



Air Quality Action Plan for  
**Kirklees Council**

Version 1.4

In fulfillment of Part IV of the  
Environment Act 1995

Local Air Quality Management

September 2019

## Kirklees Council District Action Plan

|                                |  |
|--------------------------------|--|
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|                                |  |
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| <b>Date</b>                    | September 2019   |

## Kirklees Council District Action Plan

| <b>Copy</b> | <b>Date</b> | <b>Reason for Changes</b>                              | <b>Officer</b> |
|-------------|-------------|--|----------------|
| 1.1         | 20/02/19    | Initial Draft  | A Jameson      |
| 1.2         | 01/04/19    | Inclusion to reflect feedback from approval process    | A Jameson      |
| 1.3         | 12/08/19    | Inclusion to reflect feedback from public consultation | A Jameson      |
| 1.4         | 23/09/19    | Inclusion to reflect feedback from approval process    | A Jameson      |
|             |             |  |                |
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### Executive Summary

This Air Quality Action Plan (AQAP) has been produced as part of our duty to Local Air Quality Management (LAQM). It outlines the action we will take to improve air quality in Kirklees Council between April 2019 and March 2024.

This action plan replaces the previous action plan which ran from May 2007 to August 2019. Highlights of successful projects delivered through the past action plan include:

- Redevelopment of congested junctions
- Installation of Split Cycle Offset Optimisation Technique (SCOOT) traffic managements system across the district
- Installation of bus lanes and bus priority at traffic lights
- School Bike-ability Scheme
- Calder Valley Cycle Scheme
- Free parking for ULEV Vehicles
- City Car Club
- Deep clean of AQMA 2
- EV charge point installations across district

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 the less affluent areas.<sup>1,2</sup>

The annual health cost to society of the impacts of particulate matter alone in the UK is estimated to be roughly £16 billion<sup>3</sup>. Kirklees Council is committed to reducing the exposure of people in the Kirklees district to poor air quality in order to improve health.

We have developed actions that can be considered under 11 broad topics:

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<sup>1</sup> Environmental equity, air quality, socioeconomic status and respiratory health, 2010

<sup>2</sup> Air quality and social deprivation in the UK: an environmental inequalities analysis, 2006

<sup>3</sup> Defra. Valuing the overall impacts of air pollution, March 2010

- Alternatives to private vehicle use
- Environmental permits
- Freight and delivery management
- Policy guidance and development control
- Promoting low emission plants;
- Promoting low emission transport
- Promoting travel alternatives
- Public information
- Transport planning and infrastructure
- Traffic management
- Vehicle fleet efficiency

Our primary priority within Kirklees relates to emissions associated with vehicles, the local topography and congestion. In conjunction with the primary focus, Kirklees will also work with local businesses, home owners and developers to reduce the impact from their emissions.

We have worked hard to engage with stakeholders and communities which can make a difference to air quality in Kirklees. We would like to thank all those who have worked with us in the past and we look forward to working with you again as well with new partners as we deliver this new action plan over the coming years.

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 agreed in Europe), 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 Council's direct influence.

### **Responsibilities and Commitment**

This AQAP was prepared by the Environmental Health Department of Kirklees Council with the support and agreement of the following officers and departments:

- Kirklees Council Public Health
- Kirklees Council Highways Department
- Kirklees Council Planning Department
- Kirklees Council Procurement

## Kirklees Council District Action Plan

- Kirklees Council Communities and Leisure
- Kirklees Neighbourhood Housing
- Huddersfield University
- Highways England
- West Yorkshire Low Emissions Strategy Steering Group
- West Yorkshire Combined Authority

This AQAP has been approved by:

<Details of high level Council members who have approved the AQAP (NB: In two tier authorities this could include sign off from County Councils) e.g. Head of Transport Planning, Head of Public Health, with e-signatures>.

This AQAP will be subject to an annual review, appraisal of progress and reporting to the relevant Council Committee (specify if relevant). Progress each year will be reported in the Annual Status Reports (ASRs) produced Kirklees Council, as part of our statutory Local Air Quality Management duties.

