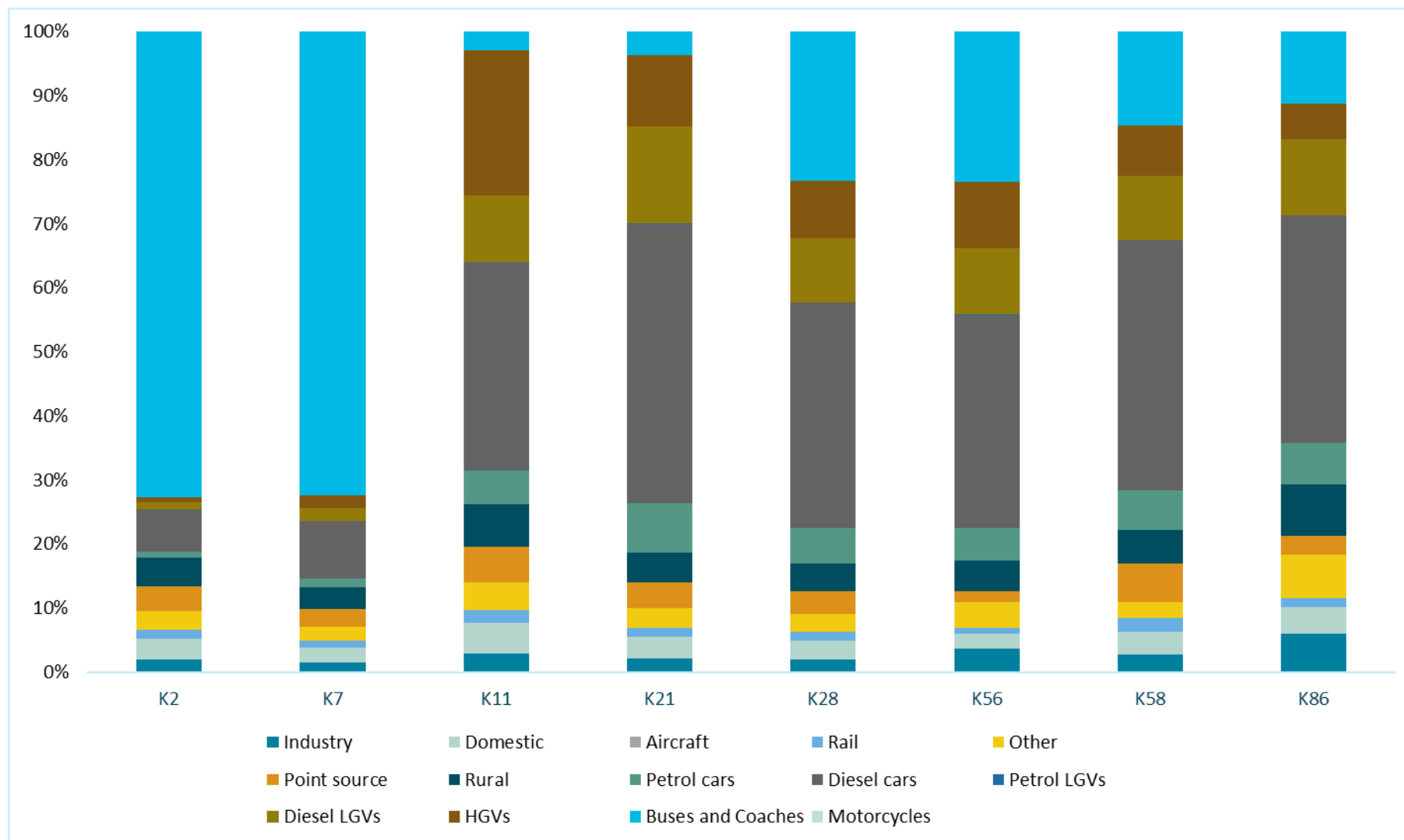


Figure 3-3 – Stacked bar chart showing NOx source apportionment for road transport and background sources within Kirklees' AQMA 9 as a percentage of total contributions.



3.4 Required Reduction in Emissions

Although monitoring data were available for 2024, the diffusion tube network had some data capture issues, resulting in all sites with data capture below 75%. This was primarily due to the LSO contractor changeover and significant changes to the monitoring network during 2024, as reported in the [2025 Annual Status Report](#). Therefore, the measurements from 2023 were used for the analysis and modelling assessment for this AQAP. Please see Appendix D for a discussion of 2024 measurements.

Monitoring undertaken in 2023 identified two exceedances in Kirklees where annual mean NO₂ concentrations exceeded the national objective limit of 40 µg/m³. These occurred at:

- K7 on Westgate in AQMA 9 Huddersfield Town Centre, measured annual mean NO₂ concentration was 44.9 µg/m³.
- K40 (now DT40) outside 35 Leeds Road, Eastborough, Dewsbury in AQMA 5, measured annual mean NO₂ concentration was 43.0 µg/m³ (not distance-corrected).

Table 3-3 presents the required reduction in road NO_x concentrations (µg/m³) that would be required to achieve compliant NO₂ concentrations (40 µg/m³) at the monitoring sites which are non-compliant in 2023. K7 requires a 20% reduction and K40 a 13% reduction from road NO_x to achieve NO₂ concentrations which are compliant with the annual mean objective.

Table 3-3 – Required reduction in road NO_x to achieve compliant NO₂ at monitoring sites in exceedance of NO₂ air quality objectives in 2023

DT ID	Location	NO ₂ measured in 2023, µg/m ³	NO _x back-ground in 2023, µg/m ³	Road NO _x from NO ₂ calculator, µg/m ³	Road NO _x to achieve compliance, µg/m ³	Road NO _x reduction required, µg/m ³	Road NO _x reduction required, %
K7	Westgate, Huddersfield	44.9	18.2	95.1	76.5	18.6	20%
K40	Triplicates - Outside 35 Leeds Road, Eastborough, Dewsbury	43.0	17.0	89.4	78.1	11.3	13%

Scenario modelling (presented in section 6) from a base year of 2023 demonstrates that with no additional measures, compliance is expected to be achieved at exceedance location K7 (the main exceedance location AQMA 9 Huddersfield Town Centre) by 2026. However, it would remain within 10% of the AQO out to 2028.

The priority measures set out in this AQAP were assessed through three scenarios, with scenarios 1 and 2 focused on tackling buses emissions linking to AQAP measures 12, 13, 14, and scenario 3 reducing emissions from cars linked to measures 15-17. These scenarios suggest that compliance could be brought forward, with levels at the location K7 dropping to below 10% of the limit value by

2026. However, for these measures, the timescales and rate of deployment/uptake of Euro VI buses, electric buses, and electric cars is uncertain.

3.5 Key Priorities

Based on the source apportionment analysis that identified the key sources contributing to air pollution in the AQMAs and discussion with key stakeholders on potential measures to tackle these sources, the key priorities for the action plan are:

Priority 1 – Reducing emissions from buses

Source apportionment identified that buses are contributing to approximately 70% of NO_x emissions at monitoring location K7 on Westgate in AQMA 9 Huddersfield Town Centre, which was in exceedance of the NO₂ annual mean AQO by more than 10% in 2023. As well as tackling this hotspot, reducing emissions from buses will have benefits for bus routes throughout Kirklees, benefitting air quality across the district, for NO_x, PM₁₀ and PM_{2.5}.

This AQAP presents several measures to reduce emissions from buses, including:

Measure 12: West Yorkshire Bus Alliance, an enhanced partnership between WYCA, West Yorkshire local authorities and bus operators. The partnership includes a voluntary agreement for buses in West Yorkshire to be Euro VI or equivalent by 2026. Scenario modelling shows that an average NO₂ concentration reduction of 1.5 µg/m³ across AQMA 9 could be achieved if 100% buses in Kirklees are Euro VI.

Measure 13: West Yorkshire Bus Service Improvement Plan 2024 - Zero emission bus fleet by 2036. The roll-out of electric buses across West Yorkshire, achieving a bus fleet which is fully zero emission by 2036. Scenario modelling shows that an average NO₂ concentration reduction of 2.3 µg/m³ across AQMA 9 could be achieved if 50% buses in Kirklees are electric and the remaining 50% are Euro VI. Electric buses should replace the most polluting buses (Euro VI and below) in the bus fleet first, and routes through Westgate in Huddersfield Town Centre should also be prioritised. Measure 14: Bus franchising is supporting the transition of the bus fleet in West Yorkshire to zero emission. Kirklees franchised buses will be operating from April 2027.

Additionally, measures to improve traffic flow will help reduce congestion-related emissions from buses, particularly Measure 21: Development and delivery of Bus Hotspots scheme, aiming to ease congestion and improve bus journey times and reliability.

Priority 2 – Reducing emissions from cars

Source apportionment identified cars contributing to approximately 48% of NO_x emissions at monitoring location K40 on Leeds Road, in AQMA 5 Eastborough, which was in exceedance of the NO₂ annual mean objective by 7.5% in 2023. Additionally, diesel cars represented 30-40% of total NO_x emissions across all monitoring locations in the AQMAs, with the exception of K2 and K7 in AQMA 9 Huddersfield Town Centre.

This AQAP presents several measures to reduce emissions from cars, including:

Measure 15: Local Government Electric Vehicle Infrastructure (LEVI) programme, and Measure 16: £1 million EV infrastructure project, to introduce more EV charging

locations where LEVI/CRSTS gaps emerge. Scenario modelling shows that if 31.5% of petrol and diesel cars in the existing local traffic mix were replaced with electric cars, an average NO₂ concentration reduction of 2.0 µg/m³ could be achieved, in the modelled AQMA 9 Huddersfield Town Centre.

Measures to improve traffic flow (Measures 18-23) will help reduce congestion-related emissions from car, measures to improve and encourage active travel (measures 24-29) and public transport (modal shift away from private car use) (measures 30-32) will help reduce emissions from cars by replacing private car journeys with those by walking, cycling, wheeling or public transport.

Priority 3 – Working with our communities to raise awareness and make changes that lead to cleaner air for everyone.

In addition to tackling the remaining pollution hotspots and achieving sustained compliance with air quality objectives across our AQMAs, Kirklees are committed to imbedding actions for air quality improvements which facilitate collaborative working and raise awareness and understanding of air quality across residents, businesses, schools and other local groups. Informed communities are more likely and more able to take action, and two-way communication is crucial to serving our local community. Increased awareness and understanding will therefore strengthen the delivery of actions which benefit everyone. For example:

Measure 39: Monitoring of air quality for public information purposes, including a PM_{2.5} monitoring campaign is critical for improving understanding the air quality in Kirklees, and the publishing of this data in an accessible format drives action.

Measure 40: Awareness campaign for smoke-control area and Measure 44: Awareness campaign for anti-idling aim to increase awareness and understanding of these sources of air pollution, and how they can be avoided, reduced or improved. Measures 39 and 40 are particularly key for addressing emissions of PM_{2.5} concentrations from domestic solid fuel burning, which is increasing source of this type of pollution in the UK¹³.

Additionally, active travel measures such as Measure 30: Delivery of active travel behaviour change programme, including community and educational events, and Measure 31: Delivery of Modeshift Stars initiative in schools engage the local community to highlight personal, environmental and social benefits of active travel.

The AQAP also includes a number of policies and strategies which align with community working, partnership working and awareness raising of transport and climate change actions which also have benefits for air quality, such as the Joint Strategic Needs Assessment (Measure 9), and Kirklees LAEP (Measure 8), in addition to the development and delivery of Local Transport Plan LTP4 (Measure 7), Kirklees Transport Strategy (Measure 5), Kirklees CCAP and Kirklees Environmental Strategy (Measure 6).

Further commentary on each measure referred to in this section can be found in Section 5.

¹³ Defra 2026 [Emissions of air pollutants in the UK – Particulate Matter \(PM₁₀ and PM_{2.5}\)](#)

4 Development and Implementation of Kirklees Council's AQAP

4.1 Consultation and Stakeholder Engagement

Table In developing/updating this AQAP, we have worked with other local authorities, agencies, businesses and the local community to improve local air quality. Schedule 11 of the Environment Act 1995, as amended by the Environment Act 2021, requires local authorities to consult the bodies listed in Table 4-1. In addition, we have undertaken the following stakeholder engagement:

- Between 2nd and 28th March 2026, an early consultation on the proposed AQAP 2026–2031 was undertaken. This was initiated prior to the commencement of the pre-election period, which formally began on 13th March 2026, and continued as part of the Council's statutory duties under LAQM.
A dedicated webpage was created on Kirklees Council's website to host an online consultation questionnaire, alongside a supporting document outlining the proposed AQAP measures and providing background information on local air quality, the supporting evidence base, and the Council's statutory responsibilities. The webpage for the consultation can be found [here](#) and the supporting document can be found [here](#).
- On 27th February 2026, the Council contacted the LAQM Helpdesk to seek advice from Defra regarding the timing and scope of consultation in relation to the requirements of LAQM.TG(22) and LAQM.PG(22), particularly in the context of the forthcoming pre-election period. Advice received on 6th March 2026 indicated that undertaking early consultation would be appropriate to inform submission of the draft AQAP for appraisal. Any further requirements would be confirmed through the Defra appraisal process.
- Consultees were invited to participate via a range of communication channels to maximise engagement, including:
 - Kirklees Council website;
 - Kirklees News and Councillor bulletins;
 - Internal employee communications and forums and;
 - Nextdoor, a location-based social networking platform.
- In addition to the public consultation, targeted engagement was undertaken with key regional and local stakeholder groups to ensure alignment with strategic priorities and public health objectives. This included:
 - West Yorkshire Low Emission Strategy Delivery Group (26th March 2026), comprising representatives from the WYCA and neighbouring authorities

(Calderdale Council, Wakefield Council, Leeds City Council and City of Bradford Metropolitan District Council). Members were briefed on the AQAP and consultation process and provided with a link to the survey to support coordinated regional input.

- Kirklees Health Placemaking Group (11th March 2026), involving internal council services. This provided an opportunity to align AQAP measures with wider place-based priorities and health-focused initiatives across the authority.
 - Kirklees Health Protection Board (19th March 2026), which takes a system-wide overview of stakeholders contributing to health protection in Kirklees. Engagement with this group ensured that the AQAP reflects the recognised health impacts of air pollution and aligns with local health protection priorities. The Board includes representation from external partner organisations (e.g. The UK Health Security Agency (UKHSA) and NHS England)
- Feedback from these groups has been considered alongside public consultation responses in the development and refinement of the final AQAP. A total of 72 responses were received to the consultation, the majority from Kirklees residents. No formal responses were received on behalf of businesses or organisations, although a small number of respondents identified as working within the district.
 - Responses indicated broad support for action to improve air quality, with transport-related measures, particularly improving traffic flow, public transport and reducing idling, identified as key priorities. Measures receiving the highest levels of support included bus service improvements, public air quality information, taxi emissions enforcement and anti-idling campaigns. Qualitative feedback reinforced these findings, highlighting concerns regarding congestion, domestic burning and the need for stronger enforcement of existing measures. Further detail on the consultation is provided in Appendix A.
 - Consultation has also been undertaken with a range of stakeholders ahead of the draft submission in May 2026 (see Table 4-1).

The response to our consultation stakeholder engagement is given in Appendix A: Response to Consultation

Table 4-1 – Consultation Undertaken

Consultee	Consultation Undertaken
The Secretary of State	Yes
The Environment Agency	Yes
National Highways	Yes
All neighbouring local authorities	Yes
Any National Park authority as appropriate	Yes

Consultee	Consultation Undertaken
Other public authorities as appropriate, such as Public Health officials	Yes
Bodies representing local business interests and other organisations as appropriate	Yes

4.2 Steering Group

The Kirklees AQAP Steering Group provides oversight and facilitates the development of the measures included within the AQAP. The Steering Group consists of representatives from key council services including:

- Environmental Health
- Public Health
- Planning and Planning Policy
- Transport Planning
- Transport Services (fleet management)
- Licensing (taxis)
- Highways Network
- Major Projects
- Housing

A steering group workshop was held on 3rd February 2026, during which monitoring and source apportionment results were presented, and the longlist of proposed AQAP measures were discussed. The workshop included an engagement exercise where participants were asked to rate “new thinking” measures based on likely benefit to air quality and likely feasibility of the measure. The workshop minutes are provided in Appendix E, including the results from the rating of “new thinking” measures. Based on the feedback received, the measures longlist was refined to a shortlist, and the AQAP was drafted

5 AQAP Measures

Kirklees Council’s AQAP measures are grouped by the following categories:

- Planning and policy measures – these are cross-cutting measures which are expected to have air quality benefits across the wider district
- Reducing emissions from buses – these measures are expected to help address the exceedance on Castlegate in AQMA 9 Huddersfield, and will additionally have air quality benefits across the wider district
- Reducing emissions from cars – these measures are expected to have air quality benefits across the wider districts
- Improving traffic flow – some these measures target specific hotspots of congestion, including A62 Cooper Bridge Corridor in AQMA 1, and locations where there are Bus hotspots

- Active travel – these measures improve active travel (walking, cycling, wheeling) infrastructure, and aim to encourage greater uptake of active travel options
- Public transport - these measures improve the public transport service offering in Kirklees, with the aim to encourage greater uptake of public transport options
- Council fleet and workplace travel – these measures reduce emissions from the council fleet and workplace travel
- Taxis – these measures reduce emissions from taxis
- Public information and awareness – these measures aim to improve awareness of air quality issues for the public.

Table 5-1 shows the Kirklees Council's AQAP measures. It contains:

- A list of the actions that form part of the plan;
- The departments/organisations responsible for delivering this action;
- Estimated cost of implementing each action;
- Expected benefit in terms of pollutant emission and/or concentration reduction. Where these have not been modelled (see Section 6), the following qualitative benefit has been estimated, with rationale provided in Table 5-1:
 - “Low” – measures with a low target pollution reduction in the AQMAs are considered “soft” actions which may not directly cause reductions of pollutants but may indirectly have a positive impact on air quality. Effectiveness of the measures may be constrained by engagement and/or enforcement. Colour coded in orange in the table.
 - “Medium” – measures with a medium target pollution reduction in the AQMAs include “technical” measures which will directly cause reductions of pollution, but the effectiveness of the measures may be constrained by engagement and/or enforcement. Colour coded in yellow in the table.
 - “High” – measures with high target pollution reduction in the AQMAs include “technical” actions over which the lead authority has control and are unlikely to be constrained by engagement and/or enforcement. Colour coded in blue in the table.
- The timescale for implementation; and
- How progress will be monitored.

The AQAP has been developed using monitoring data, assessment and source apportionment evidence. Measures being pursued by Kirklees Council are considered current, targeted, and capable of being monitored through the annual ASR process.

NB: Please see future Annual Status Reports (ASRs) for regular annual updates on implementation of these measures.

Table 5-1 – Air Quality Action Plan Measures

Measure No.	Measure	Category	Classification	Estimated Year Measure to be Introduced	Estimated / Actual Completion Date	Organisations Involved	Funding Source	Defra AQ Grant Funding	Funding Status	Estimated Cost of Measure	Measure Status	Target Reduction in Pollutant / Emission from Measure	Key Performance Indicator	Progress to Date	Comments/ Potential Barriers to Implementation
Planning and policy															
1	Regulation of permitted activities which emit air pollution through Environmental Permitting Regulations	Environmental Permits	Other	Ongoing	Ongoing	Environment Agency (Part A1), Kirklees Council (Part A2 and B)	Kirklees Council Environmental Health	No	Fully funded	£100k - £500k	Implemented	Low-Medium. Direct regulation of emissions from permitted activities, but limited room for significant reductions	Regulation of permit conditions to ensure, where required, monitored emissions of permitted facilities are compliant, AQ monitoring in vicinity of permitted developments.	Kirklees Council continues to meet its obligations under The Environmental Permitting (England and Wales) Regulations 2016 for Part A2 and Part B processes in our district. Currently, we have 1 A2 and 105 B processes in Kirklees.	Fully funded by existing budget. Estimated cost of this measure is based upon delivering ongoing regulation over the 5 years of this Plan
2	AQ assessment of planning applications	Policy Guidance and Development Control	Air Quality Planning and Policy Guidance	Ongoing	Ongoing	Kirklees Council	Kirklees Council Environmental Health	No	Fully funded	£100k - £500k	Implemented	Low-Medium. Direct regulation of emissions from permitted developments, but limited room for significant reductions	Number of applications implementing actions within AQ planning guidance, AQ monitoring results in vicinity of new developments.	Continue existing actions. Updating of WYLES AQ and Planning guidance. The consultation draft of the National Planning Policy Framework was published in December 2025 with updated guidance and proposed policies. This will be reviewed by Planning Policy and Environmental Health, and procedures updated where required.	Fully funded by existing budget. Estimated cost of this measure is based upon AQ assessment over the 5 years of this Plan
3	AQ assessment of site allocations in support of the Local Plan 2024-2043	Policy Guidance and Development Control	Air Quality Planning and Policy Guidance	Ongoing	2027	Kirklees Council	Kirklees Council Environmental Health	No	Fully funded	£10k - £50k	Planned	Low-Medium. Direct strategic directing of new development locations and activities, but limited room for achieving reductions	Location of site allocations and status relating to current AQ and likely future AQ impacts. AQ monitoring results in vicinity of new developments.	Development of Local Plan 2024-2043 will include a detailed district wide air quality modelling exercise to determine impact of allocated development within the Plan and assist in shaping future mitigation of impact.	This measure is expected to be completed by 2027. Following completion, this will be removed from subsequent ASRs
4	Adoption of Local Plan 2024-2043	Policy Guidance and Development Control	Air Quality Planning and Policy Guidance	2023	2029	Kirklees Council	Kirklees Council	No	Fully funded	£1 million - £10 million	Planned	Low. Imbedding AQ into Local Plan is important for ensuring AQ is considered strategically, but limited room for achieving reductions	Adoption of Local Plan 2024-2043	Work started on the Kirklees Local Plan in 2023 following revision of the previous Local Plan adopted in 2019. In 2024 and 2025 there were early engagement and subsequent consultation, along with a “call for sites” for assessment in the Plan. One of the main aims of the Plan is to work towards the Council aim of net zero by 2038. The Plan will contain a specific AQ Policy following adoption.	The estimated cost includes significant cost for traffic and detailed AQ modelling to support the Plan. Local Plan Timetable