If you have any comments on this AQAP please send them to Andrew Jameson at:

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Huddersfield, HD1 6LG

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Email; [andrew.jameson@kirklees.gov.uk](mailto:andrew.jameson@kirklees.gov.uk)

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### Abbreviations

|                   |   |
|-------------------|---|
| AQAP              | Air Quality Action Plan                             |
| AQMA              | Air Quality Management Area                         |
| AQS               | Air Quality Strategy                                |
| ASR               | Annual Status Report                                |
| LAQM              | Local Air Quality Management                        |
| NO <sub>2</sub>   | Nitrogen dioxide                                    |
| NO <sub>x</sub>   | Nitrogen oxides                                     |
| AQO               | Air Quality Objective                               |
| PM                | Particulate Matter                                  |
| PM <sub>10</sub>  | Particulate matter less than 10 micron in diameter  |
| PM <sub>2.5</sub> | Particulate matter less than 2.5 micron in diameter |
| SCOOT             | Split Cycle Offset Optimisation Technique           |
| WYLES             | West Yorkshire Low Emissions Strategy               |

## 1 Introduction

This report outlines the actions that Kirklees Council will deliver between October 2019 and October 2024 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 the local authority's administrative area.

It has been developed in recognition of the legal requirement on the local authority to work towards Air Quality Strategy (AQS) objectives under Part IV of the Environment Act 1995 and relevant regulations made under that part and to meet the requirements of the 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 ASR.

## 2 Summary of Current Air Quality in Kirklees

Air pollution is associated with a number of adverse health impacts. It is recognised as a contributing factor in the onset of heart disease and cancer. Additionally, air pollution particularly affects the most vulnerable in society: children 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 the less affluent areas<sup>4,5</sup>.

The annual health cost to society of the impacts of particulate matter alone in the UK is estimated to be around £16 billion<sup>6</sup>.

The air quality issues within Kirklees are focussed around the road network connecting the towns, and traffic which passes between the West Yorkshire conurbation along the M62 and Greater Manchester.

Kirklees Council have conducted monitoring across the district where these primary roads are in close proximity to relevant human activity. To date Kirklees has identified 2 primary pollutants of concern. They are Nitrogen Dioxide and Particulate Matter.

Current trends indicate that the levels of particulate matter has fallen over the last 5 years, which has resulted in the decision to remove an AQMA.

It is noted that between 2012 and 2013 concentrations within the AQMAs and overall fell by roughly  $10\mu\text{g}/\text{m}^3$ . Since that time concentration levels have stagnated within the AQMA 1. Trends within the new AQMA's and at other non AQMA monitoring locations have seen slightly increases by 1 to  $2\mu\text{g}/\text{m}^3$ . This indicates that further measures are needed to return to a downward trend and it must also be noted that the assumptions around the turnover in fleet bringing about required reductions should be treated with caution.

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<sup>4</sup> Environmental equity, air quality, socioeconomic status and respiratory health, 2010

<sup>5</sup> Air quality and social deprivation in the UK: an environmental inequalities analysis, 2006

<sup>6</sup> Defra. Abatement cost guidance for valuing changes in air quality, May 2013

### 3 Kirklees Council's Air Quality Priorities

Kirklees Council published their Corporate Plan 2018-2020 on 19 July 2018, which outlines the priorities for the next 3 years. The primary shared outcomes of the plan are as follows:

- **Best start** - Children have the best start in life
- **Sustainable economy** - Kirklees has sustainable economic growth and provides good employment for and with communities and businesses.
- **Well** - People in Kirklees are as well as possible for as long as possible
- **Safe and cohesive** - People in Kirklees live in cohesive communities, feel safe and are safe/protected from harm
- **Independent** - People in Kirklees live independently and have control over their lives
- **Clean and green** - People in Kirklees experience a high quality, clean, sustainable and green environment
- **Efficient and effective** - Kirklees Council works smart and delivers efficiently and effectively.
- **Aspire and achieve** - People in Kirklees have aspiration to achieve their ambitions through education, training employment and lifelong learning

Full details on the plan are available at:

<http://www.kirklees.gov.uk/beta/delivering-services/pdf/corporate-Plan-201820.pdf>

The Corporate Plan is reviewed annually and results were published 17 July 2019, highlighting the creation of this action plan, the air quality strategy and a number of measures from **Table 6.1** as key measures in delivering the shared outcomes.

The review is available at;

<http://intranet.kirklees.gov.uk/getattachment/News/News-and-Views/Corporate-Plan-2019-Refresh/Kirklees-Corporate-Plan-2019-Refresh-Final.pdf.aspx>

Air quality is named within the Corporate Plan as a primary key measure for success within the Clean and Green outcomes section. The target within the plan is to “Improve air quality via a Kirklees Air Quality Action Plan and other interventions across the Council and with partners.”

As part of the LAQM process Kirklees Council has identified 10 areas, which have exceeded AQO's. Originally 2 locations were identified in 2007, Bradley and Scouthill.

Bradley was declared for the exceedance of the annual NO<sub>2</sub> AQO and further assessment identified that the primary source of pollutants was as a result of vehicle emissions. Source apportionment results contained within table 8.1 were derived as part of this further assessment and used to determine measures, which have been

implemented reduce the concentrations within the area. Since that time, the levels have fallen within the AQMA and as such proposals to reduce the boundary from 78 residential properties to 2 have been accepted by DEFRA. This area will still be included within the new Action Plan from the district and where applicable, specific measures will be identified.

Scouthill was declared for exceedances of the daily PM<sub>10</sub> AQO and further assessment identified that the primary source of PM were from roadside emissions compounded by an elevated background due to neighbouring industrial activities. Through the use of diurnal trends and weather patterns led the council to conclude that exceedances were occurring due to re-suspension of PM and measures were implemented that have resulted in compliance within the AQMA. As such Kirklees Council is in the process of revoking the AQMA completely.

In 2016 a further 7 areas were identified as exceeding Annual NO<sub>2</sub> AQO and following focused studies within these areas Kirklees Council concluded the need for declaration. In 2017, Kirklees Council identified a 1 other area which exceeded the Annual NO<sub>2</sub> AQO. Declaration of these 8 areas increases the number of AQMA's within the Kirklees Council to 10.

A pre-existing Air Quality Strategy and Action Plan are in place and was adopted in 2007. While some of the actions and policies outlined in these documents are still relevant in 2018, majority are either out of date or have been superseded by adoption of other policy documents. As such Kirklees Council plan to replace these documents with this 5 year action plan and the creation of a new overarching Air Quality Strategy for the district.

The most up-to-date policy document currently in use to reduce emissions within the district is the West Yorkshire Low Emission Strategy (WYLES), which provides a regional approach to reducing emissions across a number of work streams including planning, procurement, the electric charging network and freight. This document is used within the district and regionally to inform decision making, strategies and formulate projects to reduce emissions.

The priority of air quality within the corporate plan is also re-enforced in the Kirklees Joint Health and Wellbeing Strategy 2014-2020, which prioritises air quality improvement and its concentrations are a key measure reported to the health as wellbeing board.

16 January 2019 Kirklees Council declared a Climate Emergency and has set up a councillor lead working party to set targets for the district and identify practical measures to reduce emissions. Kirklees Council Environmental Health has representation on this group and is working in partnership with Key Stakeholders to deliver a strategy to as part of the Climate Emergency. It is recognised that there is a clear relationship between Carbon Reduction and Air Quality. As such, the Air Quality Strategy and Action Plan will strongly link with Strategy and Policy constructed as a result of the Climate Emergency. The Action Plan is updated annually and will include greater detail on links to Climate Emergency works/documents upon their development and completion.