Measure No.	Measure	Category	Classification	Estimated Year Measure to be Introduced	Estimated / Actual Completion Date	Organisations Involved	Funding Source	Defra AQ Grant Funding	Funding Status	Estimated Cost of Measure	Measure Status	Target Reduction in Pollutant / Emission from Measure	Key Performance Indicator	Progress to Date	Comments/Potential Barriers to Implementation
5	Delivery of Kirklees Transport Strategy	Policy Guidance and Development Control	Other policy	2025	2025	Kirklees Council	Kirklees Council	No	Fully funded	£10k - £50k	Implemented	High. Implementation of actions within the strategy are expected to directly reduce transport related emissions in Kirklees.	Completion of strategy actions, modal share of journeys in Kirklees, information on Kirklees fleet (e.g. Euro composition, proportion of EVs and hybrids)	The Transport Strategy was completed and adopted in September 2025. Kirklees Transport Strategy Kirklees Council	This new strategy will support and guide ongoing investments in our transport network, including: Developing improved walking, wheeling and cycling routes. Delivering new and improved bus networks, bus stations and bus franchising. Upgrading the rail network through the Transpennine Route Upgrade and the Penistone Line
6	Delivery of Kirklees Climate Change Action Plan and Environmental Strategy	Policy Guidance and Development Control	Other policy	Ongoing	2038	Kirklees Council	Kirklees Council	No	Fully funded	£100k - £500k	Implemented	Medium-High. Implementation of decarbonisation actions within the strategy are expected to have direct benefits for reducing air pollutant emissions in Kirklees.	Completion of strategy actions, number of retrofits completed, modal share of journeys in Kirklees, information on Kirklees fleet (e.g. Euro composition, proportion of EVs and hybrids)	The CCAP does include actions from the Energy generation, buildings, agriculture, transport and waste which will contribute to reductions in background concentrations of NOx and PM.	Lengthy timescale in delivery actions (up to 2038), and the estimated cost reflects only the drafting of the CCAP and Environmental Strategy. In future ASRs we will briefly highlight progress with measures guided by the Plan and Strategy
7	Development and adoption of West Yorkshire Transport Strategy Local Transport Plan 4 (LTP4)	Policy Guidance and Development Control	Other policy	2026	Ongoing	WYCA	WYCA	No	Fully funded	£100k - £500k	Implemented	High. Implementation of actions within the strategy are expected to significantly reduce transport related emissions in Kirklees.	Completion of LTP4 actions, modal share of journeys in Kirklees, information on Kirklees fleet (e.g. Euro composition, proportion of EVs and hybrids)	A new Mayor's West Yorkshire Local Transport Plan (LTP) is being co-developed by the Combined Authority and Local Authority partners, aiming for adoption March 2026. This will be the new statutory Local Transport Plan for the region, the last plan being the Transport Strategy 2040 adopted in 2017	The West Yorkshire Transport Plan was adopted on 12 th March 2026 (The Mayor's West Yorkshire Local Transport Plan). The Plan alludes to significant measures which have been included in this AQAP (e.g. Bus Franchising, Mass Transit etc). In future ASRs we will report directly on progress with these measures
8	Kirklees LAEP (Transport)	Policy Guidance and Development Control	Other Policy	2026	TBC	WYCA, Kirklees Council	WYCA and Kirklees Council	No	Not funded	£10k - £50k	Planned	Medium to high. This measure supports actions to decarbonise transport which will have co-benefits for air quality.	Kirklees traffic mix – e.g. number of EVs and lower emission vehicles in mix, modal share of transport.	(Specifically, the Transport element) - currently in development in partnership with the CA. Would support the development of schemes which aim to support decarbonisation of transport.	This is the source of our figure for Scenario 3 of the detailed modelling for AQMA 9 (see Section 6 and Appendix C)

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9	Revision of Kirklees Joint Strategic Assessment (KJSA) to reflect AQAP 2026 - 2031	Policy Guidance and Development Control	Air Quality Planning and Policy Guidance	2027	2027	Kirklees Council	Kirklees Council	No	Fully funded	> £10k	Implemented	Low. KJSA- This measure is important strategically for AQ knowledge base, with indirect influence over AQ actions.	Completion of KJSA	KJSA's last updated in 2017. Currently being updated now. JSA provides link to the wider public health community.	This measure is expected to be completed by 2027. The KJSA will then likely be reviewed again with the lifetime of the AQAP
10	Liaise with National Highways over future revocation of M62 based AQMA 8	Other	Other	2026/2027	2026/2027	Kirklees Council, National Highways	Kirklees Council	No	Fully funded	> £10k	Planned	N/A - no target reduction in pollutant/emissions	Communications with National Highways, Revocation of AQMA 8. Communications completed with National Highways, Revocation of AQMA 8 by Summer 2027	AQMA 8 will be revoked when monitoring confirms compliance below 10% of the annual mean objective level for NO ₂ (<36 µg/m ³) for three consecutive years, at properties on the eastbound carriageway and this is approved by DEFRA.	Fully funded by existing budget. Timing of dialogue with National Highways dependent on sufficient "compliant" monitoring data
11	Targeted smoke control	Promoting Low Emission Plant	Other measure for low emission fuels for stationary and mobile sources	TBC	TBC	Kirklees Council, WYCA	Kirklees Council	No	Not funded	£10k - £50k	Planned	Low-medium. Level of pollutant reduction depends on successful enforcement.	Number of actions taken, including data on informal/educative communications and enforcement notices, including financial penalties, data on compliance as a result of interventions.	This project will build upon a WY report assessing (monitoring and detailed dispersion modelling) non-road emissions of PM _{2.5} , undertaken in 2024. The report concluded that targeted smoke control action (based upon the 2024 report identifying locations where health impact would be greatest) would be an effective measure in further reducing these emissions	Fully funded by existing budget and regulatory burdens funding. This measure will be incorporated into the existing staff resourcing of the Council's Environmental Health department.
Reducing emissions from buses															
12	West Yorkshire Bus Alliance - voluntary agreement for Euro VI or equivalent by 2026	Promoting Low Emission Transport	Public Vehicle Procurement - Prioritising uptake of low emission vehicles	2025	2026	WYCA	WYCA and bus operators	No	Fully funded	> £10 million	Implemented	High. Scenario modelling (scenario 2) shows that if all buses in Kirklees were Euro VI, this would reduce concentrations at diffusion tube K7 (in AQMA 9) by 4.3 µg/m ³ and by an average of 1.5 µg/m ³ across AQMA 9.	Number/ proportion of Euro VI buses, Number/ proportion of EV buses in Kirklees bus fleet	The Combined Authority is now in an Enhanced Partnership (EP) with bus operators and local authorities. This is delivered through the West Yorkshire Bus Alliance and improves the passenger experience for bus passengers in West Yorkshire. The target for Euro VI buses across West Yorkshire is a continuing target for the West Yorkshire bus services improvement plan, as well as a commitment to transition to a fully zero emission bus fleet by 2036	The current EURO split for buses in Kirklees is EURO IV 2%, EURO V 21%, EURO VI 40%, EURO VI Retrofit 38%. Although the agreement is due to be completed this year, this measure will be retained in the Plan, to monitor progress.

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13	West Yorkshire Bus Service Improvement Plan 2024. Zero emission fleet by 2036	Promoting Low Emission Transport	Public Vehicle Procurement - Prioritising uptake of low emission vehicles	2024	2036	WYCA	WYCA and bus operators	No	Fully funded	> £10 million	Planned	High. Scenario modelling (scenario 1) shows that if 50% of buses in Kirklees are zero emission and 50% are Euro VI, concentrations would reduce by 7 µg/m ³ at K7 (AQMA 9) and by an average of 2.3 µg/m ³ across AQMA 9.	Number/ proportion of EV buses in Kirklees bus fleet	When first announced in 2023, Zero Emission Bus Regional Area (ZEBRA) Phase 2 funding was intended to support the transition to zero emission buses on routes that are operated by tendered services in Calderdale and Kirklees. Following the decision to franchise the bus network in March 2024, in order to optimise the roll out of zero emission buses across the region in an equitable and proportional way, there was a strategic decision to combine this funding with ZEB phase 3 funding. ZEB phase 3 funding is a proportion of the City Regional Sustainable Travel Settlement awarded by the DfT. A benefit of franchising is the greater control the Combined Authority has over deployment of these vehicles.	Currently there are no zero emission buses operating in Kirklees. This figure will be reviewed annually within our ASRs. This is a lengthy timescale for achievement (2036)

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14	Bus franchising	Promoting Low Emission Transport	Public Vehicle Procurement - Prioritising uptake of low emission vehicles	March 2027	2036	WYCA	WYCA	No	Fully funded	£100k - £500k	Planned	High. Supporting Zero emission bus implementation in Kirklees. Scenario modelling shows that if 50% of buses in Kirklees are zero emission and 50% are Euro VI, concentrations would reduce by 7 µg/m³ at K7 (AQMA 9) and by an average of 2.3 µg/m³ across AQMA 9	Bus fleet mix, number of zero-emission buses in fleet.	Kirklees franchised buses will be operating from April 2027, with all franchised services to be in operation across the WY region by October 2028. Bus franchising will support the decarbonisation of the local bus network, establishing a transport network that helps to reduce the overall impact of transport on carbon emissions and air quality, and increases our resilience against climate change, including via investment in zero-emission buses. Our longer-term goal is to invest in a publicly owned, zero emission bus fleet gradually over time. This will be delivered in line with our ambition of having a fully zero emission bus fleet by 2036. A report has been submitted to the Combined Authority meeting on 22 January 2026 which provides more information on our plans for depot electrification in Kirklees.	Bus franchising will provide the framework to implement measure 13 above. In regard to Kirklees, a report was been taken to the Combined Authority meeting on 22 January 2026 (available here) which provides more information on our plans for depot electrification in Kirklees. This paper includes details of our plans for electrification of round 1 depots, including Huddersfield, to support the roll out of electric buses from the launch of round 1 services. The report notes that the upgraded Huddersfield depot will have the capacity to support 115 electric buses (see detail here).
Reducing emissions from cars															
15	Local Government Electric Vehicle Infrastructure (LEVI)	Promoting Low Emission Transport	Procuring alternative Refuelling infrastructure to promote Low Emission Vehicles, EV recharging, Gas fuel recharging	Early 2026	Dec-29	WYCA	WYCA and private providers	No	Fully funded	£1 million - £10 million	Implemented	Medium. This measure facilitates public uptake of electric cars. Scenario modelling (scenario 3) shows that if 31.5% of petrol and diesel cars in Kirklees are replaced with EVs, this would reduce concentrations by an average of 2.0 µg/m³ across AQMA 9.	Number of EV charge points, proportion of EVs in Kirklees local traffic mix	This project received cabinet approval in 2025, facilitating the creation of a procurement framework for Electric Vehicle Charge Point providers by WYCA, the use of the West Yorkshire Procurement Framework to appoint a provider (or providers) to deliver the LEVI project in West Yorkshire and specifically charge points in Kirklees.	Delivery commenced in early 2026

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16	£1 million EV infrastructure project	Promoting Low Emission Transport	Procuring alternative Refuelling infrastructure to promote Low Emission Vehicles, EV recharging, Gas fuel recharging	2026	Dec-27	Kirklees Council, WYCA	Kirklees Council Capital funding	No	Fully funded	£1 million	Planned	Medium. This measure facilitates public uptake of electric cars. Scenario modelling (scenario 3) shows that if 31.5% of petrol and diesel cars in Kirklees are replaced with EVs, this would reduce concentrations by an average of 2.0 µg/m ³ across AQMA 9	Number of EV charge points, proportion of EVs in Kirklees local traffic mix	To introduce more EV charging locations where LEVI/CRSTS gaps emerge	The original intention of the funding was to address infrastructure gaps within non-commercial locations across Kirklees. Following the establishment of the LEVI fund, the scope of these gaps has become more defined and localised. The Council is currently reviewing submissions received through the LEVI funding process and working in collaboration with the fleet team to identify any remaining gaps in provision

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17	ULEV parking permits	Promoting Low Emission Transport	Priority parking for LEVs	Ongoing	Under Review	Kirklees Council	Council Corporate revenue	No	Fully funded	> £10k	Implemented	Low. This soft measure may have an influence on uptake of LEVs and may influence AQ in any designated priority ULEV parking locations.	Number of ULEV parking permits issued/ applied for	ULEV permits were introduced in 2020/21. Initially free, moving to an annual charge in 2023. In accordance with a Cabinet decision, the ULEV permit offer will now be reviewed to determine if the original aims and objectives have been met. Review to take place in Spring/Summer 2026	Approval from service director and portfolio holder. ULEV green permit and decision to continue will be undertaken later this year. Local elections in May leading to change of portfolio holder – delay in review outcome. The outcome of this will be reported in our 2027
Improving traffic flow															
18	A62 Cooper Bridge Corridor Improvement Scheme (AQMA 1)	Traffic Management	Strategic highway improvements	2029	2029	Kirklees Council Major Projects	Capital Transport Fund	No	Fully funded	> £10 million	Planned	Medium-High. Implementation of scheme will have direct benefits for local area	Completion of Scheme	Impact in now revoked AQMA 1 (Cooper Bridge). One of the scheme objectives is improvement in AQ. This scheme will help maintain improved AQ in the area	Measures to be introduced is the same year as scheme completion. Construction will start early 2028 and will last approximately 18 months. However, the exact duration length will be determined by the contractor once appointed.
19	Phase 5, A629 Halifax to Huddersfield Road scheme (AQMA 3 and 6)	Traffic Management	Strategic highway improvements	Phase 1 2025 Phase 2 2027	Phase 1 2025 Phase 2 2027	Kirklees Council Major Projects	Capital Transport Fund	No	Fully funded	> £10 million	Implemented	Medium-High. Implementation of scheme will have direct benefits for local area	Completion of Scheme	Impact in AQMA 3 (Ainley Top) and 6 (Edgerton). Additional measures (upgrade of Microprocessor Optimised Vehicle Actuation, MOVA) in AQMA 6. Also, active travel improvements along the corridor. One of the scheme objectives is improvement in AQ.	Phase 1 is defined as AQMA 6 (Edgerton), this was completed in 2025 – Phase 2, (AQMA 3, Ainley Top) is estimated to be completed in 2027
20	Continuing development of network's Urban Traffic Management Control (UTMC) systems	Traffic Management	UTC, Congestion management, traffic reduction	Ongoing	Ongoing	Kirklees Council	WYCA, subject to future funding	No	Fully funded	£1 million - £10 million	Implemented	Medium-High. This contributes to lower congestion, in turn lower emissions of NOx and PM.	Number of UTMC suitable modes of operation in place, AQ monitoring results in locations with UTMC	Continue to implement adaptive urban traffic control system to co-ordinate and dynamically optimise traffic flow, in line with current and future processes, systems and technologies. This will contribute to lower congestion, in turn lower emissions of NOx and PM.	Continuing development of UTMC systems dependent on securing of ongoing funding

Measure No.	Measure	Category	Classification	Estimated Year Measure to be Introduced	Estimated / Actual Completion Date	Organisations Involved	Funding Source	Defra AQ Grant Funding	Funding Status	Estimated Cost of Measure	Measure Status	Target Reduction in Pollutant / Emission from Measure	Key Performance Indicator	Progress to Date	Comments/Potential Barriers to Implementation
21	Development and delivery of Bus Hotspots scheme, aiming to ease congestion and improve bus journey times and reliability	Traffic Management	Other	Ongoing	Ongoing	Kirklees Council	WYCA, subject to future funding	No	Fully funded	£1 million - £10 million	Implemented	Medium. Implementation of scheme should have direct benefits for areas where bus services are impacted by congestion.	Delivery of scheme, bus journey times, service use and/or ratings	Range of interventions planned across the district, includes the procurement of software which will make identification of hotspots in district easier to support future scheme delivery	Continued implementation of this scheme is subject to a current assessment of bus hotspots and the impact of future bus franchising in WY
22	Development of bus priority network management system within AQMA 9	Traffic Management	Selective vehicle priority, bus priority, high vehicle occupancy lane	TBC	TBC	Kirklees Council	WYCA, subject to future funding	No	Not funded	TBC	Planned	Medium. Implementation of scheme should have direct benefits where bus services in AQMA 9 are impacted by congestion.	Delivery of system, bus journey times, service use and/or ratings	Proposal is based around junction of Trinity Street and Castlegate providing bus priority.	This is dependent on LTP 4.
23	Moving Traffic Enforcement Powers at three trial sites	Traffic Management	Other	Late 2026	Ongoing	Kirklees Council	Council budget	No	Fully funded	£100k - £500k	Planned	Low. AQ benefit is dependent on the Powers successfully dissuading high emission vehicle behaviours.	Instances of use of moving traffic powers, nature of incidents (did they involve high emission vehicle behaviours?).	Approved at Cabinet January 2026. Planned implementation late 2026.	6-to-12-month trial period at 3 locations in the district. On completion of the trial, an assessment to continue will be made
Active travel															
24	Development of WY Active Travel Strategy & 'Vision'	Promoting Travel Alternatives	Intensive active travel campaign & infrastructure	March 2026?	WYCA to confirm	WYCA	WYCA	No	Fully funded	£1 million - £10 million	Planned	Low. A soft measure, and AQ benefit is dependent on uptake of active travel.	Adoption of Strategy, and implementation of actions	In development. Initially a vision is in development and expected that this will develop to a full strategy in future years	West Yorkshire Places Your Voice
25	Delivery of Huddersfield Town Centre Sustainable Transport Schemes	Promoting Travel Alternatives	Intensive active travel campaign & infrastructure	Ongoing	Ongoing	Kirklees	Various	No	Not funded	Various range of projects, unable to quantify at this stage	Planned	Low. A soft measure, and AQ benefit is dependent on uptake of active travel.	Delivery of actions/measures within the framework	Requires funding, currently being sought. A high-level framework for future movements in Huddersfield Town Centre prioritising public transport and active travel modes.	Requires funding. Progress with this project will be reported in future ASRs.
26	Development and delivery of active travel infrastructure schemes	Transport Planning and Infrastructure	Cycle and pedestrian networks	Ongoing	Ongoing	Kirklees	Various	No	Partially funded	Various range of projects, unable to quantify at this stage	Planned	Low. A soft measure, and AQ benefit is dependent on uptake of active travel.	Number of schemes completed	Rolling programme of network mapping, pipeline development and scheme delivery based upon when funding can be secured. Further funding required and being sought for post 2026	Further funding required and being sought for post 2026 Progress with this project will be reported in future ASRs

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27	Delivery of active travel behaviour change programme	Promoting Travel Alternatives	Intensive active travel campaign & infrastructure	Ongoing	Ongoing	Kirklees Council	Various	No	Partially funded	Funding yet to be confirmed for 27/28	Implemented	Low. A soft measure, and AQ benefit is dependent on uptake of active travel.	Number of events delivered participation rates	Includes community events, widening participation activities, schools work, cycle storage and cycle training.	Rolling programme based upon when funding can be secured. Further funding required and being sought post 2026. Progress with this project will be reported in future ASRs.
28	Delivery of Modeshift Stars initiative in schools to encourage modal shift.	Promoting Travel Alternatives	Promotion of walking; Promotion of cycling	Ongoing	Ongoing	Kirklees Council	Council Budget / Active Travel England / West Yorkshire Combined Authority (modeshift subscription only for the district)	No	Fully funded	< £10k - £50k	Implemented	Low. A soft measure, and AQ benefit is dependent on uptake of active travel.	Number of schools signed up and the accreditation level of each school.	To encourage sustainable travel to school by implementation of various travel initiatives (park and stride - walking bus etc). Total of 58 schools signed up currently.	Total of 58 schools signed up currently.
29	Bikeability training for children	Promoting Travel Alternatives	Promotion of walking;	Ongoing	Ongoing	Kirklees Council	Mainly Active Travel England (Bikeability Trust Grant) with West Yorkshire Combined Authority top up for balance.	No	Fully Funded	£100k - £500k	Implemented	Low. A soft measure, and AQ benefit is dependent on uptake of active travel.	Number of children participating in the scheme of each level of bikeability plus the additional balance training for early years.	Continued yearly delivery with 4 providers across the district	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 a mode of transport.
Public transport															

Measure No.	Measure	Category	Classification	Estimated Year Measure to be Introduced	Estimated / Actual Completion Date	Organisations Involved	Funding Source	Defra AQ Grant Funding	Funding Status	Estimated Cost of Measure	Measure Status	Target Reduction in Pollutant / Emission from Measure	Key Performance Indicator	Progress to Date	Comments/Potential Barriers to Implementation
30	Transpennine Route Upgrade (TRU)	Transport Planning and Infrastructure	Public transport improvements - interchanges stations and services	2021	2032 *	Department for Transport	Department for Transport	No	Fully funded	> £10 million	Implemented	Low to medium. AQ benefit is dependent on uptake of rail, and level to which rail journeys replace private vehicle journeys or road freight post-completion.	Completion of upgrade. Electrification of the Line	This is a significant capital infrastructure for the north of England, improving connectivity between Leeds, Huddersfield and Manchester. Work has commenced on those sections within Kirklees	Timescale is for the W3B section of the Scheme. Benefits to be delivered in a 5–10-year timeframe. As Huddersfield Railway station is located within AQMA 9, electrification of the line will eventually assist in reducing NOx emissions. Submission of the W2C section Gledholt Tunnel to Standedge Tunnel Transport and Works Act Order (TWAO) expected 2026, will impact AQMA 9 and 10. TRU upgradehttps://thetrupgrade.co.uk/
31	Penistone Line	Transport Planning and Infrastructure	Public transport improvements - interchanges stations and services	TBC	TBC	Kirklees Council	Kirklees Council via the Levelling Up Fund	No	Fully funded	> £10 million	Planned	Low to medium. AQ benefit is dependent on uptake of rail, and level to which rail journeys replace private vehicle journeys or road freight post-completion.	Completion of upgrade, number of passengers and journeys	Kirklees Council was awarded £48 million in 2025 to improve the Penistone Line between Huddersfield and Sheffield. An improved, more attractive line will assist with modal shift away from the car to public transport	Benefits to be delivered in a 5-year timeframe.
32	Mass Transit - Dewsbury Line Development Project	Transport Planning and Infrastructure	Public transport improvements - interchanges stations and services	Not to be delivered until the mid-2030s, after Phase 1 - Leeds and Bradford	2040	WYCA	DfT Transport for City Regions Fund	No	Fully funded	> £10 million	Planned	Medium to high. This new public transport route is likely to achieve some modal shift from private vehicle use, reducing journeys by private vehicle.	Completion of upgrade, number of passengers and journeys	A Strategic Outline Case is proposed to be submitted to Government later this year	Not to be delivered until the mid-2030s, after Phase 1 - Leeds and Bradford

Council fleet and workplace travel

Measure No.	Measure	Category	Classification	Estimated Year Measure to be Introduced	Estimated / Actual Completion Date	Organisations Involved	Funding Source	Defra AQ Grant Funding	Funding Status	Estimated Cost of Measure	Measure Status	Target Reduction in Pollutant / Emission from Measure	Key Performance Indicator	Progress to Date	Comments/Potential Barriers to Implementation
33	Kirklees fleet "Vehicle Replacement Programme" (VRP)	Promoting Low Emission Transport	Council fleet Vehicle Procurement - Prioritising uptake of low emission vehicles	2025	2031	Kirklees Council	Kirklees Council Capital Plan	No	Fully funded	£21.7 million	Implemented	Medium. This measure involves direct replacement of higher emission vehicles with lower emission vehicles.	Euro and fuel type % composition of Kirklees fleet.	Replacement of existing vehicles with EURO VI (latest variant), and future EURO VII adoption. Potentially replace some of the van fleet with EVs, following further feasibility studies and continue to monitor the EV market for suitability of vehicles to meet individual service operational delivery models.	Progress with this rolling programme will be reported in future ASRs
34	Pool vehicles for council staff	Alternatives to private vehicle use	Car & lift sharing schemes	Ongoing	Ongoing	Kirklees Council	Kirklees Council	No	Fully funded	£500k - £1 million	Implemented	Low. AQ benefit is dependent on uptake, likely a relatively small pool of users.	Frequency of use	The use of pool cars is embedded within Council procedures, including the provision of a driver's handbook for use of pool cars	
35	EV salary sacrifice scheme	Promoting Low Emission Transport	Other	2025	2030	Kirklees Council	N/A	No	Fully funded	Costs met by the employee	Implemented	Low. A relatively low level of emissions reduction.	Number of council employees participating in the scheme.	Implementation of Ultra Low Emission Vehicles (ULEVs) Salary Sacrifice Scheme began Sept 2025 and will be a 5-year contract	Vehicle options are restricted to ULEVs, which are defined as a low emission car that emits 75g/km CO ₂ or less, based on the NEDC test. ULEVs include pure electric vehicles, electric range-extender vehicles, and plug-in hybrids (PHEVs).
Taxis															
36	EV taxis (with WYCA)	Promoting Low Emission Transport	Taxi emission incentives	Ongoing	Dec-30	Kirklees Council, WYCA	WYCA	No	Fully funded	£1 million - £10 million	Implemented	Low. This measure encourages replacement of higher emission vehicles with lower emission vehicles but is dependent on uptake by taxi operators.	Number of charge points available for taxis and private hire vehicles, rates of charge point use	The Ultra-Low Emission Vehicle (ULEV) taxi scheme aims to reduce air pollution by installing free-to-use charging points for electric vehicles and encouraging taxi and private hire drivers to switch from diesel to electric vehicles. Each two-bay charge point included one bay dedicated for taxi and private hire vehicle use.	The project, led by the West Yorkshire Combined Authority, remains ongoing with funding in place. The Council is currently assessing the feasibility of installing a limited number of additional charge points as part of the scheme.