Along with these core air quality strategy document, Kirklees Council has a number of other strategic policies that will have impact on climate change and emissions reduction:

- Kirklees Telematics Policy 2017
- Kirklees Employee Handbook 2015
- Kirklees Council Social Values Policy Statement 2013
- Kirklees Climate Local Framework 2013
- Kirklees Climate Change Local Commitments 2013
- Kirklees Flexible, Mobile and Agile Ways of Working Policy Statement 2017
- Kirklees Walking & Cycling Framework 2018
- Kirklees Procurement Strategy 2013
- Kirklees Joint Strategic Needs Assessment: Air Quality 2018
- Highways Asset Management Policy & Strategy Document 2015

Furthermore, Kirklees Council is in the process of developing new strategic documents to promote the reduction of health impacting emissions. These documents are listed below and contained within the action plan schedule of work:

- Kirklees Local Plan Environmental Policy (Adoption)
- New Kirklees Air Quality Strategy
- New Kirklees Air Quality Action Plan
- Kirklees Electric Vehicle Charging Strategy
- Kirklees Climate Emergency Action Plan

Hyperlinks for access to the aforementioned policy documents are available in Appendix C.

## **4 Development and Implementation of Kirklees Council AQAP**

### **4.1 Consultation and Stakeholder Engagement**

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 requires local authorities to consult the bodies listed in Table 4.11.

## Kirklees Council District Action Plan

In addition, during the construction of the document, we have undertaken the following stakeholder engagement to include their input into the document prior to the consultation process on the completed document

- Promotion of the Draft on the Council Website
- Engagement with Anchor Institutions:
  - Kirklees Neighbourhood Housing
  - Huddersfield University
  - Local NHS Trusts
- Engagement with Local Ward Councillors

The response to our consultation stakeholder engagement is given in Appendix A.

*Table 4.1 - Consultation Undertaken*

| <b>Contact Type / Date</b>      | <b>Consultee</b>                                     |
|---------------------------------|--|
| Submitted to DEFRA LAQM Website | The Secretary of State                               |
| Letter 18/06/19                 | The Environment Agency                               |
| Letter 18/06/19                 | Highways England (The Highways Authority)            |
| Letter 18/06/19                 | Huddersfield / Calderdale NHS Trust                  |
| Letter 18/06/19                 | Mid Yorkshire NHS Trust                              |
| Letter 18/06/19                 | West Yorkshire Public Health (Public Health England) |
| Letter 18/06/19                 | Peak District National Park                          |
| Emailed 06/06/19                | Kirklees Councillors                                 |
| Letter 18/06/19                 | Kirklees Neighbourhood Housing                       |
| Letter 18/06/19                 | Kirklees Active Leisure                              |
| Letter 18/06/19                 | Barnsley Council (Neighbouring Local Authority)      |

## Kirklees Council District Action Plan

| Contact Type / Date | Consultee  |
|---------------------|--|
| Letter 18/06/19     | Bradford Council (Neighbouring Local Authority)          |
| Letter 18/06/19     | Calderdale Council (Neighbouring Local Authority)        |
| Letter 18/06/19     | High Peak Borough Council (Neighbouring Local Authority) |
| Letter 18/06/19     | Leeds City Council (Neighbouring Local Authority)        |
| Letter 18/06/19     | Oldham Council (Neighbouring Local Authority)            |
| Letter 18/06/19     | Wakefield Council (Neighbouring Local Authority)         |
| Letter 18/06/19     | West Yorkshire Combined Authority                        |
| Letter 18/06/19     | Poundstretcher Ltd (Local Business)                      |
| Letter 18/06/19     | PPG Architectural Coating UK Ltd (Local Business)        |
| Letter 18/06/19     | Principle Global Ltd (Local Business)                    |
| Letter 18/06/19     | Tandem 1987 Ltd (Local Business)                         |
| Letter 18/06/19     | BUY IT Direct Ltd (Local Business)                       |
| Letter 18/06/19     | Hoyer Petrolog UK Ltd (Local Business)                   |
| Letter 18/06/19     | Syngenta (Local Business)                                |
| Letter 18/06/19     | Mamas & Papas (Holdings) Ltd (Local Business)            |
| Letter 18/06/19     | FMG Support Group Ltd (Local Business)                   |
| Letter 18/06/19     | Northern Commercials (Mirfield) Ltd (Local Business)     |
| Letter 18/06/19     | Thornton & Ross Ltd (Local Business)                     |
| Letter 18/06/19     | Premdor Crosby Ltd (Local Business)                      |
| Letter 18/06/19     | Adare SEC Holding Ltd (Local Business)                   |
| Letter 18/06/19     | The Simplybiz Group PLC (Local Business)                 |
| Letter 18/06/19     | DW3 Products Holdings Ltd (Local Business)               |
| Letter 18/06/19     | Isaac Timmins Ltd (Local Business)                       |
| Letter 18/06/19     | Myers Group Holdings Ltd (Local Business)                |

## Kirklees Council District Action Plan

| Contact Type / Date  | Consultee  |
|--|--|
| Letter 18/06/19  | Lawton Yarns Ltd (Local Business)                  |
| Letter 18/06/19  | ALS Laboratories (UK) Ltd (Local Business)         |
| Letter 18/06/19  | DB Santasalo (Local Business)                      |
| Letter 18/06/19  | AHR Management Services LLP (Local Business)       |
| Letter 18/06/19  | South Pennine Academies (Local Business)           |
| Letter 18/06/19  | Focus Academy Trust (UK) Ltd (Local Business)      |
| Letter 18/06/19  | Waterhead Academy (Local Business)                 |
| Letter 18/06/19  | The Keys (Local Business)                          |
| Letter 18/06/19  | National Federation of Plus Areas (Local Business) |
| Letter 18/06/19  | Major Recruitment Ltd (Local Business)             |
| Letter 18/06/19  | Local Care Direct (Local Business)                 |
| Letter 18/06/19  | T.W Broadbent Ltd (Local Business)                 |
| Letter 18/06/19  | Sun Healthcare Ltd (Local Business)                |
| Public consultation website;<br>Opened 06/06/19<br>Closed 20/07/19 | General Public                                     |

### **4.2 Update to Action Plan following public consultation**

Kirklees Council undertook the consultation process over a 6 week period between 06 June 2019 and 20 July 2019. Consultees were able to submit feedback via email or using pro-forma on the council's consultation website. The council received a total of 18 responses to the consultation, details of which are contained within **Appendix A**.

We welcome the feedback we have received and thank stakeholders for their engagement in this process and plan to continue to work with them going forward.

In response to the consultation, Kirklees Council have taken the opportunity to address the feedback received and the Action Plan has been updated to reflect the given observations.

## Kirklees Council District Action Plan

Firstly, one of the primary items of discussion received from a number of different stakeholders centred on measurability of the plan. The plan has been updated in acknowledgement of this need and **Table 6.1**. has been updated to include stronger targets / measurables / indicators in order to review delivery of the action plan.

Stakeholder responses also requested inclusion of a number of direct measures to bring about air quality improvements. The council has considered these requests and in the most part, the requested measures were already included within **Table 6.1** in some form.

The only measure that received high demand from consultees and not be included in the plan related to anti-idling around schools. In acknowledgement of this, action G.68 has been created, in which the council aim to undertake a feasibility study into anti-idling across the district when funding becomes available to do so.

There were also high demands from consultees for the need for Clean Air Zones, Greater Communications, Development Control and Free parking for E.V's across West Yorkshire.

There are a number of measures within the Generic section of the action plan to address the issues arising from Development control and Kirklees Council have included the need for incentivised ULEV parking across West Yorkshire (G.7).

Kirklees Council has considered the viability of a Chargeable Clean Air Zone and determined that delivery would not be feasible. Notwithstanding this, Kirklees Council have included action G.56, which is to undertake a feasibility study into a Non-charging Clean Air Zone for the district.

Finally, we acknowledge the feedback received about communications and are in agreement that there is significant need to provide information and dialogue between stakeholders and the authority. Therefore as a matter of priority, Kirklees Council will be working on action G.44 to evaluate the current information portals and deliver a plan to improve communication with stakeholders.

As stated at the time of the public consultation, the action plan is an iterative process that is reviewed annually and as such continued feedback and input is welcome at any time.