Measure No.	Measure	Category	Classification	Estimated Year Measure to be Introduced	Estimated / Actual Completion Date	Organisations Involved	Funding Source	Defra AQ Grant Funding	Funding Status	Estimated Cost of Measure	Measure Status	Target Reduction in Pollutant / Emission from Measure	Key Performance Indicator	Progress to Date	Comments/Potential Barriers to Implementation
37	Enforcement of emission limits via Kirklees Hackney Carriage and Private Hire Policy	Promoting Low Emission Transport	Taxi Licensing conditions	Ongoing	Ongoing	Kirklees Council Licencing	Kirklees Council	No	Fully funded	£10 - £50k	Implemented	Low-medium. This measure requires replacement of higher emission vehicles with lower emission vehicles.	Number of ULEVs	EURO V petrol, EURO VI diesel (except WAVs) at first licensing, encourage uptake of ULEVs	All licensed vehicles must meet the Kirklees Council vehicle specification Appendix D - Vehicle Specification. Taxi drivers are required to fund their own vehicles, there is no monetary incentive for them.
38	Hackney carriage and Private Hire anti-idling at taxi ranks	Traffic Management	Anti-idling enforcement	TBC	TBC	Kirklees Council Licensing	Kirklees Council	No	Fully funded	£10 - £50k	Planned	Low. Level of pollutant reduction depends on successful enforcement.	Number of enforcement events, frequency of enforcement activity	Based upon Calderdale policy, where the first two hackney carriages can idle, but the remaining hackney carriages in the rank cannot. Enforcement in Calderdale undertaken by a combination of Licensing and Environmental Health staff on a periodic basis, using the 2002 anti-idling regulations. Kirklees have now applied to the Secretary of State (SoS) for these powers.	Currently there are 224 hackney carriages in Kirklees (this is the maximum allowed) and 2624 PHVs. Licensing is a ware of a significant number of taxis operating in Kirklees which have been registered elsewhere, but numbers are not known. Discussions to be held in 2026 and reported in 2027 ASR on feasibility of taking this measure forward
Public information and awareness															

Measure No.	Measure	Category	Classification	Estimated Year Measure to be Introduced	Estimated / Actual Completion Date	Organisations Involved	Funding Source	Defra AQ Grant Funding	Funding Status	Estimated Cost of Measure	Measure Status	Target Reduction in Pollutant / Emission from Measure	Key Performance Indicator	Progress to Date	Comments/Potential Barriers to Implementation
39	Monitoring of air quality for public information purposes	Public Information	Via the Internet	Ongoing	Ongoing	Kirklees Council	Kirklees Council	No	Partly funded	£50k - £100k	Implemented	Low. Monitoring is important for the AQ knowledge base, with indirect influence over AQ actions.	Publication of AQ monitoring data and annual AQ reports	Including the West Yorkshire Public Particulate Information Improvement Project (PIIP) monitoring PM _{2.5} and air quality dashboard has been established	Air quality dashboard The particulate monitors are not funded through baseline budgets and therefore additional funding will be required to extend the use of these beyond their current subscriptions end date (October 2027) The current West Yorkshire air quality dashboard is funded until September 2026, after which time additional funding will be required to extend this dashboard if a suitable, in-house dashboard cannot be developed. We will report of particulates in our Annual Status Report (ASR).
40	Awareness campaign for smoke-control area	Public Information	Via the Internet, Via other mechanisms	TBC	TBC	Kirklees Council	Kirklees Council	No	Fully funded	£10k - £50k	Planned	Low. This is a soft measure, impact to AQ/ emissions is dependent on behaviour change by members of the public, which cannot be guaranteed.	Number of people/ households/solid fuel vendors reached by campaign, number of smoke-control rule breaches	Educative initiative for vendors of solid fuels undertaken in 2024/2025. This project will build upon a WY report assessing (monitoring and detailed dispersion modelling) non-road emissions of PM2.5, undertaken in 2024.	Fully funded by existing budgeted and regulatory burdens funding. This measure will be incorporated into the existing staff resourcing of the Council's Environmental Health dept. A work programme will have to be devised which can both accommodate existing statutory work and this measure
41	Awareness campaign for anti-idling	Public Information	Via the Internet, Via other mechanisms	TBC	TBC	Kirklees Council	Kirklees Council	No	Fully funded	£10k - £50k	Planned	Low. This is a soft measure, impact to AQ/ emissions is dependent on behaviour change by members of the public, which cannot be guaranteed.	Number of people/ households/schools reached by campaign, number of anti-idling education events.	There has been previous engagement with ward members etc over potential anti-idling campaigns, particularly around schools. The lessons learned from this dialogue will be useful in future consideration of this measure.	Fully funded by existing budget. This measure will be incorporated into the existing staff resourcing of the Council's Environmental Health department

5.1 Timescales of the AQAP Measures

Several measures outlined in Table 5-1 are already underway, and a number of these are ongoing measures which are expected to remain in place for the foreseeable future – beyond completion of this AQAP in 2031 and beyond Kirklees achieving compliance with AQOs.

The target completion date (and in some cases, also the target start date) for some measures are to be confirmed (TBC), as measure planning has not yet reached the stage where timescales are confirmed. A number of these measures are linked to the adoption of the new Local Plan and the development and adoption of the LTP4 transport plan. These timescales will be kept under review, and the AQAP measures Table will be updated accordingly when timescales are confirmed.

For measures which remain incomplete by their target completion dates, an examination of implementation barriers will be conducted, and necessary solutions will be designed with the measures updated accordingly.

In terms of assessing the effectiveness of each AQAP measure, Kirklees Council will continue to review progress against implementing AQAP measures on a routine basis, with annual reporting of progress as well as evaluation of the impact of specific measures within ASRs.

Each measure's Key Performance Indicators (KPIs) will also be monitored and reported. These vary from adoption/implementation dates (e.g. for the new Local Plan, for LTP4), completion of actions/schemes, to metrics such as number of journeys, events, users/participants, or upgrades. A key metric for a number of "low emission transport measures" is the proportion of Euro and fuel types in the Kirklees local traffic mix. This can be measured through traffic surveys.

The following measures are anticipated to have impacts which may be seen locally:

- A62 Cooper Bridge Corridor Improvement Scheme (AQMA 1)
- Phase 5, A629 Halifax to Huddersfield Road Scheme (AQMA 3 and 6)
- Development and delivery of Bus Hotspots Scheme, aiming to ease congestion and improve bus journey times and reliability
- Development of bus priority network management system within AQMA 9
- Moving Traffic Enforcement Powers at three trial sites

For all other measures, impacts would be expected more widely across Kirklees.

5.2 Air Quality Partners

Air Quality Partners may be designated when a local authority's assessment of air quality indicates the sources of pollution will be outside the control of the local authority. Air Quality Partners should provide reasonable assistance establishing measures they will take responsibility for within the AQAP, must commit to measures and must specify a date by which those measures will be carried out.

Kirklees Council has identified WYCA and local bus operators as Air Quality Partners due to their role in addressing bus and wider road-transport emissions across Kirklees. Source apportionment identifies buses as a key contributor to road-transport emissions within AQMA 9, and Kirklees Council will continue to work with these partners to support measures that help achieve the air quality objectives.

Kirklees Council has identified that National Highways are the responsible owner for road transport from the M62 impacting air pollution in AQMA 8. AQMA 8 is currently compliant with the AQO for which it was declared (NO₂ annual mean), and can be revoked once monitoring demonstrates three consecutive years of concentrations being below 10% of the objective level.

Therefore, it is suitable for Kirklees Council and National Highways to liaise over the future revocation of AQMA 8, and this is an action included within the AQAP measures. However, if air quality concentrations worsen in AQMA 8 and exceed or approach the exceedance level for NO₂, Kirklees Council will liaise with National Highways to discuss what measures should be introduced, which National Highways would be responsible for.

5.3 Maintaining Safe Air Quality

Measurements taken in 2023 show that annual average levels of NO₂ across Kirklees council are mostly compliant with the threshold set by the UK (40 µg/m³)¹⁴. Non-compliant sites are K7 (44.9 µg/m³) and K40 (43 µg/m³).

The measures laid out in this AQAP aim to help bring these remaining sites into compliance expected by 2026, and further reduce concentrations of NO₂ to below 10% of the objective value to ensure on going compliance.

Kirklees Council aims to ensure that relevant council teams and partners continue to collaborate effectively to drive compliance with the national NO₂ annual mean objective. Once compliance is achieved, Kirklees Council will also aim to publish an Air Quality Strategy (AQS), to ensure continued compliance with the national objective, and where feasible, to continue to reduce NO₂ levels across Kirklees.

¹⁴ <https://www.kirklees.gov.uk/beta/crime-and-safety/pdf/kirklees-annual-status-report-2024.pdf>

6 Quantification of measures

Scenarios to assess the impact of priority measures for reducing emissions from buses and diesel cars were selected for modelling by Kirklees Council. This decision was informed by the source apportionment results, which showed that:

- Buses are the largest contributor to emissions at exceeding location K7, and K2 in AQMA 9 Huddersfield (approximately 72% of NO_x emissions); and cars are the second largest contributor to emissions at these sites.
- Cars are the largest contributor to emissions at exceeding location K40, (approximately 48% of NO_x emissions).

The following scenarios were developed, to reflect the impact of measures planned to address these priorities:

Scenario 1 – Convert Bus fleet to 50% electric buses and 50% Euro VI buses.

Scenario 2 – Convert Bus fleet to 100% Euro VI buses.

Scenario 3 – Upgrade 31.5% of petrol and diesel cars to electric cars.

6.1 Scenario assessment for AQMA 9

Dispersion modelling was undertaken for the year 2023 in AQMA 9 in Kirklees to establish baseline air quality (methodology detailed in Appendix C) AQMA 9 was prioritised for dispersion modelling as it is the most complex and highest-risk location, with the greatest exceedance, and a detailed local traffic model to support a robust assessment. In contrast, the remaining AQMAs have simpler emission profiles and lower or marginal exceedances, so proportionate scenario assessments based on monitoring and emissions data were considered sufficient.

To allow for direct comparison between the scenarios and the baseline air quality conditions, all scenarios were modelled in 2023. Table 6-1 presents the change in NO₂ concentrations between the three measure scenarios from the baseline, with reductions in concentrations compared to the baseline across roads links and at monitoring locations.

The results show that Scenario 1 achieves the greatest reductions in annual mean NO₂ concentrations with a maximum of -9.5 µg/m³ and average reductions across all road links of -2.3 µg/m³. Scenario 3 achieves the smallest average reductions of -2.0 µg/m³ across all road links and -2.2 µg/m³ at monitoring sites. Scenario 2 sits between these other two scenarios.

Table 6-1 – change in NO₂ concentrations (µg/m³) between the three measure scenarios from the baseline

Change in NO₂ concentrations (µg/m³) from Baseline	Scenario 1 (buses 50% electric and 50% Euro VI)	Scenario 2 (buses 100% Euro VI)	Scenario 3 (petrol and diesel cars 31.5% electric)
Maximum reduction	-9.5	-6.8	-3.3

Minimum reduction	-0.4	-0.3	-0.1
Average reduction across roads (PCM links)	-2.3	-1.5	-2.0
Average reduction across monitoring locations	-2.6	-1.7	-2.2
Average reduction across roads and monitoring locations	-2.3	-1.6	-2.0

The scenario modelling described in Appendix C has also been used to estimate when the annual mean NO₂ objective is likely to be achieved in Kirklees at remaining non-compliant sites (K7 and K40). To estimate the future year of compliance, Defra background pollution maps¹⁵ for Kirklees were used for the period 2023 to 2028 to develop scaling factors by comparing the background concentration at diffusion tube sites in each future year.

These scaling factors were then applied to the modelled concentrations at K7 to estimate the future compliance year. Note that modelled concentrations at K7 had an adjustment factor of 1.047 applied for the baseline year (2023) to ensure that the modelled value at K7 matched the measured NO₂ value exactly. The results of this exercise are shown in Table 6-2.

Table 6-2 – Future compliance projection for diffusion tube K7

K7 Scenario	2023	2024	2025	2026	2027	2028
Baseline	44.9	41.7	40.5	39.4	38.1	36.9
Scenario 1	37.6	34.9	33.9	32.9	31.9	30.9
Scenario 2	40.6	37.7	36.7	35.6	34.5	33.4
Scenario 3	44.8	41.6	40.4	39.3	38.1	36.8

Exceedances of the NO₂ annual mean AQO are shown in **bold**

- Under the Baseline scenario, it is projected that diffusion tube K7 will remain above the 10% compliance threshold in 2028.
- Under Scenario 1, assuming immediate implementation, compliance under the 10% threshold is achieved by 2024.
- Under Scenario 2, the 10% threshold is predicted to be achieved by 2026.
- Under Scenario 3, K7 will remain above the 10% compliance threshold in 2028.

Note compliance at K40 is discussed in the following section.

¹⁵ <https://uk-air.defra.gov.uk/data/lagm-background-maps?year=2021>

6.2 Scenario assessments for AQMAs 3, 5, 6, 7, 8 and 10

Since air quality modelling was only conducted for the Huddersfield town centre in AQMA 9, an alternative approach to assessing the effects of the scenarios in AQMAs 3, 5, 6, 7, 8, and 10 was developed by calculating NO_x emissions totals for each scenario. Similar to the source apportionment approach (Section 3.3) for these AQMAs, the roads with DfT count point data closest to the diffusion tube locations were used to assess the effects of the scenarios. Each AQMA uses data from one DfT count point, though some of the AQMAs include more than one diffusion tube (located near each other). The traffic input data were adjusted for each scenario, and the Defra Emission Factor Toolkit (EFT) (v13.1)¹⁶ was run to produce annual NO_x emissions totals for each road. The results are presented in Table 6-3.

The largest reductions in NO_x emissions were from scenario 3, which included reductions between 15-18% across AQMAs. The smallest reductions in NO_x emissions were in scenario 2, which ranged from 0-2%. The reductions in scenario 1 ranged from 0-3%. These results complement the source apportionment analysis, in which cars contributed high proportions of NO_x emissions in these AQMAs. Since scenario 3 targets emissions from cars, this scenario has the largest effect on NO_x emissions. Buses have smaller contributions to NO_x emissions in these AQMAs, so the scenarios targeting emissions from buses have a limited effect.

Table 6-3 – NO_x emissions reductions per scenario by AQMA

AQMA	Baseline NO _x emissions (kg/yr)	Scenario 1 reduction from baseline (%)	Scenario 2 reduction from baseline (%)	Scenario 3 reduction from baseline (%)
3	1,729	-3	-2	-17
5	1,782	-1	0	-18
6	1,729	-3	-2	-17
7	1,074	-2	-1	-17
8	11,998	0	0	-17
10	917	-3	-2	-15

The exceedance location K40 (as measured in 2023) sits in AQMA 5. Assessment of the required reduction in emissions to achieve compliance at location K40 (see Section 3.4) indicated that a 13% reduction in road NO_x would be needed. The scenario analysis here suggests that Scenario 3, targeting reduction in car emissions from a shift to electric vehicles, would achieve an 18% reduction in emissions in AQMA 5 and so would achieve compliance at location K40.

¹⁶ Defra (2025), [Emissions Factors Toolkit](#)

Appendix A: Response to Consultation

Table A-1 Summary of Responses to Consultation and Stakeholder Engagement on the AQAP

Consultee	Category	Response
<Insert consultee e.g. Chamber of Commerce>	<Insert category e.g. Business>	<Insert text e.g. Disagree with plan to remove parking on High Street in favour of buses and cycles; consider it will harm business of members>

In the final AQAP, we intend to provide a summary of the responses to consultation stakeholder engagement on the AQAP in Table A-1 as per the LAQM AQAP template. At the time of finalising the draft AQAP, no responses have been received from stakeholders, except from members of the public. These are discussed in more detail below.

A total of ten questions were included within the online questionnaire, designed to capture both quantitative and qualitative feedback on local air quality issues, priorities for action, and the proposed AQAP measures. A summary of the questions and responses is provided in Table A-2

Question 15 gave the opportunity for open responses. Respondents frequently highlighted concerns relating to traffic congestion and the need to improve traffic flow, with particular reference to idling near schools and residential areas, including comments such as “vehicles left running outside schools” and the need to “keep traffic moving rather than slowing it down.” Domestic solid fuel burning, including wood burners and bonfires, was also raised as a concern, with respondents noting “high levels of smoke during winter evenings” and calling for stronger controls. There was strong support for improvements to public transport, particularly reliability and journey times, with suggestions for “faster bus routes” and “better priority at traffic lights.” Feedback also consistently referenced a perceived lack of enforcement, with comments that existing rules are “not consistently enforced.” In addition, some respondents raised concerns around affordability and accessibility, particularly in relation to transitioning to cleaner vehicles, noting that “not everyone can afford to change vehicles or travel options.”

Table A-2 Summary of Responses to Consultation and Stakeholder Engagement on the AQAP

Question	Topic	Summary of Responses
Q1. Are you responding as...	Respondent Profile	A total of 72 responses were received. The majority of respondents identified as Kirklees residents (66 responses, 93%). A smaller proportion identified as Kirklees Council employees (14%) or individuals working within the district (8%). No formal responses were received on behalf of businesses or organisations, indicating limited representation from commercial stakeholders.
Q2. Were you aware of AQMAs prior to this consultation?	Awareness of AQMAs	Awareness of AQMAs was relatively low. 65% of respondents indicated that they were not aware of AQMAs prior to the consultation, with 31% reporting awareness and 4% unsure. This suggests that while air quality is recognised as an issue locally, understanding of formal air quality management processes is limited, highlighting a need for improved communication and public engagement.
Q3. Do you live, work, or regularly travel within an AQMA?	Exposure to AQMAs	A significant proportion of respondents reported direct exposure to AQMAs. 68% indicated that they regularly travel through an AQMA, while 31% work within or near one and 27% live within or near one. This indicates that responses are informed by individuals who experience areas of poorer air quality as part of their daily activities.
Q4. How familiar were you with air quality issues?	Familiarity	Familiarity with local air quality issues was generally low. The largest groups of respondents reported being “not at all familiar” (24 responses) or “somewhat familiar” (20 responses). Only a small proportion (4 respondents) indicated a high level of familiarity, suggesting limited public understanding of technical air quality issues and supporting the need for improved awareness and information provision.
Q5. How concerned are you about air quality?	Level of Concern	Responses indicated a moderate level of concern overall, with a spread across categories. 19 respondents reported being “very concerned”, while others indicated varying levels of concern. A notable proportion (12 respondents) reported no concern, suggesting differing perceptions of air quality issues across the district.

Question	Topic	Summary of Responses
Q6. What are the main contributors to poor air quality?	Perceived Sources	The most commonly identified sources of air pollution were traffic-related. Traffic congestion and idling (51 responses), general road traffic (46 responses), and HGV/freight emissions (37 responses) were identified as the primary contributors. Domestic solid fuel burning (15 responses) was also highlighted, indicating some awareness of particulate pollution sources beyond transport.
Q7. Please rank the priorities (1 = highest)	Priorities for Action	Improving traffic flow and reducing congestion was most frequently identified as the highest priority, being ranked first by 36 respondents. Other priority areas such as public transport and emission reduction were also supported, but planning and awareness measures were generally ranked lower, indicating a preference for direct and visible interventions.
Q8–Q14. Rate proposed AQAP measures	Views on Measures	Respondents were asked to rate a range of proposed AQAP measures. Overall, there was broad support across all categories. Measures relating to public transport, enforcement and information provision were most strongly supported. In particular, bus service improvements (57%), public air quality information (51%), taxi emissions enforcement (49%), and anti-idling campaigns (47%) received the highest proportion of “high importance” ratings. Measures relating to active travel, planning and electric vehicles received more mixed responses, indicating varying levels of acceptability.
Q15. Additional measures suggested	Additional Feedback	Respondents identified a range of additional issues and measures. Key themes included concerns regarding traffic flow and congestion, domestic wood burning, the need for improved public transport, and stronger enforcement of existing regulations. Other issues raised included idling near schools and residential areas, freight emissions, and concerns about affordability and accessibility of measures.

Question	Topic	Summary of Responses
Open responses	Qualitative Feedback	Qualitative responses reinforced the quantitative findings. Recurring themes included concerns regarding congestion and traffic management, emissions from domestic burning, and a perceived lack of enforcement. There was strong support for improved public transport, alongside concerns regarding cost, accessibility and potential impacts on vulnerable groups.

The consultation responses demonstrate broad support for action to improve air quality across Kirklees. Transport-related emissions were consistently identified as the primary concern, with respondents placing the greatest priority on measures to improve traffic flow, reduce congestion, and address vehicle idling. There was particularly strong support for interventions relating to public transport improvements, enhanced enforcement (including taxi emissions and idling), and increased access to air quality information. Awareness of AQMAs and the technical aspects of local air quality management was generally low; however, respondents still expressed moderate levels of concern, indicating recognition of air pollution as an issue. In addition, qualitative responses highlighted emerging concerns regarding particulate emissions, particularly from domestic solid fuel burning, alongside a desire for more visible and enforceable actions.

The consultation is considered proportionate to the scope of the AQAP; however, several limitations should be acknowledged when interpreting the findings. Responses were predominantly received from residents, with no formal submissions from businesses or organisations, limiting representation of commercial perspectives. The consultation was delivered through online channels, which may have restricted participation from certain groups, and the respondent demographic was skewed towards older age groups, meaning the sample is not fully representative of the wider population. In addition, baseline awareness of air quality issues and local management frameworks appeared limited, which may have affected the depth of responses to more technical aspects of the AQAP.

Following completion of the public consultation, the draft AQAP was also circulated directly to bodies representing local business interests, (West & North Yorkshire Chamber of Commerce). Any responses received from these organisations, alongside comments from all other consultees and statutory stakeholders, will be considered and incorporated, where appropriate, into the final AQAP.

Appendix B: Reasons for not pursuing action plan measures

Table B-1 Action Plan Measures Not Pursued and the Reasons for that Decision

Action category	Action description	Reason action is not being pursued (including Stakeholder views)
Alternatives to private vehicle use	Park and ride	Park and ride options have previously been considered and assessed for feasibility for Huddersfield. Previous assessments have found it to be not feasible, due to financial viability and the size of the town.
Clean Air Zone		There is no mandatory requirement for a clean air zone within Kirklees. We recognise our previous AQAP ¹ , referred to a voluntary clean air zone feasibility study. However, this has not been completed. We will continue to monitor across the borough to ensure compliance with AQOs.

Appendix C: 2023 Baseline Model for AQMA 9, Source Apportionment and Scenario Modelling Study

Introduction

Kirklees Council engaged Ricardo to provide an air quality modelling and source apportionment assessment as part of the process of reviewing and updating the existing 2019 Air Quality Action Plan (AQAP).

This report summarises the findings from the 2023 baseline air quality model for AQMA in Huddersfield and source apportionment results, as well as the estimated impacts of scenarios representing three AQAP measures, on emissions and concentrations of nitrogen dioxide (NO₂) and Particulate Matter (PM₁₀ and PM_{2.5}).

2023 Baseline model methodology

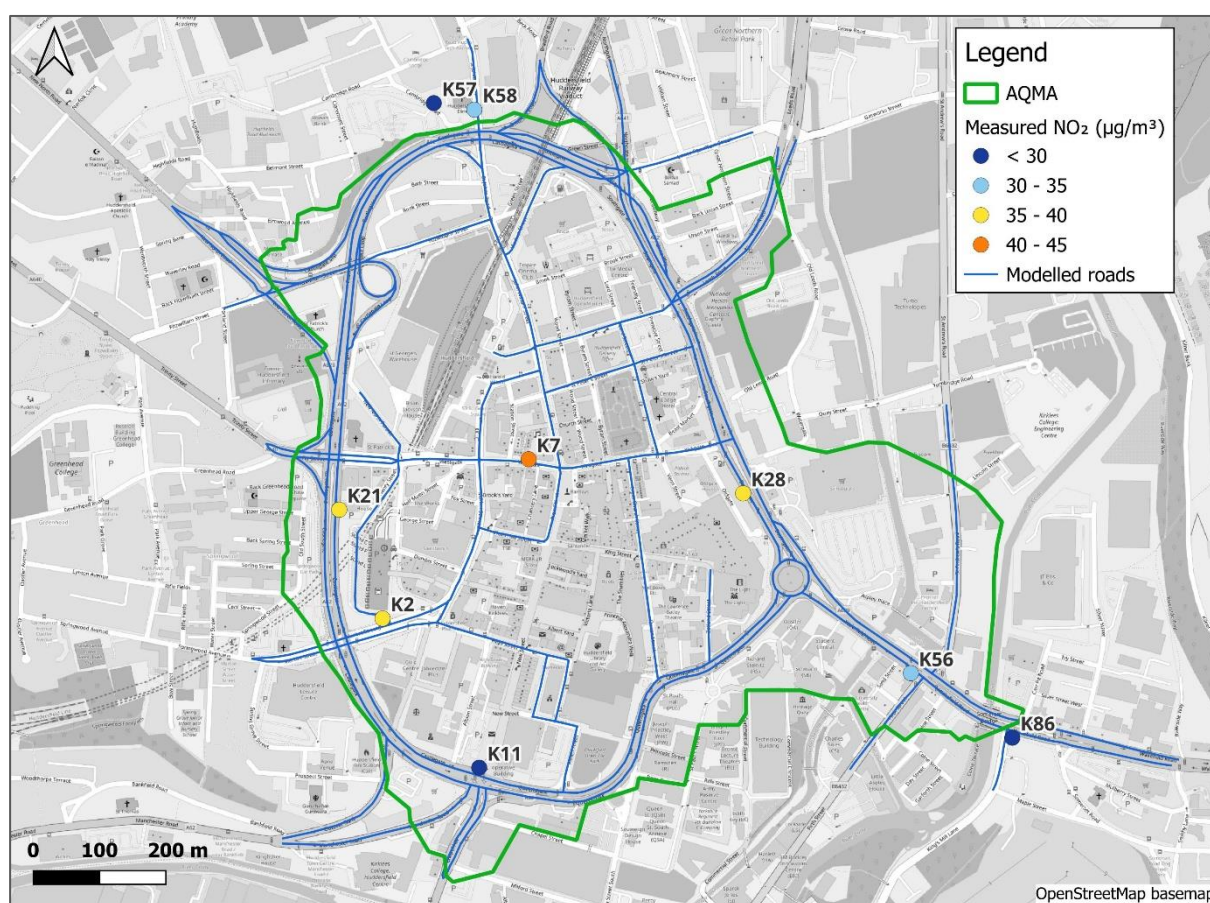
Model selection

The RapidAir® air quality modelling software was used to predict air pollutant concentrations for this study. This is Ricardo's proprietary modelling system developed for urban air pollution assessment. RapidAir has been developed to provide graphic and numerical outputs which are comparable with other models used widely in the United Kingdom. The air dispersion modelling approach is based on convolution of an emissions grid with dispersion kernels derived from the USEPA AERMOD model, at resolutions ranging from 1 m to 20 m. AERMOD provides the algorithms which govern the dispersion of the emissions and is an accepted international model for road traffic studies.

Model domain

Figure C-1 presents the model domain used for the assessment, including Kirklees Air Quality Management Area (AQMA) 9 in Huddersfield and the air quality monitoring locations used in the assessment.

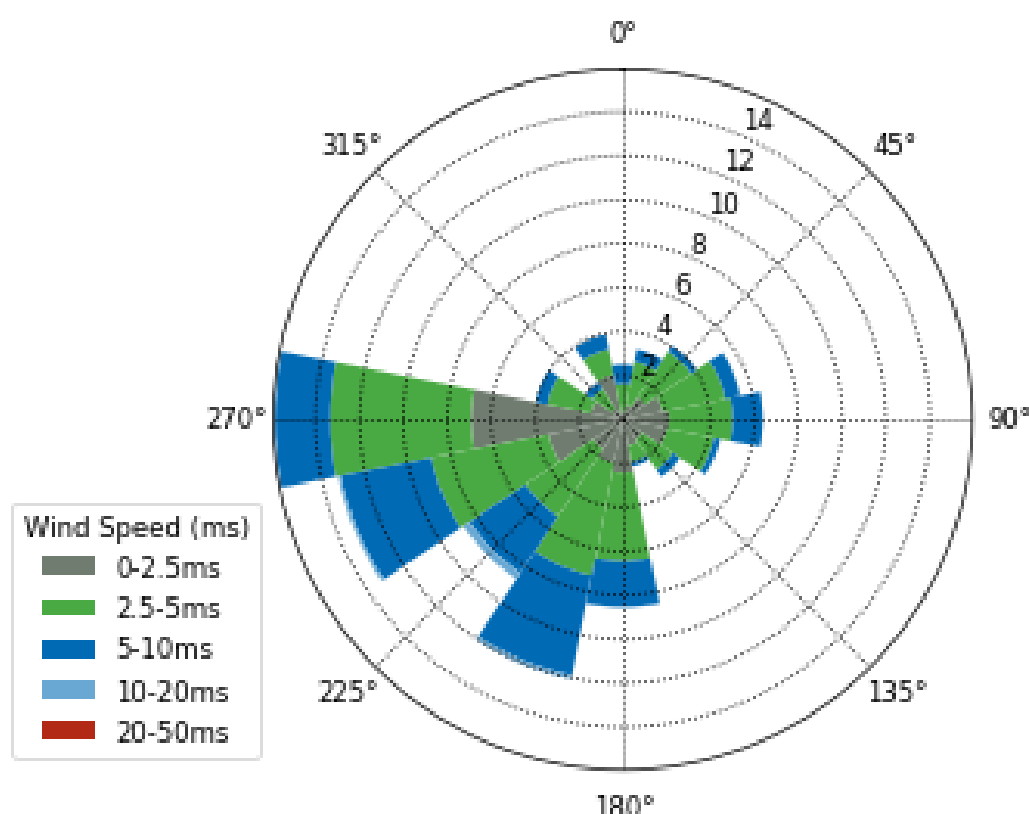
Figure C-1 Model domain and monitoring locations



Meteorological data

The 2023 meteorological data were obtained from a nearby weather station in Bingley and processed in RapidAir. A wind rose is displayed in Figure C-2, showing predominantly westerly and southwesterly winds.

Figure C-2 2023 wind rose from Bingley weather station

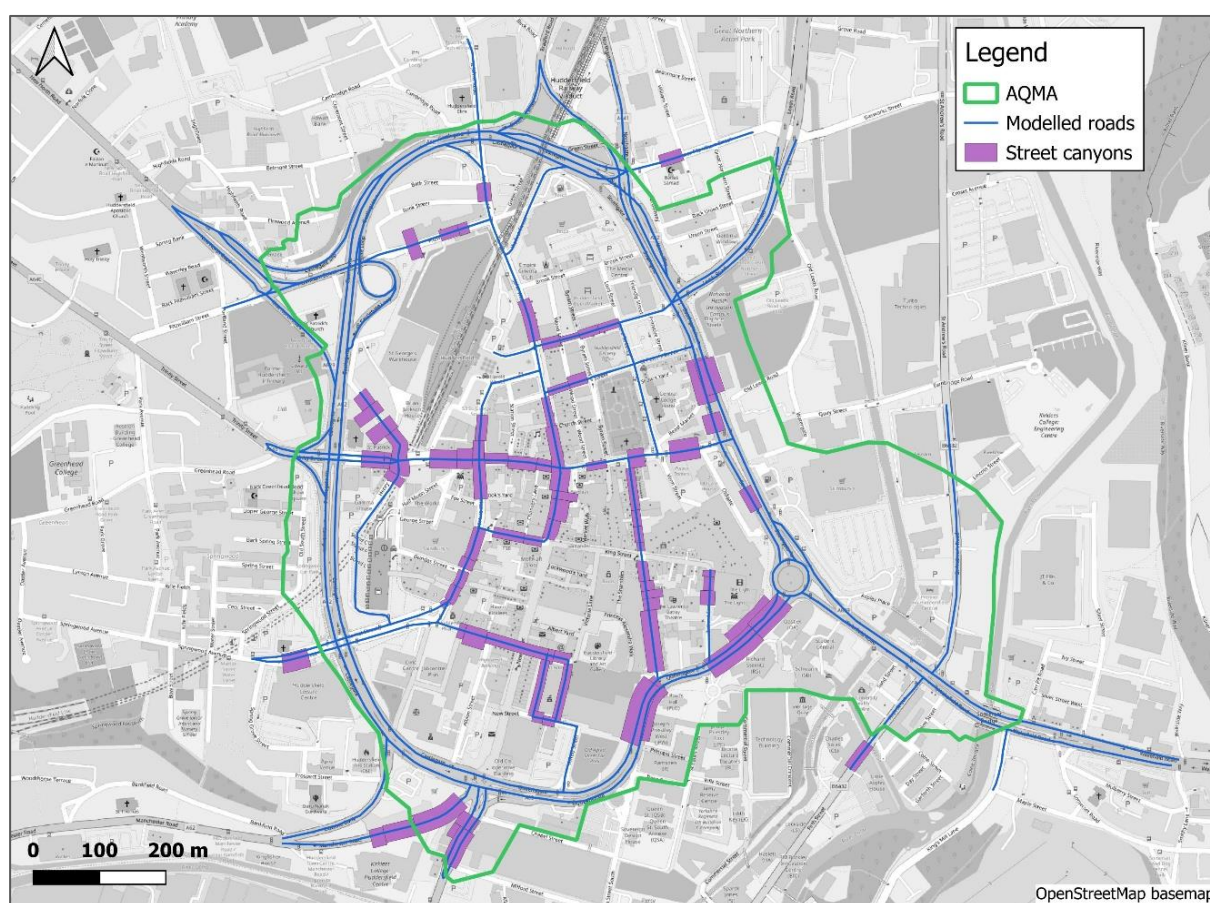


Street canyons

The presence of buildings either side of a road can introduce 'street canyon' effects which result in pollutants becoming trapped, leading to increased pollutant concentrations. There are canyon effects present in Huddersfield, which may be contributing to air quality issues in the study area.

Street canyon impacts were modelled using the RapidAir canyon module. Building heights and road centrelines were obtained from the Ordnance Survey (OS) MasterMap Topography Layer data. Modelled street canyons are presented in Figure C-3.

Figure C-3 Locations of street canyons in Huddersfield



Gradients

Gradient effects were incorporated into the emissions calculations to account for variations in terrain. Elevation data were derived from the LiDAR Digital Surface Model (DSM), which was used to quantify gradients along the relevant routes and inform emissions estimates.

Road transport modelling

Average daily vehicle flow and speeds

For most modelled road links, Annual Average Daily Traffic (AADT) flows and proportions of vehicle type (i.e., cars, Light Good Vehicles (LDVs), Heavy Good Vehicle (HGVs), buses, and motorcycles) were calculated from junction turning count surveys provided by Kirklees Council. The surveys were conducted from 28th – 30th March, 2023, by Tracsis.

In locations where the traffic surveys were not available, traffic flows were supplemented with 2023 Department for Transport (DfT) counts¹⁷ and a 2019 traffic model provided by Kirklees Council. AADT from the 2019 traffic model were adjusted to be representative of the baseline year (2023) using Trip End Model Presentation Program (TEMPPro) growth factors¹⁸.

Average speeds for each modelled road link were taken from the 2019 traffic model, and speeds were assumed to be half of the provided value for links approaching junctions.

A typical UK weekday diurnal profile (sourced from the DfT) was assumed and applied as time varying emissions in AERMOD when creating the RapidAir dispersion kernel.

6.2.1.1 Emissions

As local fleet composition data were not available, vehicle fleet composition data for 2023 were applied from the best available national data.

Vehicle emission rates for buses, HGVs, LGVs, cars and motorcycles have been calculated for each modelled road link using the COPERT v5.8 emissions functions contained in the latest version of the Defra Emission Factor Toolkit (EFT)¹⁶.

NO_x/NO₂ conversion

The most recent version (v9.1) of the Local Air Quality Management (LAQM) NO_x to NO₂ conversion toolkit¹⁹ was used to convert road NO_x and background NO_x into NO₂ concentrations where results at discrete receptor locations were required. This includes all 2023 NO₂ monitoring site locations in proximity to modelled road links.

The domain was modelled at a 1m resolution. When calculating NO₂ for large model domains and high-resolution models, using the LAQM NO_x to NO₂ conversion spreadsheet tool for the conversion is not practical. In this case, a statistical relationship was derived using an ordinary least squares (OLS) regression model. The OLS model was derived by defining background NO_x and adjusted road NO_x as the independent variables, and total NO₂ as the dependent variable.

Background concentrations

Background NO_x and PM values were obtained from background mapping data at 1 km resolution for local authorities available on the LAQM website²⁰. The 2023 background maps (2021 base year) were applied to the study. The contribution from local road transport sources sectors that were included in the air quality model were

¹⁷ DfT (2023), Annual average daily flow by direction, [DfT downloads](#)

¹⁸ DfT (2023), [Trip End Model Presentation Program \(TEMPPro\)](#)

¹⁹ Defra (2024), [NO_x to NO₂ Calculator](#)

²⁰ Defra (2024), [Background Mapping data for local authorities](#)

subtracted from the background maps to avoid double counting: primary A roads for NO_x; primary A roads, brake and tyre wear, and abrasion for PM. Background concentration data were sourced for the Kirklees local authority.

Measured concentrations

Kirklees Council's 2023 NO₂ measurements²¹ were applied to the air quality modelling assessment to verify the model outputs and to inform the source apportionment analysis. Although NO₂ measurements were available for 2024, many new diffusion tube sites were added late in 2024 and had low data capture. Therefore, the 2023 measurements were thought to be more reliable to use in the modelling.

There were no automatic monitoring sites in Huddersfield in 2023 and no PM measurements. NO₂ concentrations were measured at 10 diffusion tube sites.

Measurements were applied from eight diffusion tube sites which were confirmed as having sufficient data capture for the 2023 base year and in locations where concentrations would be accurately represented in the air quality model. Table C-1 shows the sites at which NO₂ concentrations were measured during 2023 and provides measured concentrations from 2019 - 2023.

Two sites were excluded from model verification. K45 did not have a valid

Table C-1 NO₂ measurements (µg/m³) in Huddersfield from 2019 – 2023

Site	Name	Type	2019	2020	2021	2022	2023
K2	Bus station - Huddersfield	Other	38.5	34.2	42.4	36.9	36.7
K7	Westgate Huddersfield	Urban Centre	40.8	28.9	36.7	40.0	44.9
K11	Chapel Hill Huddersfield	Roadside	35.0	27.7	31.3	32.0	27.9
K21	Castlegate Huddersfield	Roadside	34.7	33.4	39.3	37.8	35.7
K28	Ring Road Huddersfield-Southgate	Roadside	46.4	37.6	41.4	41.0	38.1
K45	LC 008 Trinity Street outside Chiiwala	Roadside	-	-	-	-	-
K56	Wakefield Road Huddersfield	Roadside	34.9	30.3	37.4	36.1	34.8
K57	Cambridge Road 1	Roadside	22.2	18.5	20.1	20.7	21.8
K58	St John's Road	Roadside	39.6	34.9	37.4	35.9	32.5
K86	Kings Mill Lane	Roadside	29.1	22.8	26.3	24.4	23.8

Exceedances of the NO₂ annual mean AQO are shown in **bold**

Model verification

²¹ Kirklees Council (2024), [2024 Air Quality Annual Report](#)

To evaluate model performance and uncertainty, the Root Mean Square Error (RMSE) for observed vs predicted NO₂ annual mean concentrations was calculated, as detailed in LAQM.TG(22).

A single road NO_x (global) adjustment factor of 2.94 was derived from the model verification, and was applied to the calculation of modelled concentrations at specified air quality monitoring locations. In the absence of PM data for verification, the road NO_x adjustment was applied to the modelled road PM₁₀ and PM_{2.5} outputs. This is the recommended methodology from LAQM.TG(22).

Total NO₂ concentrations at specified receptors were obtained from background and adjusted road NO_x concentrations using the NO_x to NO₂ calculator provided by Defra. Where annual NO₂ concentration maps were required, total NO₂ was derived using the specified equation. The equation was determined by performing a regression analysis of adjusted modelled NO_x and background NO_x as independent variables vs total NO₂ as a dependent variable. A random sample of receptor points across the domain, that covered a range of values, were used to develop the equation:

$$\text{NO}_2 = 0.32 * (\text{adjusted road NO}_x) + 0.82 * (\text{background NO}_x)$$

LAQM.TG(22) indicates that a RMSE of up to 10% of the target limit value (4 µg/m³, considering a 40 µg/m³ limit value for NO₂) is ideal, and an RMSE of up to 25% of the target limit value (10 µg/m³) is acceptable. In the study, the RMSE was calculated at 5.3 µg/m³, which is acceptable and shows agreement between the modelled and measured concentrations. The modelling domain covers the entire AQMA in Huddersfield, and it is difficult to improve model performance across a large domain. In addition, there is uncertainty in using a combination of traffic data sources, and only using diffusion tube measurements for verification.

Roadside receptor locations

As RapidAir produces concentration grids (in raster format), modelled concentrations can be extracted at receptor locations anywhere on the 1m resolution model output grid. Annual mean pollutant concentrations at a distance of 4m from the kerb have been extracted from the RapidAir data and presented as a separate model output file. This will allow the selected locations to be assessed according to the Air Quality Directive (AQD) requirements Annex III A, B, and C3.