### 4.3 Steering Group

Kirklees Council set up internal steering groups to create, review and deliver the action plan over the 5 year life span of the project. The following departments are represented on the steering group:

- Kirklees Environmental Health
- Kirklees Public Health
- Kirklees Strategic Highways
- Kirklees Planning
- Kirklees Highways Maintenance
- Kirklees Procurement
- Kirklees Parking
- Kirklees Carbon Reduction Team
- Kirklees Neighbourhood Housing
- Kirklees UTMC
- Kirklees Strategic Assets
- Kirklees Transport
- Kirklees Investment & Regeneration
- Kirklees Schools
- Kirklees Street Scene
- Kirklees Highways Safety
- Kirklees Waste

Initial goal of the steering group is to input into the action plan to create a council wide document considering emissions reduction.

Once the document has been ratified by national government, Kirklees Council Environmental Health will lead on delivery of the program, liaising with partners to assist in delivery of each project contained within the action plan. The steering group will meet on bi-annual basis to discuss progress of the plan and update where necessary. Meetings of the steering group are highlighted in **Table 4.2**.

## Kirklees Council District Action Plan

*Table 4.2 Details of Steering Group Meetings*

| <b>Meeting Title</b>                      | <b>Date</b>  | <b>Attendees</b>  | <b>Comments</b>  |
|---|--------------|---|--|
| Inception Meeting                         | 26 Feb 2018  | Full Steering Group   | Initial meeting to highlight issues currently, explain the process and request information on activities the council currently does which will have impact on emissions reductions |
| Delivery Meeting                          | 24 May 2018  | Public Health & Environmental Health                                  | Meeting to discuss how to integrate Outcomes Based Accountability into the Action Plan assessment process  |
| Update Meeting                            | 12 Sept 2018 | Full Steering Group   | Follow up meeting to discuss National Action Plan, impacts to Kirklees and how the action plan will be assessed using OBA  |
| Environment & Health Projects             | 27 Sept 2018 | Public Health<br>Environmental Health<br>Carbon Reduction             | OBA Meeting to discuss current projects, future projects and unfunded projects that will have an impact on emissions within the district dealing with health and environment       |
| Strategic Highways Project                | 2 Oct 2018   | Public Health<br>Environmental Health<br>Strategic Highways           | OBA Meeting to discuss current projects, future projects and unfunded projects that will have an impact on emissions within the district dealing with Strategic Highways           |
| Development Control                       | 11 Oct 2018  | Public Health<br>Environmental Health<br>Planning Policy and Delivery | OBA Meeting to discuss current projects, future projects and unfunded projects that will have an impact on emissions within the district dealing with Development Control          |
| Highways Maintenance and Parking Projects | 16 Oct 2018  | Public Health<br>Environmental Health<br>Road Safety                  | OBA Meeting to discuss current projects, future projects and unfunded projects that will have an impact on emissions within the district dealing with highways safety,             |

## Kirklees Council District Action Plan

| Meeting Title                           | Date        | Attendees                             | Comments   |
|---|-------------|---------------------------------------|--|
|   |             | UTMC<br>Parking                       | management and parking   |
| Internal Transport Management Projects  | 30 Oct 2018 | Public Health<br>Environmental Health | OBA Meeting to discuss current projects, future projects and unfunded projects that will have an impact on emissions within the district dealing with internal transport.    |
| Kirklees Neighbourhood Housing Projects | 21 Jan 2019 | Kirklees Neighbourhood Housing        | OBA Meeting to discuss current projects, future projects and unfunded projects that will have an impact on emissions within the district from Kirklees Neighbourhood Housing |

In addition to the steering group meeting, engagement has been undertaken with councillors, anchor institutions and Highways England to include feasible projects into the action plan. Details on these meeting are contained within **Table 4.3**.