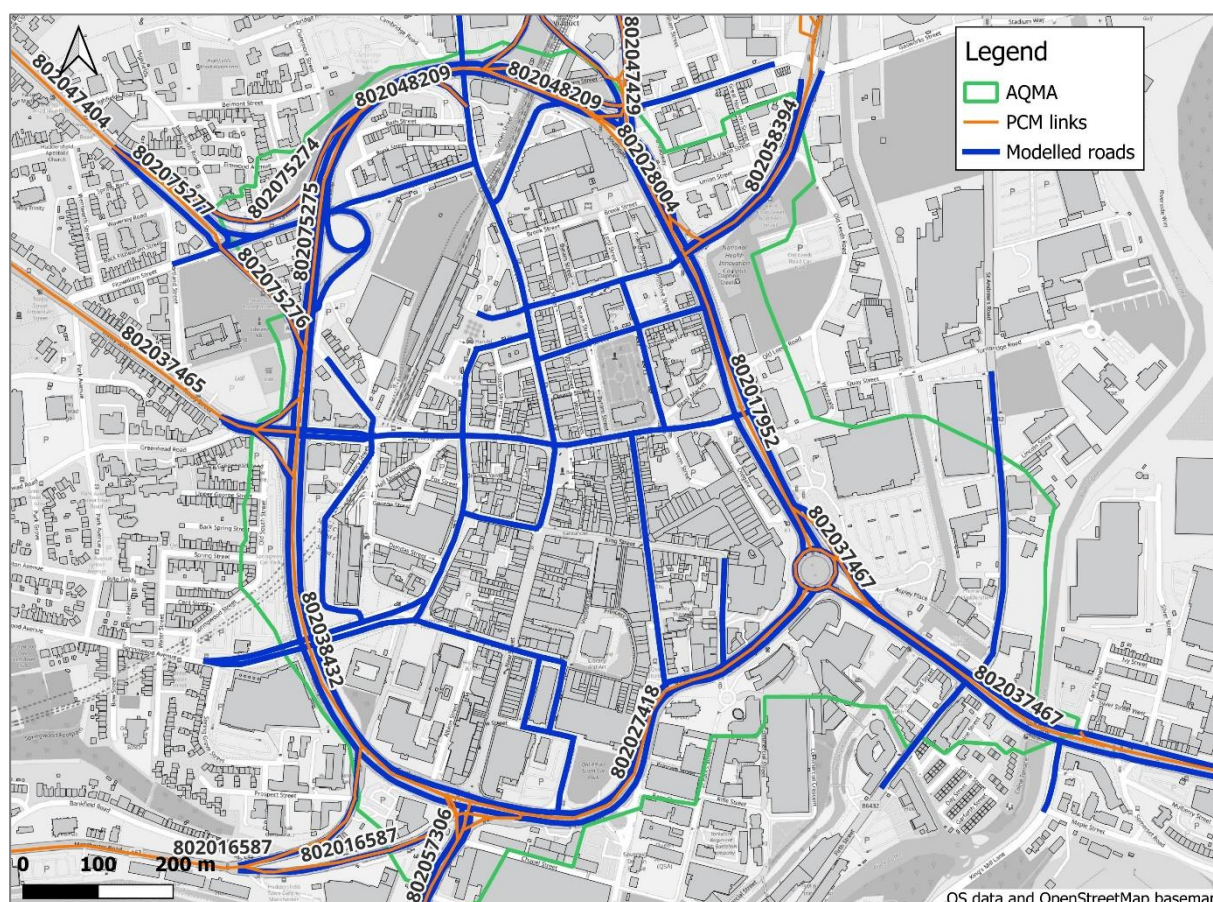
Consistent with the Pollution Climate Mapping (PCM) model²², roadside receptor locations have been generated at a distance of 4 m from the kerb. Annex III of the AQD specifies that macroscale siting of sampling points should be representative of air quality for traffic-orientated sites. To provide results relevant to this requirement at roadside locations where there is public access and the Directive applies, a subset of the OS Mastermap GIS dataset provided spatially accurate polygons representing road carriageways, receptor locations were then placed along relevant road links using a 4 m buffer around the road carriageway polygons.

²² Defra (2023), Pollution Climate Mapping (PCM) Model, UK-AIR Air Quality Modelling

Annex III of the AQD also specifies that microscale sampling should be at least 25 m from major junctions; on this basis no results have been reported at receptor locations within 25 m of major junctions.

Maximum pollutant concentrations per road were selected from the sampled receptor locations. For roads that are included in the PCM model (see Figure C-4), the PCM Census ID has been used to report a maximum pollutant concentration, as PCM Census links are longer than individual road links but not as long as some roads by name (e.g., Castlegate). For roads in the town centre that are not included in the PCM model, the road name has been used for reporting maximum pollutant concentrations.

Figure C-4 PCM links and Census IDs



2023 Baseline Model results

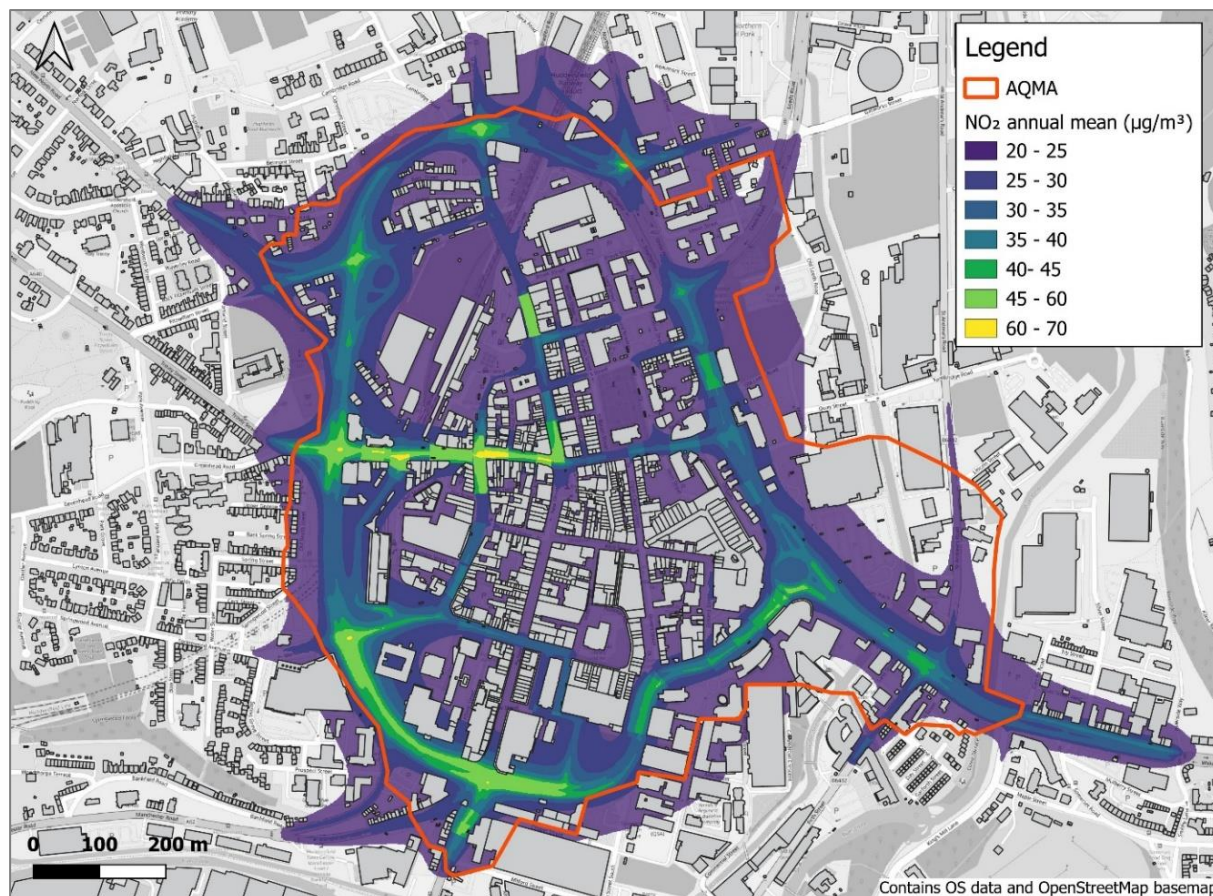
NO₂

Figure C-5 presents a map of modelled NO₂ concentrations in Huddersfield in 2023. Air quality in Huddersfield is generally good, and below the annual mean air quality objective in most locations. There are elevated concentrations of NO₂ along the A62 ring road, particularly on Castlegate in the southwest.

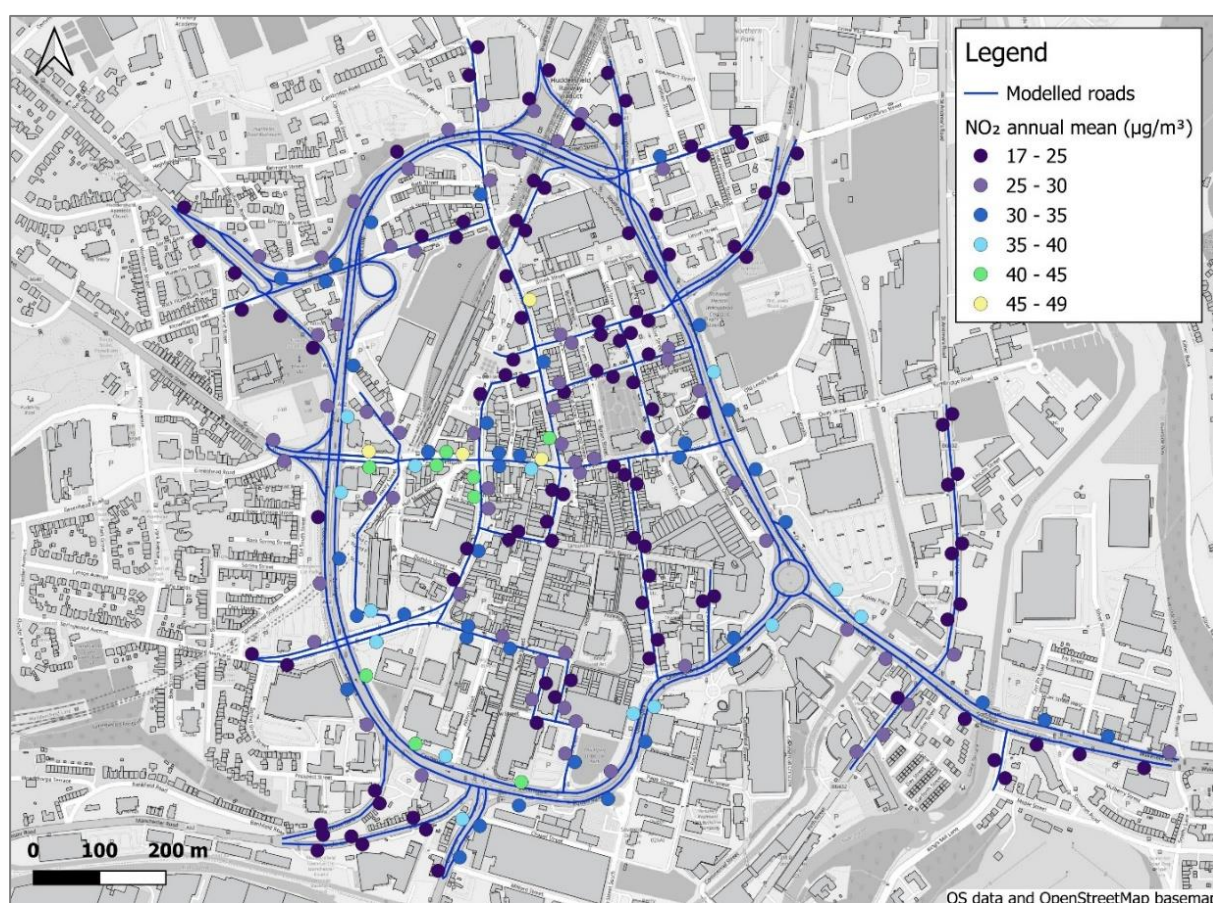
The highest concentrations are found on Westgate and Trinity Street in the town centre, where there are high proportions of buses on these roads, street canyons,

gradients, junctions and bus stops affecting the flow of traffic. However, there are no sensitive receptor locations, such as residential properties, at ground level on these roads.

Figure C-5 NO₂ annual mean concentrations ($\mu\text{g}/\text{m}^3$) in Huddersfield AQMA

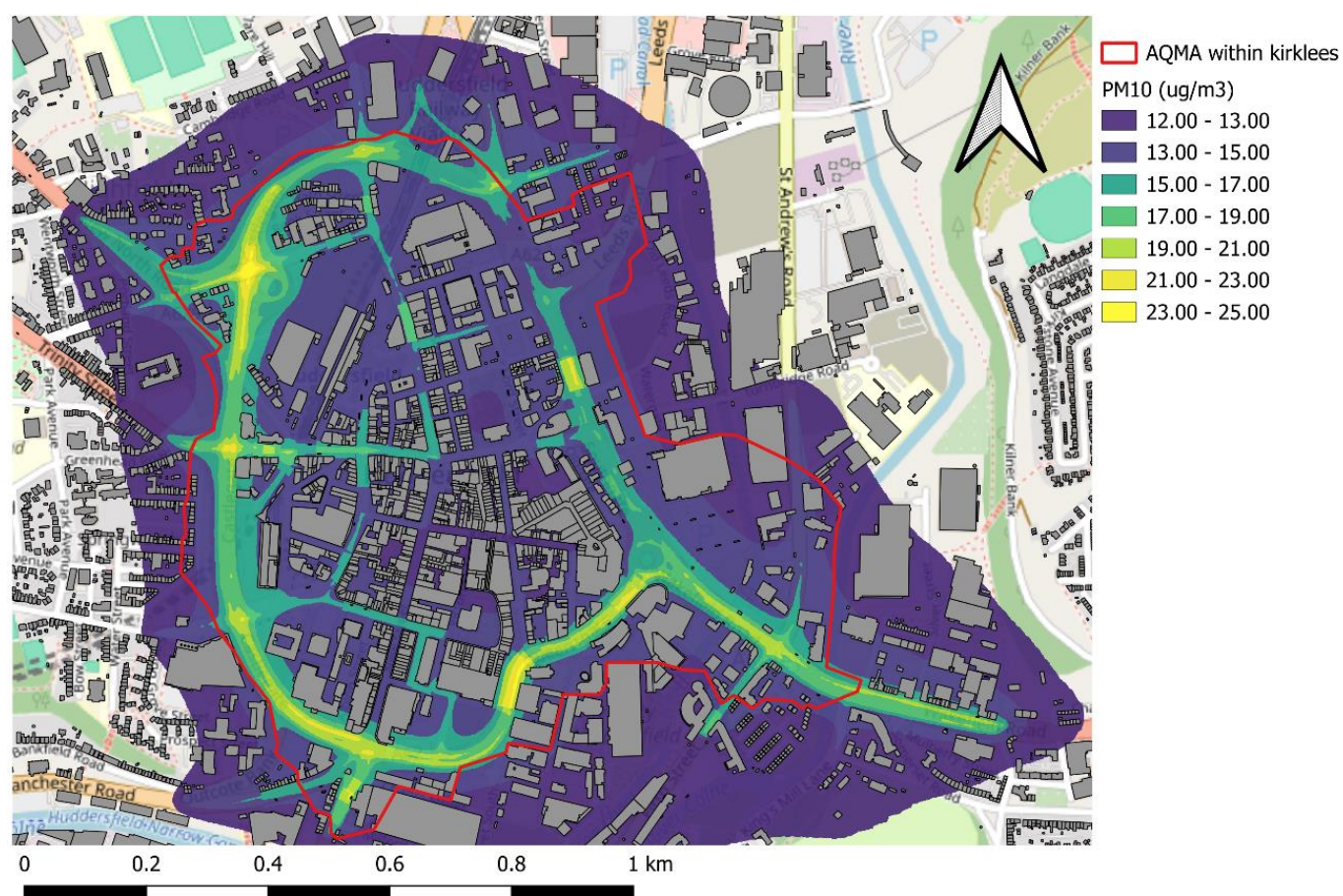


The concentrations at roadside receptor locations at 4 m from the kerb are presented in Figure C-6. These results show exceedances of 40 $\mu\text{g}/\text{m}^3$ annual mean objective at roadside locations in the town centre and along Castlegate.

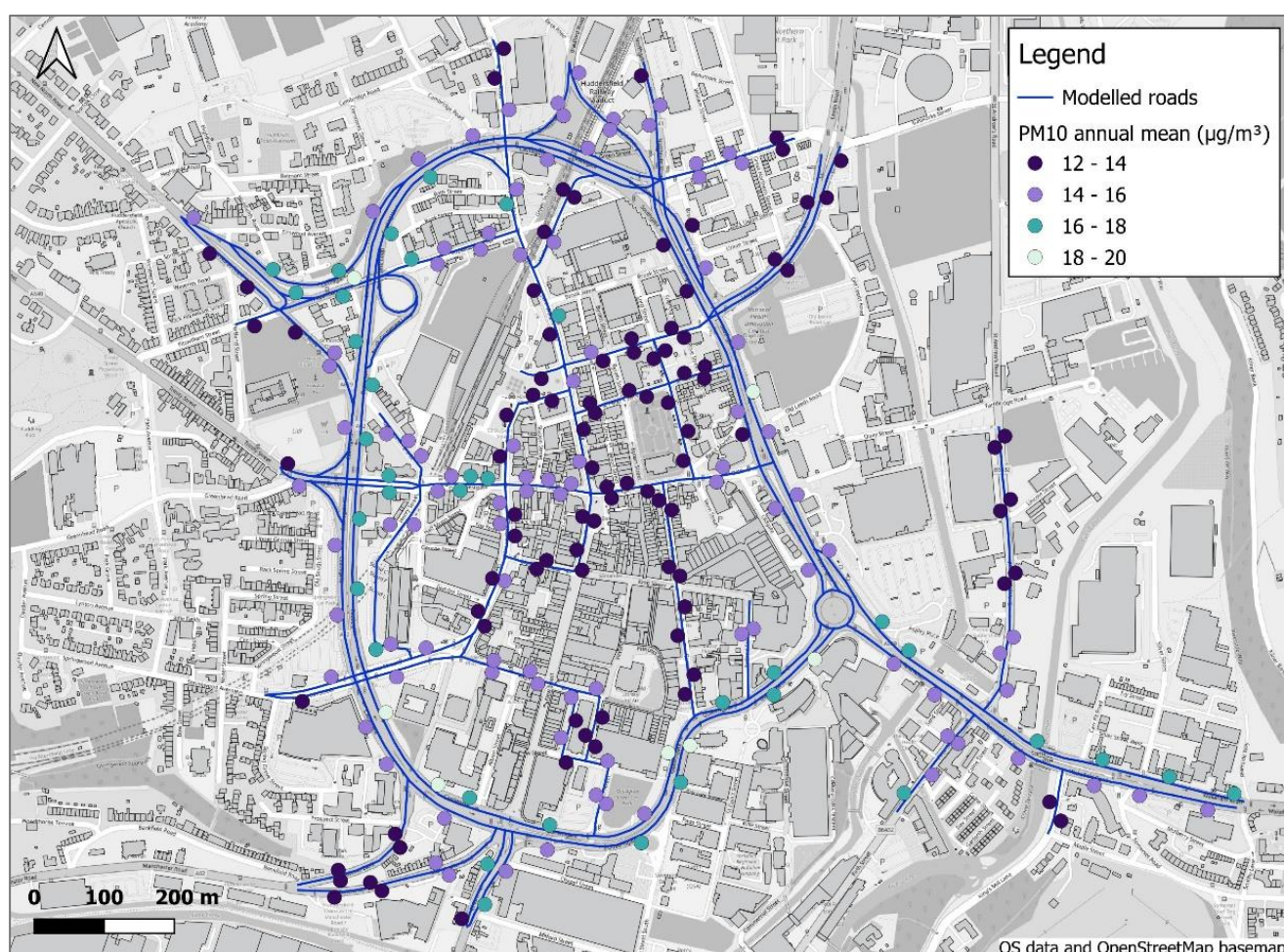
Figure C-6 Roadside receptor NO₂ concentrations (µg/m³) in Huddersfield AQMA

PM₁₀

Figure C-7 presents a map of modelled PM₁₀ concentrations in Huddersfield in 2023. PM₁₀ concentrations are well below the 40 µg/m³ annual mean objective across Huddersfield. The highest concentrations of PM₁₀ are on the A62 ring road.

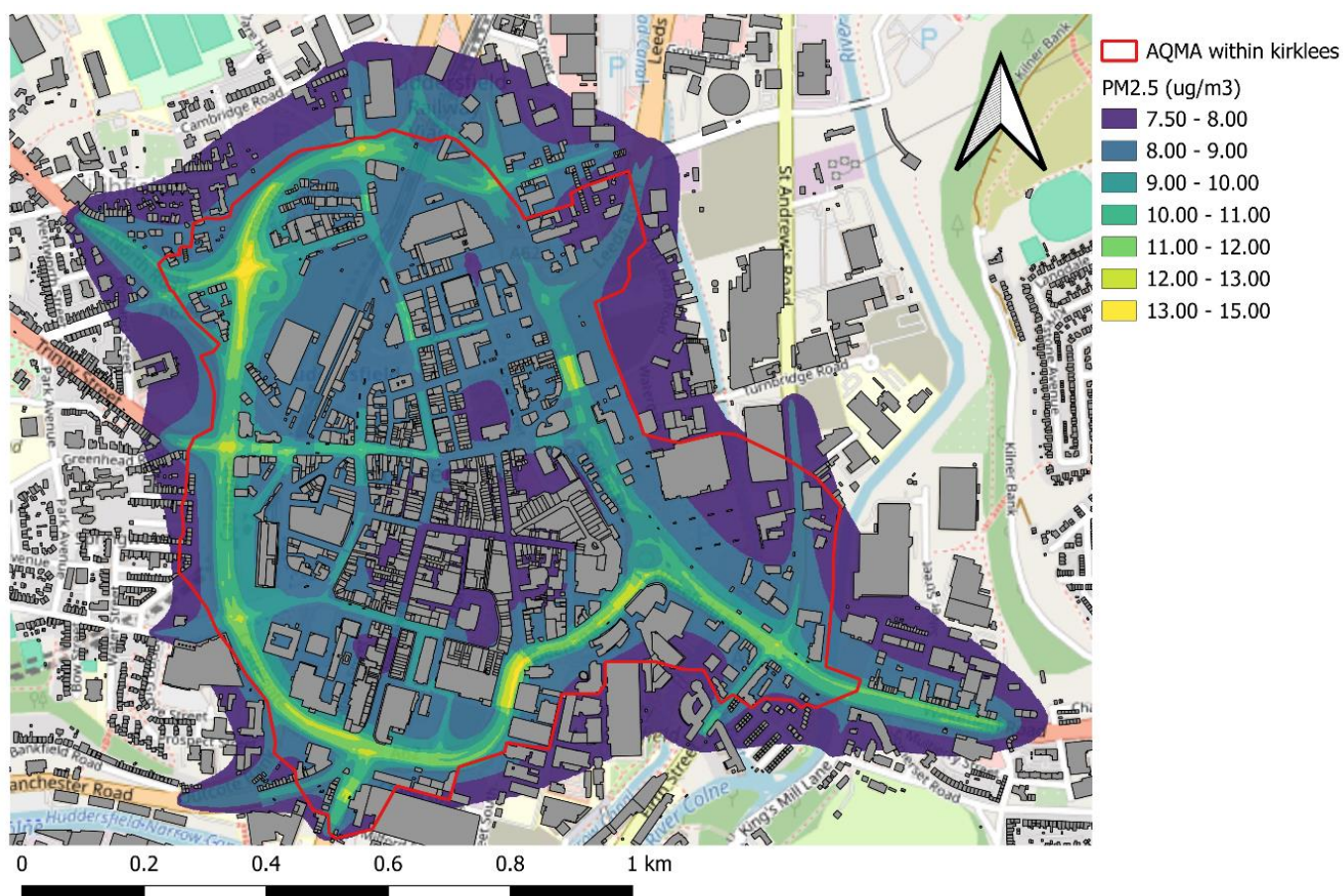
Figure C-7 PM₁₀ annual mean concentrations ($\mu\text{g}/\text{m}^3$) in Huddersfield AQMA

The concentrations at roadside receptor locations at 4 m from the kerb are presented in Figure C-8. There are no exceedances of the $40 \mu\text{g}/\text{m}^3$ annual mean objective at roadside locations in Huddersfield.

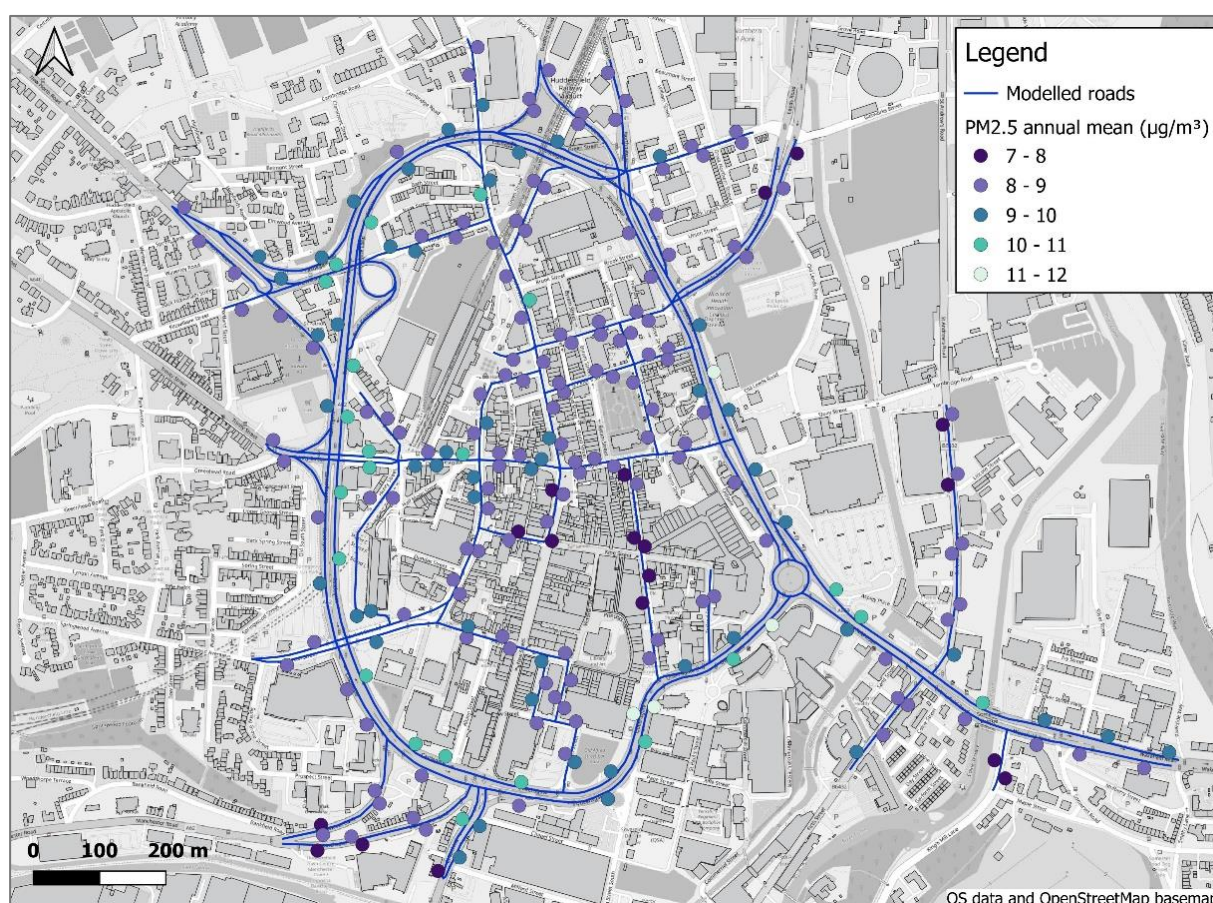
Figure C-8 Roadside receptor PM₁₀ concentrations (µg/m³) in Huddersfield AQMA

PM_{2.5}

Figure C-9 presents a map of modelled PM_{2.5} concentrations in Huddersfield in 2023. PM_{2.5} concentrations are well below the 20 µg/m³ annual mean objective across Huddersfield. The highest concentrations of PM_{2.5} are on the A62 ring road.

Figure C-9 PM_{2.5} annual mean concentrations ($\mu\text{g}/\text{m}^3$) in Huddersfield AQMA

The concentrations at roadside receptor locations at 4 m from the kerb are presented in Figure C-10. There are no exceedances of the $20 \mu\text{g}/\text{m}^3$ annual mean objective at roadside locations in Huddersfield.

Figure C-10 Roadside receptor PM_{2.5} concentrations (µg/m³) in Huddersfield AQMA

Scenario modelling

Three priority measures were identified for modelling by Kirklees Council. These were as follows:

- Measure 1 – Convert Bus fleet to 50% electric buses and 50% Euro VI buses
- Measure 2 – Convert Bus fleet to 100% Euro VI buses
- Measure 3 – Upgrade 31.5% of petrol and diesel cars to electric cars

These measures were split out into three modelling scenarios, using the baseline model methodology as a starting point. Each of the scenarios utilised the same model domain, meteorological data, street canyons, NO_x/NO₂ conversion, adjustment factors, and roadside receptor locations as the baseline model.

Changes were made to the annual average daily traffic and traffic composition on each of the roads modelled to reflect the implementation of the measures detailed above.

Changes to traffic and traffic composition are detailed in the sections below.

Scenario 1

Scenario 1, which reflects a conversion of the bus fleet in Kirklees to 50% electric buses and 50% Euro VI buses required the following changes to the traffic composition:

In the Emission Factor Toolkit (EFT), buses and coaches annual average daily traffic was split. The resulting bus flow was changed from the Euro composition used in the baseline model, to 50% Electric Buses, and 50% Euro VI buses. The remaining annual average daily traffic and traffic composition numbers remain unchanged from the baseline model when running these through the EFT.

These updated traffic emissions were then used as an input for RapidAir ©.

Scenario 2

Scenario 2, which reflects the conversion of the bus fleet in Kirklees to 100% Euro VI buses required the following changes to the traffic composition:

In the EFT, buses and coaches annual average daily traffic was split. The resulting bus flow was changed from the Euro composition used in the baseline model, to 100% Euro VI buses. The remaining annual average daily traffic and traffic composition numbers remain unchanged from the baseline model when running these through the EFT.

These updated traffic emissions were then used as an input for RapidAir ©.

Scenario 3

Scenario 3, which reflects the conversion of diesel and petrol cars to electric vehicles. Following Department for Transport data at the end of 2024 and the “More Likely” Scenario in the draft Local Area Energy Plan for Kirklees, 31.5% of petrol and diesel cars are predicted to be replaced by electric vehicles.

In the EFT, 31.5% of the total petrol car and diesel car average daily traffic was added to the existing electric car traffic flows. Total traffic flows remain identical as do the euro standards of the remaining petrol and diesel cars.

These updated traffic emissions were then used as an input for RapidAir ©.

NO₂

Comparison of maximum roadside concentrations

Table C-2 presents the maximum roadside sampled NO₂ concentration by PCM Census ID, road name, or diffusion tube ID as applicable for each scenario. The highest concentration is on Westgate, and this declines the most in Scenario 1 (9.5 µg/m³), where buses are converted to 50% electric buses, and 50% Euro VI buses.

Table C-2 - Maximum NO₂ concentration (µg/m³) per road, PCM census ID, or diffusion tube ID for all scenarios and baseline

CensusID/Road Name	Baseline Concentration	Scenario 1 Concentration	Scenario 2 Concentration	Scenario 3 Concentration	Scenario 1 - Baseline	Scenario 2 - Baseline	Scenario 3 - Baseline
802016587 - Outcote Bank	24.0	23.0	23.5	22.3	-1.0	-0.6	-1.7
802038432 - Castlegate	44.1	42.4	42.7	40.8	-1.7	-1.4	-3.3
802037465 - Trinity Street	25.3	23.8	24.3	23.7	-1.4	-0.9	-1.6
802007975 - Castlegate	37.1	35.5	35.9	34.2	-1.6	-1.2	-2.9
802075276 - New North Road	26.6	25.9	26.1	24.5	-0.6	-0.4	-2.1
802075277 - New North Road	23.3	22.8	23.0	21.3	-0.5	-0.3	-2.0
802075274 - Castlegate Slip	28.3	27.7	27.9	25.8	-0.5	-0.4	-2.5
802048209 - Castlegate	27.2	26.6	26.9	25.1	-0.6	-0.3	-2.1
802047429 - Bradford Road	25.4	24.7	24.9	23.6	-0.8	-0.5	-1.8
802058394 - Leeds Road	21.2	20.4	20.7	20.0	-0.8	-0.5	-1.2
802017952 - Southgate	38.2	36.3	36.8	35.0	-1.9	-1.5	-3.2
802037467 - Wakefield Road	37.3	35.6	36.1	34.3	-1.6	-1.2	-2.9
802027418 - Queensgate	42.4	40.6	41.1	39.4	-1.9	-1.3	-3.0
802057306 - Chapel Hill	37.9	35.9	36.9	35.0	-2.0	-1.0	-2.9
802028004 - Northgate	22.7	21.9	22.2	21.1	-0.7	-0.5	-1.5

CensusID/Road Name	Baseline Concentration	Scenario 1 Concentration	Scenario 2 Concentration	Scenario 3 Concentration	Scenario 1 - Baseline	Scenario 2 - Baseline	Scenario 3 - Baseline
802075275 - Castlegate	33.3	32.2	32.5	30.5	-1.2	-0.8	-2.8
Merton Street	25.1	23.7	24.1	23.3	-1.4	-1.0	-1.8
Trinity Street	45.9	40.8	41.2	43.7	-5.1	-4.6	-2.1
New North Road	31.0	30.3	30.5	28.5	-0.7	-0.5	-2.5
Fitzwilliam Street	32.6	31.9	32.2	29.5	-0.7	-0.4	-3.1
St John's Road	31.7	29.6	30.2	28.9	-2.1	-1.5	-2.9
Lower Fitzwilliam Street	30.4	29.2	29.6	28.1	-1.2	-0.8	-2.3
St Andrew's Road	27.5	26.5	26.8	25.1	-1.0	-0.7	-2.4
Kings Mill Lane	18.1	17.5	17.7	17.0	-0.6	-0.4	-1.1
Firth Street	28.5	28.1	28.2	25.7	-0.4	-0.3	-2.8
Viaduct Street	23.1	21.8	22.1	21.6	-1.3	-0.9	-1.5
John William Street	47.0	40.9	42.5	44.6	-6.1	-4.5	-2.4
Northumberland Street	26.2	23.8	24.5	24.7	-2.4	-1.7	-1.4
New North Parade	27.6	26.2	26.5	25.6	-1.4	-1.1	-1.9
Westgate	48.8	39.2	42.0	47.3	-9.5	-6.8	-1.5
Railway Street	34.3	28.1	31.1	33.2	-6.1	-3.2	-1.1
St George's Square	24.4	21.6	22.6	23.4	-2.8	-1.8	-1.0
Kirkgate	33.0	29.2	30.7	31.1	-3.8	-2.3	-1.9
Lord Street	23.2	20.9	21.6	22.2	-2.3	-1.6	-1.0
St Peter's Street	25.5	23.3	23.9	24.3	-2.2	-1.6	-1.2
New Street	23.8	22.1	22.6	22.5	-1.7	-1.2	-1.3
Ramsden Street	30.2	26.8	28.1	28.5	-3.4	-2.0	-1.7
Peel Street	25.6	23.2	23.9	24.2	-2.5	-1.7	-1.4
Alfred Street	31.9	29.0	29.7	29.7	-2.9	-2.2	-2.2

CensusID/Road Name	Baseline Concentration	Scenario 1 Concentration	Scenario 2 Concentration	Scenario 3 Concentration	Scenario 1 - Baseline	Scenario 2 - Baseline	Scenario 3 - Baseline
Queen Street	22.6	21.4	21.8	21.1	-1.2	-0.8	-1.5
Cross Church Street	21.8	20.0	20.6	20.7	-1.7	-1.2	-1.1
Henry Street	27.7	24.7	25.5	26.4	-3.0	-2.2	-1.3
Market Street	44.6	36.6	39.6	43.2	-8.0	-5.0	-1.4
Princess Street	28.9	26.3	27.2	27.0	-2.7	-1.8	-1.9
Corporation Street	29.0	27.4	28.0	26.4	-1.6	-1.0	-2.6
High Street	32.9	28.8	30.3	31.1	-4.1	-2.6	-1.7
Bus station	36.4	31.1	32.6	34.6	-5.3	-3.8	-1.8
Cloth Hall Street	22.5	20.9	21.4	21.2	-1.6	-1.1	-1.2
Zetland Street	24.6	23.8	24.1	22.4	-0.8	-0.5	-2.2
K2	36.8	31.4	32.9	35.1	-5.3	-3.8	-1.7
K7	42.9	35.9	38.8	42.8	-7.0	-4.1	-0.1
K11	40.0	38.6	39.1	36.8	-1.4	-0.9	-3.2
K21	33.3	31.6	32.2	30.4	-1.7	-1.1	-2.9
K28	32.2	29.9	30.6	29.7	-2.3	-1.6	-2.5
K45	23.7	22.1	22.5	22.0	-1.6	-1.2	-1.8
K56	32.1	30.4	31.0	29.2	-1.7	-1.1	-2.8
K58	27.5	26.5	26.8	25.3	-0.9	-0.7	-2.2
K86	25.2	24.1	24.4	23.0	-1.1	-0.7	-2.2

Exceedances of the NO₂ annual mean AQO are shown in **bold**

PM₁₀

Comparison of maximum roadside concentrations

Table C-3 presents the maximum sampled roadside PM₁₀ concentration by PCM Census ID or road name as applicable for each scenario. The highest concentration is on Queensgate (Census ID 802027418), and this declines the most in Scenario 3 (0.67 µg/m³), which corresponds to a 31.5% conversion of petrol and diesel cars to electric cars. This decrease on Queensgate was the largest decrease across all scenarios.

Table C-3 Maximum PM₁₀ concentration (µg/m³) per road, PCM census ID, or diffusion tube ID

CensusID/Road Name	Baseline Concentration	Scenario 1 Concentration	Scenario 2 Concentration	Scenario 3 Concentration	Scenario 1 - Baseline	Scenario 2 - Baseline	Scenario 3 - Baseline
802016587 - Outcote Bank	14.47	14.43	14.44	14.24	-0.04	-0.03	-0.23
802038432 - Castlegate	18.61	18.54	18.55	18.00	-0.06	-0.05	-0.61
802037465 - Trinity Street	14.14	14.09	14.10	13.92	-0.05	-0.04	-0.22
802007975 - Castlegate	17.34	17.27	17.28	16.87	-0.06	-0.05	-0.46
802075276 - New North Road	15.34	15.32	15.32	15.04	-0.02	-0.02	-0.30
802075277 - New North Road	14.99	14.97	14.98	14.72	-0.02	-0.02	-0.28
802075274 - Castlegate Slip	16.35	16.33	16.33	15.96	-0.02	-0.02	-0.39
802048209 - Castlegate	16.21	16.18	16.19	15.87	-0.03	-0.02	-0.35
802047429 - Bradford Road	14.88	14.85	14.86	14.62	-0.03	-0.02	-0.26
802058394 - Leeds Road	13.57	13.54	13.55	13.41	-0.03	-0.02	-0.16
802017952 - Southgate	18.79	18.71	18.73	18.21	-0.08	-0.07	-0.58
802037467 - Wakefield Road	17.66	17.59	17.60	17.14	-0.07	-0.06	-0.52
802027418 - Queensgate	19.64	19.57	19.58	18.97	-0.08	-0.07	-0.67
802057306 - Chapel Hill	17.23	17.15	17.16	16.78	-0.08	-0.07	-0.46
802028004 - Northgate	14.28	14.26	14.26	14.05	-0.02	-0.02	-0.23

CensusID/Road Name	Baseline Concentration	Scenario 1 Concentration	Scenario 2 Concentration	Scenario 3 Concentration	Scenario 1 - Baseline	Scenario 2 - Baseline	Scenario 3 - Baseline
802075275 - Castlegate	17.72	17.68	17.69	17.25	-0.04	-0.03	-0.47
Merton Street	14.15	14.11	14.11	13.92	-0.05	-0.04	-0.24
Trinity Street	17.34	17.13	17.16	16.94	-0.21	-0.18	-0.40
New North Road	16.49	16.46	16.46	16.10	-0.03	-0.03	-0.39
Fitzwilliam Street	18.12	18.09	18.09	17.59	-0.03	-0.03	-0.53
St John's Road	17.30	17.21	17.23	16.82	-0.08	-0.07	-0.48
Lower Fitzwilliam Street	15.86	15.81	15.82	15.52	-0.05	-0.04	-0.35
St Andrew's Road	15.61	15.58	15.59	15.26	-0.04	-0.03	-0.35
Kings Mill Lane	12.97	12.95	12.95	12.83	-0.02	-0.01	-0.14
Firth Street	16.09	16.07	16.07	15.67	-0.02	-0.01	-0.41
Viaduct Street	14.04	13.99	14.00	13.84	-0.04	-0.04	-0.20
John William Street	17.60	17.36	17.40	17.15	-0.23	-0.20	-0.44
Northumberland Street	14.02	13.95	13.96	13.83	-0.07	-0.06	-0.19
New North Parade	14.85	14.81	14.81	14.59	-0.04	-0.04	-0.26
Westgate	16.52	16.20	16.25	16.22	-0.32	-0.27	-0.30
Railway Street	15.02	14.73	14.78	14.84	-0.29	-0.24	-0.18
St George's Square	13.60	13.50	13.52	13.47	-0.10	-0.08	-0.13
Kirkgate	14.88	14.74	14.77	14.62	-0.14	-0.11	-0.26
Lord Street	13.37	13.31	13.32	13.23	-0.06	-0.05	-0.14
St Peter's Street	13.74	13.66	13.67	13.58	-0.08	-0.07	-0.16
New Street	13.54	13.49	13.49	13.38	-0.05	-0.04	-0.16
Ramsden Street	14.84	14.70	14.72	14.60	-0.14	-0.12	-0.24
Peel Street	13.97	13.89	13.90	13.79	-0.08	-0.07	-0.19
Alfred Street	15.33	15.23	15.25	15.02	-0.10	-0.08	-0.31

CensusID/Road Name	Baseline Concentration	Scenario 1 Concentration	Scenario 2 Concentration	Scenario 3 Concentration	Scenario 1 - Baseline	Scenario 2 - Baseline	Scenario 3 - Baseline
Queen Street	13.81	13.77	13.78	13.62	-0.04	-0.03	-0.20
Cross Church Street	13.19	13.14	13.15	13.06	-0.05	-0.04	-0.13
Henry Street	14.67	14.58	14.59	14.44	-0.09	-0.07	-0.23
Market Street	15.63	15.51	15.53	15.34	-0.12	-0.10	-0.29
Princess Street	14.88	14.78	14.79	14.61	-0.10	-0.08	-0.27
Corporation Street	15.45	15.39	15.40	15.09	-0.06	-0.05	-0.35
High Street	15.26	15.10	15.12	15.00	-0.17	-0.14	-0.26
Bus station	16.14	16.03	16.05	15.79	-0.11	-0.10	-0.36
Cloth Hall Street	13.42	13.38	13.39	13.28	-0.05	-0.04	-0.15
Zetland Street	14.46	14.44	14.44	14.18	-0.03	-0.02	-0.28
K2	15.44	15.25	15.28	15.17	-0.18	-0.16	-0.27
K7	15.87	15.51	15.57	15.65	-0.36	-0.31	-0.22
K11	17.70	17.64	17.65	17.17	-0.06	-0.05	-0.52
K21	17.94	17.87	17.88	17.43	-0.07	-0.06	-0.51
K28	16.07	15.99	16.00	15.70	-0.08	-0.07	-0.37
K45	13.77	13.73	13.74	13.58	-0.04	-0.04	-0.19
K56	16.27	16.21	16.22	15.86	-0.06	-0.05	-0.41
K58	14.93	14.90	14.90	14.64	-0.03	-0.02	-0.29
K86	15.03	15.00	15.00	14.72	-0.04	-0.03	-0.31

PM_{2.5}

Comparison of maximum roadside concentrations

Table C-4 presents the maximum sampled roadside PM_{2.5} concentration by PCM Census ID or road name as applicable for each scenario. The highest concentration is on Queensgate (Census ID 802027418), and this declines the most in Scenario 3 by 0.31 µg/m³. The largest decrease across all scenarios was at Diffusion tube K7 in Scenario 1, which is on Westgate, declining by 0.35 µg/m³.

Table C-4 Maximum PM_{2.5} concentration (µg/m³) per road, PCM census ID, or diffusion tube ID

CensusID/Road Name	Baseline Concentration	Scenario 1 Concentration	Scenario 2 Concentration	Scenario 3 Concentration	Scenario 1 - Baseline	Scenario 2 - Baseline	Scenario 3 - Baseline
802016587 - Outcote Bank	8.52	8.49	8.50	8.42	-0.04	-0.03	-0.10
802038432 - Castlegate	10.83	10.77	10.78	10.55	-0.06	-0.05	-0.28
802037465 - Trinity Street	8.52	8.47	8.48	8.43	-0.05	-0.04	-0.10
802007975 - Castlegate	10.31	10.25	10.26	10.09	-0.06	-0.05	-0.21
802075276 - New North Road	9.20	9.18	9.18	9.07	-0.02	-0.02	-0.14
802075277 - New North Road	9.00	8.98	8.98	8.87	-0.02	-0.02	-0.13
802075274 - Castlegate Slip	9.76	9.74	9.74	9.59	-0.02	-0.02	-0.18
802048209 - Castlegate	9.76	9.73	9.73	9.60	-0.03	-0.02	-0.16
802047429 - Bradford Road	8.99	8.97	8.97	8.88	-0.03	-0.02	-0.12
802058394 - Leeds Road	8.27	8.24	8.24	8.19	-0.03	-0.02	-0.07
802017952 - Southgate	11.08	11.00	11.01	10.82	-0.08	-0.07	-0.26
802037467 - Wakefield Road	10.38	10.31	10.32	10.14	-0.07	-0.06	-0.24
802027418 - Queensgate	11.45	11.40	11.40	11.14	-0.05	-0.05	-0.31
802057306 - Chapel Hill	10.09	10.01	10.02	9.87	-0.08	-0.07	-0.21
802028004 - Northgate	8.65	8.63	8.63	8.55	-0.02	-0.02	-0.10

CensusID/Road Name	Baseline Concentration	Scenario 1 Concentration	Scenario 2 Concentration	Scenario 3 Concentration	Scenario 1 - Baseline	Scenario 2 - Baseline	Scenario 3 - Baseline
802075275 - Castlegate	10.56	10.52	10.53	10.35	-0.04	-0.03	-0.21
Merton Street	8.45	8.41	8.42	8.34	-0.04	-0.04	-0.11
Trinity Street	10.39	10.18	10.21	10.20	-0.21	-0.18	-0.18
New North Road	9.85	9.82	9.82	9.67	-0.03	-0.03	-0.18
Fitzwilliam Street	10.73	10.70	10.71	10.49	-0.03	-0.03	-0.24
St John's Road	10.34	10.26	10.27	10.12	-0.08	-0.07	-0.22
Lower Fitzwilliam Street	9.53	9.49	9.49	9.37	-0.05	-0.04	-0.16
St Andrew's Road	9.24	9.21	9.21	9.08	-0.03	-0.03	-0.16
Kings Mill Lane	7.79	7.77	7.77	7.72	-0.02	-0.01	-0.06
Firth Street	9.45	9.44	9.44	9.26	-0.02	-0.01	-0.19
Viaduct Street	8.57	8.53	8.54	8.48	-0.04	-0.04	-0.09
John William Street	10.64	10.41	10.44	10.43	-0.23	-0.20	-0.21
Northumberland Street	8.55	8.49	8.50	8.47	-0.07	-0.06	-0.09
New North Parade	8.94	8.90	8.91	8.82	-0.04	-0.04	-0.12
Westgate	10.04	9.72	9.77	9.90	-0.32	-0.27	-0.14
Railway Street	9.20	8.92	8.97	9.12	-0.28	-0.24	-0.08
St George's Square	8.32	8.23	8.24	8.26	-0.09	-0.08	-0.06
Kirkgate	8.99	8.86	8.88	8.87	-0.13	-0.11	-0.12
Lord Street	8.14	8.09	8.09	8.08	-0.05	-0.05	-0.06
St Peter's Street	8.38	8.31	8.32	8.31	-0.08	-0.07	-0.07
New Street	8.20	8.15	8.16	8.13	-0.05	-0.04	-0.07
Ramsden Street	8.88	8.74	8.76	8.77	-0.14	-0.12	-0.11
Peel Street	8.34	8.26	8.27	8.26	-0.08	-0.07	-0.09
Alfred Street	9.07	8.97	8.99	8.93	-0.10	-0.08	-0.14

CensusID/Road Name	Baseline Concentration	Scenario 1 Concentration	Scenario 2 Concentration	Scenario 3 Concentration	Scenario 1 - Baseline	Scenario 2 - Baseline	Scenario 3 - Baseline
Queen Street	8.26	8.22	8.22	8.17	-0.04	-0.03	-0.09
Cross Church Street	8.01	7.96	7.97	7.95	-0.05	-0.04	-0.06
Henry Street	8.82	8.74	8.75	8.72	-0.08	-0.07	-0.10
Market Street	9.51	9.23	9.27	9.39	-0.28	-0.24	-0.12
Princess Street	8.84	8.74	8.75	8.71	-0.10	-0.08	-0.12
Corporation Street	9.14	9.08	9.09	8.98	-0.06	-0.05	-0.16
High Street	9.14	8.97	9.00	9.02	-0.16	-0.14	-0.12
Bus station	9.59	9.48	9.49	9.43	-0.11	-0.10	-0.16
Cloth Hall Street	8.11	8.07	8.07	8.04	-0.04	-0.04	-0.07
Zetland Street	8.62	8.60	8.60	8.49	-0.02	-0.02	-0.13
K2	9.26	9.08	9.10	9.13	-0.18	-0.16	-0.12
K7	9.70	9.35	9.39	9.60	-0.35	-0.31	-0.10
K11	10.33	10.27	10.28	10.09	-0.06	-0.05	-0.24
K21	10.55	10.49	10.50	10.32	-0.07	-0.06	-0.23
K28	9.58	9.49	9.51	9.41	-0.08	-0.07	-0.17
K45	8.32	8.28	8.28	8.23	-0.04	-0.04	-0.09
K56	9.62	9.56	9.57	9.43	-0.06	-0.05	-0.19
K58	9.05	9.02	9.02	8.92	-0.03	-0.02	-0.13
K86	8.91	8.88	8.88	8.77	-0.04	-0.03	-0.14

Appendix D: 2024 measurements

This section repeats the assessment of the required reduction in emissions (section 3.4) using 2024 measurement data so that the latest measurement data have been considered.

Compared to 2023, there were notable changes to the diffusion tube network in 2024, with a number of new monitoring locations added, including additional tubes added to the location of K40 (2023 site ID), now renamed DT40 (DT164 and DT165) in 2024 making it a triplicate site (though full year triplicate monitoring results will not be available until the 2025 annual data is ratified and reported). Site K7 (2023 site ID) has been discontinued but replaced with other diffusion tube monitoring sites nearby on Westgate, to further investigate the exceedance. The rest of this section references the diffusion tube locations using the 2024 site ID.

The diffusion tube network had some data capture issues in 2024, resulting in all sites having data capture below 75%. Though the results have been annualised in line with LAQM.TG(22), they should nevertheless be treated with a degree of caution. Information here should be used for indicative purposes for this reason. All planned actions as in Table 5-1 are intended to improve air quality borough wide.

The results for 2024 identified seven diffusion tube locations in exceedance, nearly all within or adjacent to existing Air Quality Management Areas (AQMA):

- Two in Dewsbury, within and just outside of AQMA 5 (DT40 and DT54), and
- Three in Huddersfield AQMA 9 (DT56, DT144, DT145)
- Two in Thornton Lodge (DT77 and DT151)

Table D-1 **Error! Reference source not found.** presents the required reduction in road NO_x concentrations (µg/m³) that would be required to achieve compliant NO₂ concentrations (40 µg/m³) at the monitoring sites which are non-compliant in 2024.

The sites requiring the greatest reduction in road NO_x are diffusion tubes 144 and 145 located on Westgate, Huddersfield Town Centre in AQMA 9, with 41% and 39% reductions in road NO_x required respectively to achieve compliance. It's worth noting that DT144 is located next to a bus stop, and DT145 is located near a bus stop and a junction with traffic lights.

The sites requiring the next greatest reduction in road NO_x are diffusion tubes 56 in Apsley (AQMA 9) and 151 in Thornton Lodge, with 30% and 18% reductions in road NO_x required respectively to achieve compliance. The remaining three sites require road NO_x reductions between 7% and 9%.

These results are at ground floor level, in Westgate most receptors are at first floor level. Concentrations will decrease as height increases, with the largest decrease seen at lower levels. However, there is no standard method to calculate this.

Table D-1 Required reduction in road NO_x to achieve compliant NO₂

DT ID	Location	NO ₂ measured in 2024, µg/m ³	NO _x background in 2024, µg/m ³	Road NO _x from NO ₂ calculator, µg/m ³	Road NO _x to achieve compliance, µg/m ³	Road NO _x reduction required, µg/m ³	Road NO _x reduction required, %
40	Triplicate 1 - Outside 35 Leeds Road, Eastborough, Dewsbury - Lamppost 007	41.6	24.8	73.6	67.6	6.0	8%
54	Wakefield Road, Dewsbury - in Layby at bus stop on way to Dewsbury Town Centre from Earlsheaton	41.6	16.4	84.8	78.7	6.1	7%
56	New Wharf Inn PH opposite Riverbank Court, Wakefield Road, Aspley - Planning 1 Tube	48.6	16.0	113.1	79.2	33.8	30%
77	Triplicate 1 - Manchester Road, Thornton Lodge 4 – lamp post 37	42.1	13.4	91.1	82.8	8.2	9%
144	Outside the Jules Verne PH, Westgate, LC003	53.1	17.9	129.3	76.7	52.6	41%
145	Triplicate 1 - The Crown PH, Westgate, LC010	52.0	17.9	124.7	76.7	48.1	39%
151	Below 173 Manchester Road, LC 035, Thornton Lodge	44.8	13.4	101.2	82.8	18.3	18%

Appendix E: Minutes from Steering Group workshop

A steering group workshop was held on 3rd February 2026. In attendance were:

From Kirklees Council

RM, Environmental Health

NH, Environmental Health

CS, Environmental Health

JS, Planning Policy Group Leader

SH, Strategic Planner, Project Development

NCB, Fleet and Transport Manager

JS, Project Manager EVCP delivery

DK, Project Officer, EVCP delivery

JM, Housing Team Manager

LM, Public Health

EB, Transport Strategy and Policy

FG, Licensing Group Leader

DH, Operation Manager for Highways Network Management

PW, Transport Planning Group Engineer

DM, Operations Manager for Highways Assets

From Ricardo

VT, Senior Air Quality Consultant and Project Manager

AP, Senior Air Quality Consultant

JB, Senior Air Quality Consultant

Minutes

1. Introductions
2. Background to Air Quality, Kirklees AQMAs and the AQAP process
3. Presentation of baseline modelling results for AQMA 9, and source apportionment results for all AQMAs.
 - Baseline modelling uses 2023 monitoring data. One exceedance in 2023 on Westgate (further exceedance in 2024 monitoring data, though diffusion tube

results for 2024 had lower data capture, and therefore there is a preference to use 2023 for the model year and to 2023 monitoring data to verify the model.

- Elevated NO₂ concentrations Castlegate and on Westgate
 - Westgate has a significantly higher proportion of buses, as well as gradients, street canyons, bus stops and junctions contributing to higher concentrations.
 - Comment about buses – any impact seen from rail replacement uses associated with TransPennine route upgrades? Response - Likely not having a heavy influence on the 2023 data underpinning the baseline modelling and source apportionment.
 - Comment about the overall aims of the AQAP – need to have actions for AQMAs, but also to see general improvements to AQ across Kirklees.
 - Comments on freight - The group highlighted that freight is identified as an aspirational area in the upcoming WYCA LTP4, with scope for further development once the plan is published.
 - An update was also given that an application has been submitted to the Department for Transport for additional lane powers (e.g. to support road works).
4. Measures were discussed around the following themes: Improving traffic flow; Low emission transport; Encouraging modal shift to active transport; Encouraging modal shift to public transport; Freight, taxis, council fleet; Planning; and Information and awareness.

Improving traffic flow

The group noted that all straightforward bus lane options have already been delivered, particularly in Huddersfield town centre. Further widening to create additional lanes is not feasible, and future improvements will instead rely on upgrading buses themselves. [addressed in next section]. Mentimeter results are shown in Table E-1.

Table E-1 Mentimeter voting results (scores across 12 respondents) in relation to improving traffic flow. (Rating from a scale of 0-5, 5 being high feasibility, high benefit to air quality)

“New opportunity” measures	Feasibility		Benefit to air quality	
	Mean	St. Dev.	Mean	St. Dev.
Bus priority route or lane within AQMA 9	3.45	1.44	3.54	1.30
Moving Traffic Enforcement (via ANPRs and fines)	2.65	1.61	2.67	1.23
Identification of Bus Hotspots with aim to ease congestion at those locations, and improve bus journey times	3.75	1.06	3.75	0.96

Low emission transport

The group noted that WYCA’s innovative EV programme is currently on hold, though the local EV infrastructure project will proceed with secured funding, and a strategy is expected later this year. Members highlighted overlap with existing low-emission measures and expressed broad support for all proposed actions, emphasising the role of WYCA in leading EV uptake. Mentimeter results are shown in Table E-2.

Table E-2 Mentimeter voting results (scores across 11 respondents) (Rating from a scale of 0-5, 5 being high feasibility, high benefit to air quality)

“New opportunity” measures	Feasibility		Benefit to air quality	
	Mean	St. Dev.	Mean	St. Dev.
Use of Bus Franchising to reduce emissions from buses through Westgate	3.18	NA	3.45	NA
Accelerating delivery of zero emission buses to Kirklees	3	1.34	2.72	1.68
Updating the West Yorkshire Bus Alliance voluntary agreement for buses to reduce emissions	3.18	1.40	3.45	1.51

Encouraging uptake of Active Transport

The group discussed ways to encourage active travel, noting that public transport can be challenging for some users due to comfort, behaviour and accessibility issues, particularly when carrying bulky items. Active travel schemes are progressing

at different stages of funding, and members highlighted the need for resources to maintain existing public rights of way. It was also noted that key walking links, including sealed urban footpaths, are often overlooked despite their importance. Mentimeter results are shown in Table E-3.

Table E-3 Mentimeter voting results (scores across 12 respondents) (Rating from a scale of 0-5, 5 being high feasibility, high benefit to air quality)

“New opportunity” measures	Feasibility		Benefit to air quality	
	Mean	St. Dev.	Mean	St. Dev.
Improvement of bus service through bus franchising, West Yorkshire Bus Service Improvement Plan, and LTP 4	3.82	1.25	4.27	1.01
Parking management to encourage shift from private cars use in the Huddersfield town centre	2.55	0.94	3.81	1.85
Park & Ride for Huddersfield	1.09	1.36	2.73	1.37

Encouraging uptake of Public transport

The group noted that Park & Ride has previously been assessed several times and found not viable locally. Work is underway to improve Dewsbury and Huddersfield bus stations, and options for EV charging linked to long-stay parking and bus routes are being explored. It was also noted that WYCA are prioritising ongoing measures to improve passenger safety, particularly for women and girls.

Freight, taxis, council fleet

The group discussed freight, taxi and fleet issues, noting existing HGV restrictions in Huddersfield town centre and the need to reduce vehicle emissions. Anti-idling at taxi ranks within the AQMA was raised, though members noted there are practical limitations to enforcing anti-idling measures. It was also noted that national consultation is underway on whether taxi licensing may transfer from local authorities to a transport authority in future. Mentimeter results are shown in Table E-4.

Table E-4 Mentimeter voting results (average scores across 12 respondents) (Rating from a scale of 0-5, 5 being high feasibility, high benefit to air quality)

“New opportunity” measures	Feasibility		Benefit to air quality	
	Mean	St. Dev.	Mean	St. Dev.
Taxis: Enforcement of emission limits via Kirklees Hackney Carriage and Private Hire Policy.	3.5	1.00	4.08	0.9

Taxis: Anti-idling policy and enforcement at taxi ranks, similar to Calderdale	3.83	1.19	4.42	1.00
Council fleet: replacement of fleet vehicles with EVs, within Vehicle Replacement Programme 2024	3.83	1.59	4.17	1.59

Planning

The group noted that targeted smoke control measures could help reduce PM_{2.5} levels, with around 5% of mortality in Kirklees linked to fine particulate pollution. Targeted action in more deprived areas was highlighted as a way to address inequalities. It was also noted that an EV consultation is underway exploring a easing restrictions on installing home EV chargers, particularly for households without driveways, though this is still in development.

Information and awareness

The group noted that anti-idling awareness is useful but is resource dependent. Signage outside schools was suggested. An update was given on the WY PIIP project, with the end date still to be confirmed and potentially extending to 2027, dependent on agreement from neighbouring authorities. Mentimeter results are shown in Table E-5.

Table E-5 Mentimeter voting results (scores across 11 respondents) (Rating from a scale of 0-5, 5 being high feasibility, high benefit to air quality)

“New opportunity” measures	Feasibility		Benefit to air quality	
	Mean	St. Dev.	Mean	St. Dev.
Targeted Smoke Control	2.82	1.25	3.18	1.72
Awareness campaign for anti-idling	3.09	1.20	2.91	1.10
Awareness campaign for smoke-control area	3.36	1.69	2.64	1.57

Any other comments

The group noted that bus priority measures in AQMA 9 have already been implemented and cannot be extended further into Huddersfield town centre. Members agreed, highlighting the success of the existing bus gate and its positive effects

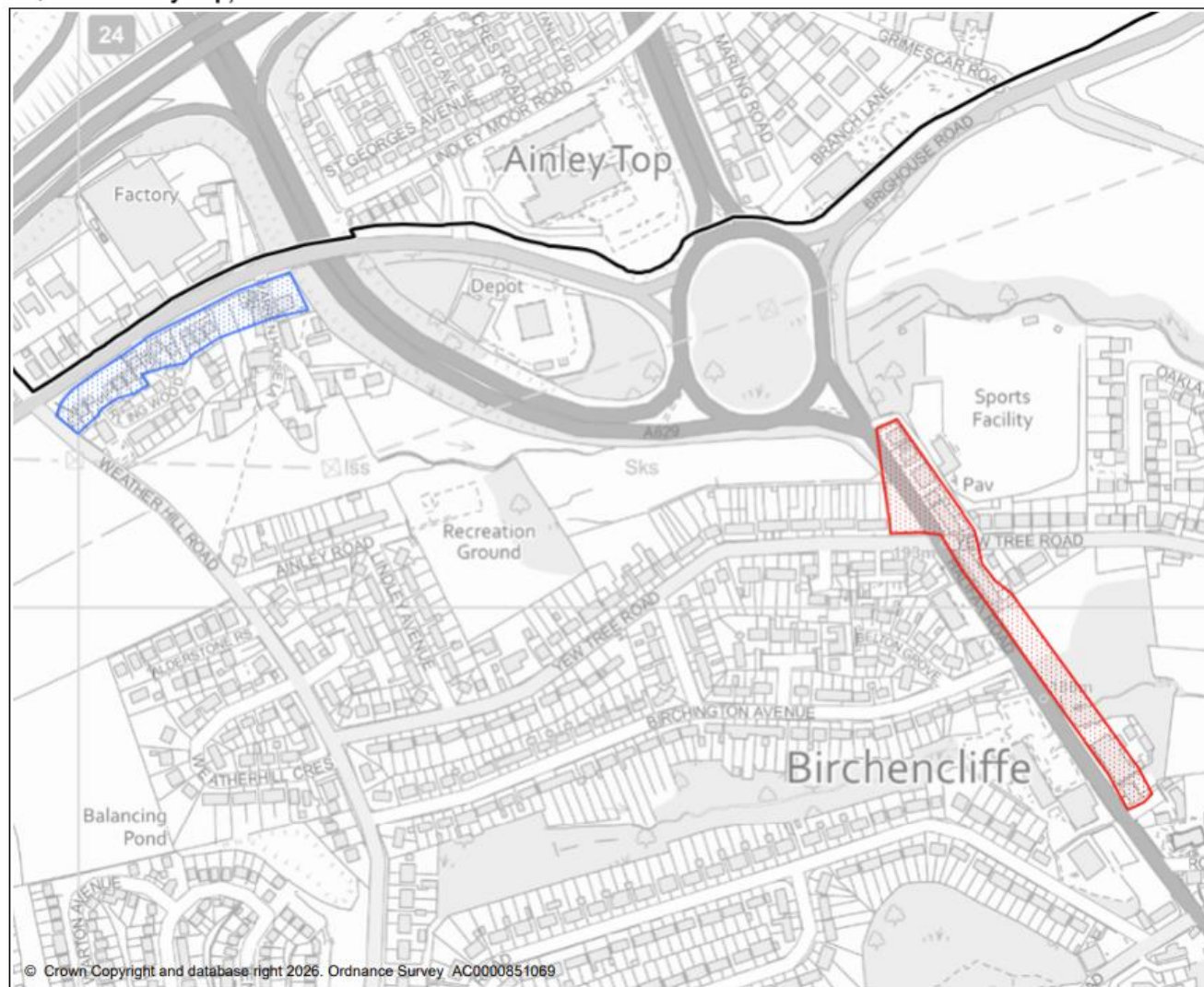
5. Discussion of next steps for AQAP process:

- Distributing meeting minutes and copy of slides
- Refining the measures to a shortlist
- Completion of the draft AQAP, and consultation.
- Finalisation of AQAP.

Appendix F: Maps of AQMAs

Maps of monitoring locations and the 7 AQMAs within Kirklees have been provided.

Figure F-1 – Air Quality Management Area 3 – Ainley Top, Huddersfield.

AQMA 3 - Ainley Top, Huddersfield**Air Quality**

-  Air Quality Management Area as
-  Revoked AQMA

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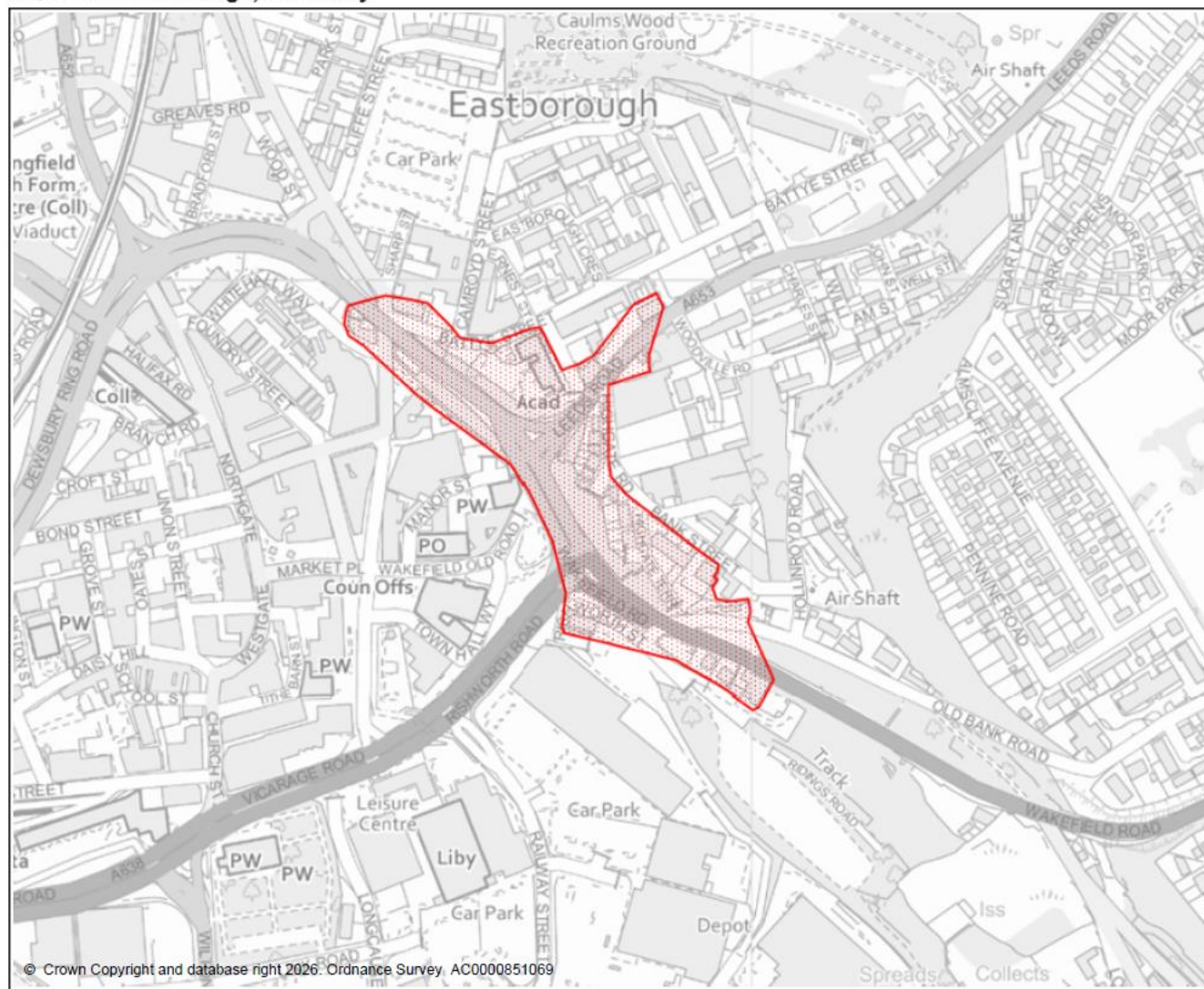


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Figure F-2 Air Quality Management Area 5 – Eastborough, Dewsbury.

AQMA 5 - Eastborough, Dewsbury**Air Quality**

 Air Quality Management Area as

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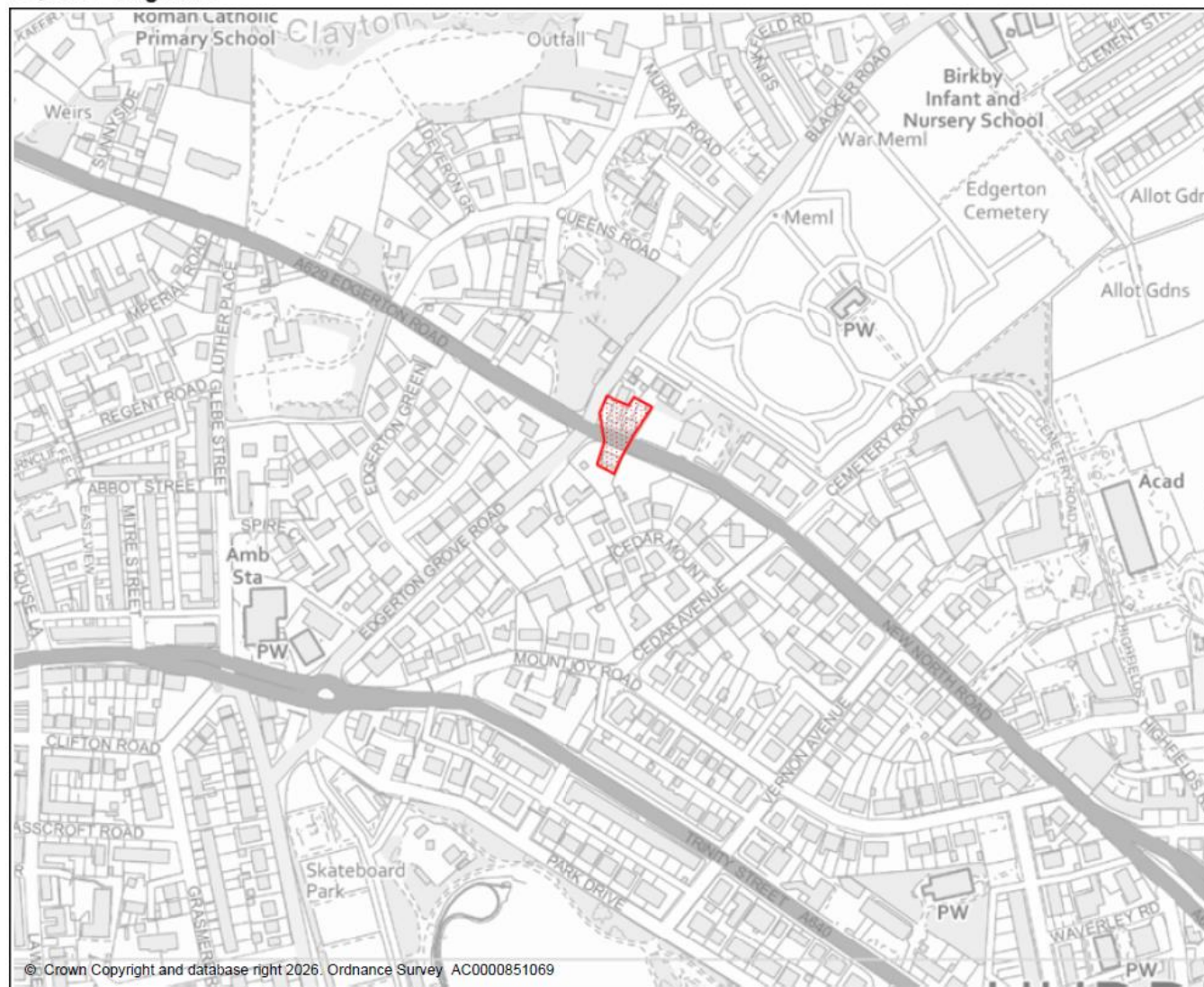


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Figure F-3 - Air Quality Management Area 6 – Edgerton Road, Huddersfield

AQMA 6 - Edgerton**Air Quality**

 Air Quality Management Area as

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 Air Quality Management Areas
 Revoked AQMAs

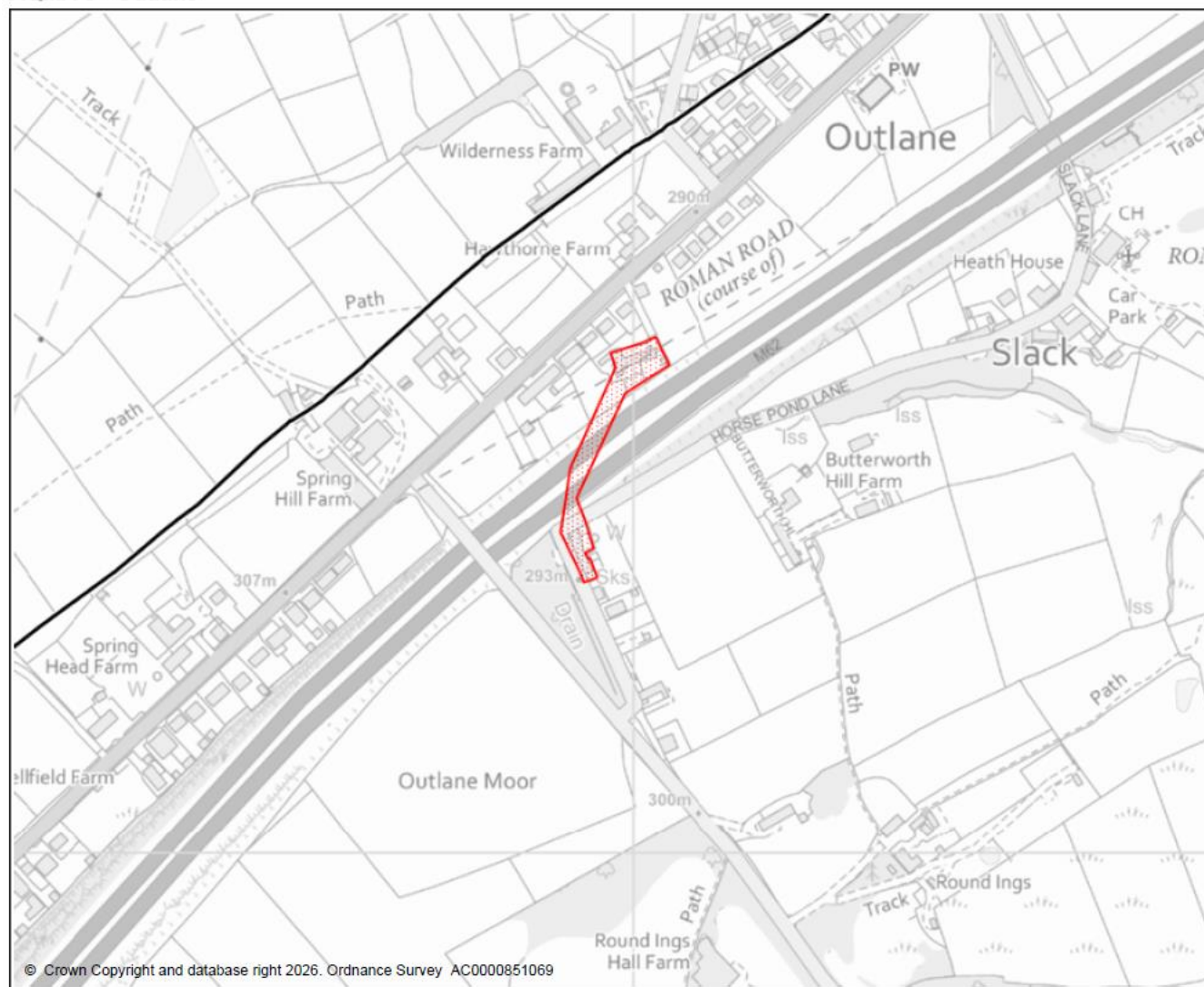
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Figure F-5 - Air Quality Management Area 8 – Outlane

AQMA 8 - Outlane**Air Quality**

 Air Quality Management Area as

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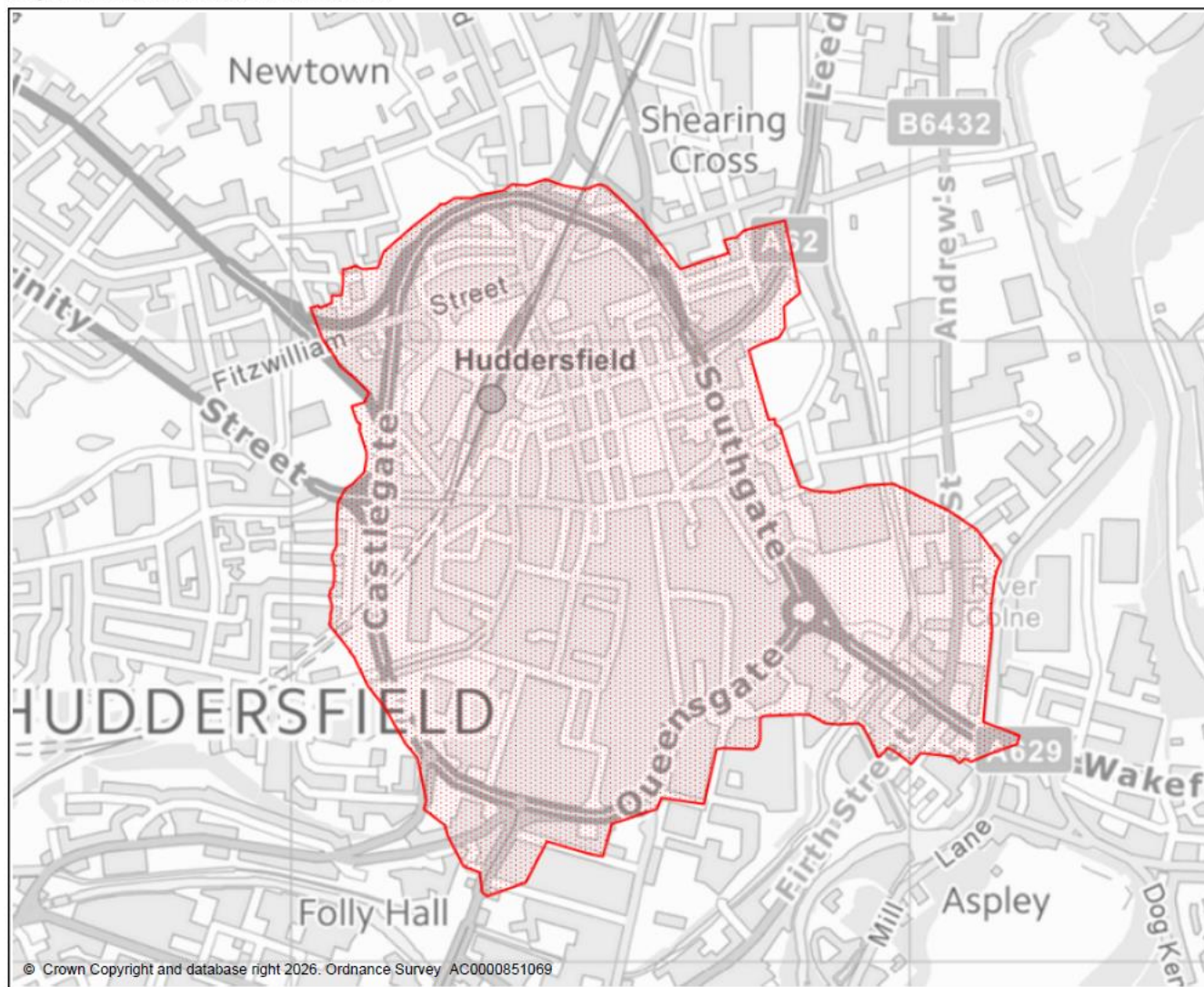
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Figure F-6 Air Quality Management Area 9 – Huddersfield Town Centre

AQMA 9 - Huddersfield Town Centre



Air Quality

 Air Quality Management Area

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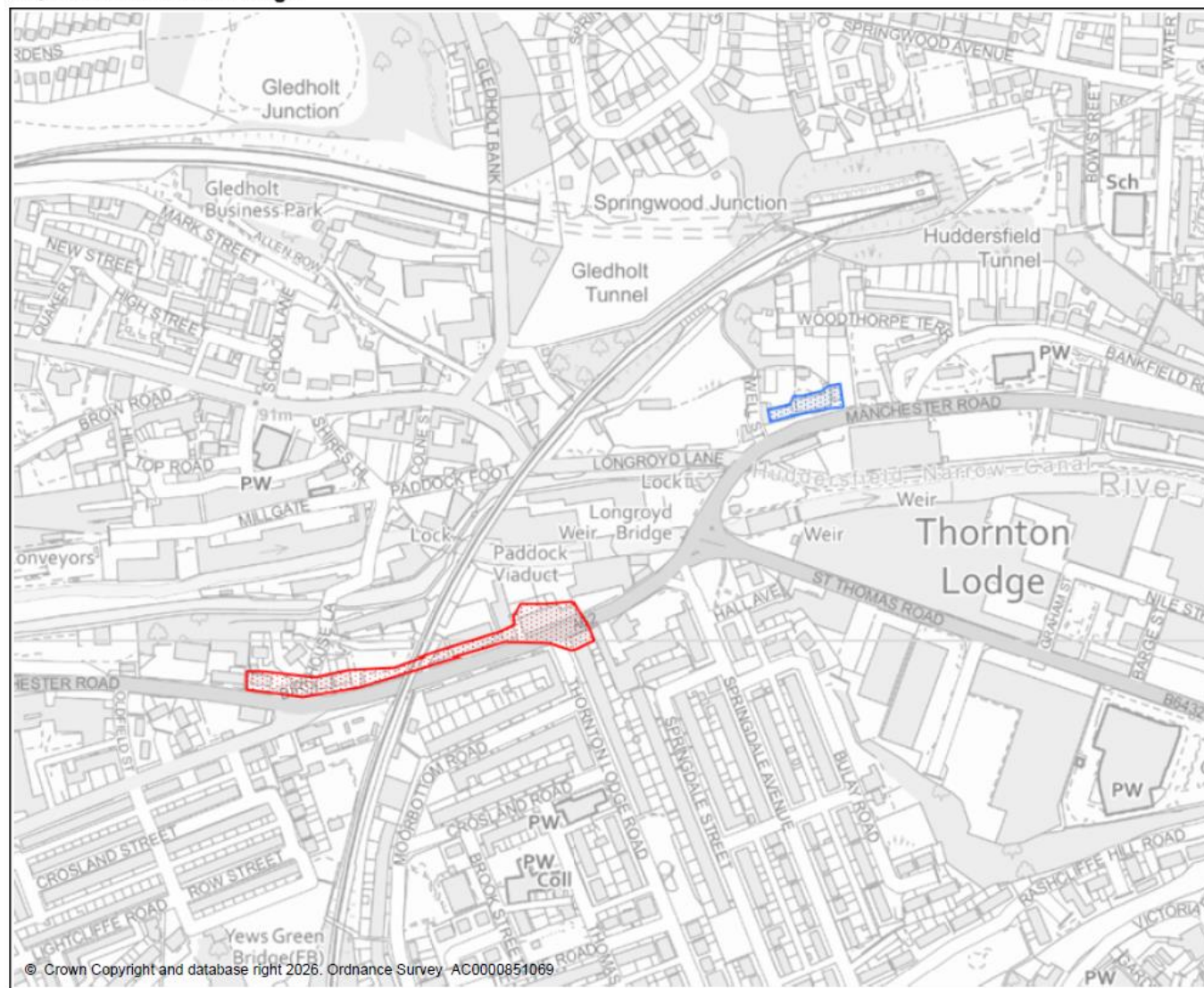
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Figure F-7 Air Quality Management Area 10 – Thornton Lodge

AQMA 10 - Thornton Lodge



Air Quality

-  Air Quality Management Area
-  Revoked AQMA

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Glossary of Terms

Abbreviation	Description
AADT	Annual Average Daily Traffic
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
AQD	Air Quality Directive
AQS	Air Quality Strategy
ASR	Air Quality Annual Status Report - submitted annual to DEFRA in fulfilment of Part IV of the Environment Act 1995 Local Air Quality Management, as amended by the Environment Act 2021
CCAP	Climate change Action Plan
CRSTS	City Regional Sustainable Transport Settlement - Funding programme for sustainable transport.
COPD	Chronic Obstructive Pulmonary Disease
Defra	Department for Environment, Food and Rural Affairs
DfT	Department for Transport
DT	Diffusion Tube
EFT	Emissions Factors Toolkit (version 13.1) - A Defra-provided tool used to calculate road traffic emission factors for air quality assessments and modelling
Euro Standards	Vehicle Emission Standards - Regulations limiting vehicle pollutant emissions
EV	Electric Vehicle
HGV	Heavy goods vehicle – Vehicles weighing over 3.5 tonnes
KJSA	Kirklees Joint Strategic Assessment (KJSA)
KPI	Key Performance Indicator
LAEP	Local Area Energy Plan
LAQM	Local Air Quality Management
LAQM.PG(22)	Local Air Quality Management Policy Guidance 2022 - Provides policy guidance to local authorities on how to meet LAQM requirements

Abbreviation	Description
LAQM.TG(22)	Local Air Quality Management Technical Guidance 2022 - Provides detailed technical guidance on monitoring, modelling and assessment of air quality
LCWIP	Local Cycling and Walking Infrastructure Plan
LEVI	Local Electric Vehicle Infrastructure
LGVs	Light Good Vehicles
LSOA	Lower Super Output Area
LTP4	Local Transport Plan 4 - Regional transport strategy guiding investment and emissions reduction
MOVA	Microprocessor Optimised Vehicle Actuation - Traffic signal system improving junction efficiency
NO ₂	Nitrogen Dioxide
NO _x	Nitrogen Oxides
OLS	Ordinary Least Squares – A statistical method used to estimate the relationship between variables by minimising the difference between observed and predicted values
ONS	Office of National Statistics
OS	Ordnance Survey: The national mapping agency of Great Britain, providing geographic data used for mapping, spatial analysis, and modelling
OLEV	Office for Low Emission Vehicles - Government body supporting low emission vehicles
PCM	Pollution Climate Mapping
PHE	Public Health England
PHEV	Public Hybrid Electric Vehicle
PIIP	<u>West Yorkshire Public Particulate Information Improvement Project (PIIP)</u>
PM ₁₀	Airborne particulate matter with an aerodynamic diameter of 10µm (micrometres or microns) or less
PM _{2.5}	Airborne particulate matter with an aerodynamic diameter of 2.5µm or less
Receptor	A location representative of human (or ecological) exposure to a pollutant, over a time period relevant to the objective that is being assessed against, where the Air Quality Strategy objectives are considered to apply
RMSE	Root Mean Square Error – A statistical metric used to evaluate model performance by measuring the average magnitude of differences between observed and modelled values.

Abbreviation	Description
SCOOT	Cycle Offset Optimisation Technique
SO ₂	Sulphur dioxide
SoS	Secretary of State
TBC	To be confirmed
TEMPPro	Trip End Model Presentation Program
TWAO	Transport and Works Act Order
TRU	Transpennine Route Upgrade
UKHSA)	The UK Health Security Agency (UKHSA)
ULEVs	Ultra Low Emission Vehicles
WYCA	West Yorkshire Combined Authority
WYCF	West Yorkshire Climate Fund
WYLES	West Yorkshire Low Emission Strategy
ZEBRA	Zero Emission Bus Regional Area

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