*Table 4.3 Key Stakeholder Meetings*

| Meeting Title                                     | Date            | Attendees  | Comments  |
|---|-----------------|--|---|
| Dewsbury East Ward Councillors<br>(AQMA 5)        | 8 October 2018  | Cll Firth<br>Cll Kane<br>Cll Scott<br>Environmental Health     | Meeting to discuss current projects, future projects and unfunded projects that will have an impact on emissions within the district and request local input into the process |
| Birkenshaw & Birstall Ward Councillor<br>(AQMA 4) | 12 October 2018 | Cll Light<br>Cll Smaje<br>Cll Thompson<br>Environmental Health | Meeting to discuss current projects, future projects and unfunded projects that will have an impact on emissions within the district and request local input into the process |
| Colne Valley Ward Councillors                     | 17 October 2018 | Cll Bellamy  | Meeting to discuss current projects, future projects and unfunded projects that will have   |

## Kirklees Council District Action Plan

| <b>Meeting Title</b>                                    | <b>Date</b>      | <b>Attendees</b>                                    | <b>Comments</b>   |
|---|------------------|---|---|
| Meeting<br>(AQMA 8)                                     |                  | Cll Griffiths<br>Cll Walker<br>Environmental Health | an impact on emissions within the district and request local input into the process   |
| Ashbrow Ward Councillors Meeting<br>(AQMA 1)            | 17 October 2018  | Cll Homewood<br>Cll Pinnock<br>Environmental Health | Meeting to discuss current projects, future projects and unfunded projects that will have an impact on emissions within the district and request local input into the process |
| Heckmondwike Ward Councillors<br>(AQMA 7)               | 30 October 2018  | Cll Kendrick<br>Cll Sheard                          | Meeting to discuss current projects, future projects and unfunded projects that will have an impact on emissions within the district and request local input into the process |
| Crosland Moor & Netherton Ward Councillors<br>(AQMA 10) | 9 November 2018  | Cll Kaushik<br>Environmental Health                 | Meeting to discuss current projects, future projects and unfunded projects that will have an impact on emissions within the district and request local input into the process |
| Dalton Ward Councillors<br>(AQMA 9)                     | 20 November 2018 | Cll Khan<br>Cll McBride<br>Environmental Health     | Meeting to discuss current projects, future projects and unfunded projects that will have an impact on emissions within the district and request local input into the process |
| Highways England Meeting<br>(AQMA's 3,4 & 8)            | 12 December 2018 | Highways England<br>Environmental Health            | Meeting to discuss current projects, future projects and unfunded projects that will have an impact on emissions within the district and along highways within their control  |
| Kirklees Neighbourhood Housing (KnH)                    | 21 January 2019  | KnH<br>Environmental                                | OBA Meeting to discuss current projects, future projects and unfunded projects that will have   |

## Kirklees Council District Action Plan

| Meeting Title  | Date             | Attendees   | Comments   |
|--|------------------|---|--|
|  |                  | Health  | an impact on emissions within the KnH activities.  |
| West Yorkshire Combined Authority<br>(WYCA)          | 29 January 2019  | WYCA<br>Environmental Health  | OBA Meeting to discuss current projects, future projects and unfunded projects that will have an impact on emissions within the district and how WYCA could support this.                        |
| Kirklees Communications and Marketing Meeting        | 12 February 2019 | Communications and Marketing<br>Environmental Health                  | OBA Meeting to discuss a collective approach to promote air quality and projects within the district and how Comms could support the action plan   |
| Huddersfield & Calderdale NHS Trust                  | 12 February 2019 | H&C NHS Trust<br>Environmental Health                                 | Meeting to discuss current projects, future projects and unfunded projects that will have an impact on emissions within the district and collaborative working between the council and the trust |
| Newsome Councillors<br>(AQMA 9 & 10)                 | 30 May 2019      | Cll Cooper<br>Cll Allison<br>Cll Lee-Richards<br>Environmental Health | Meeting to update councillors on action plan process and discuss current projects, future projects and unfunded projects that will have an impact on emissions.                                  |
| Crosland Moor and Netherton Councillors<br>(AQMA 10) | 30 May 2019      | Cll Kaushik<br>Environmental Health                                   | Meeting to update councillors on action plan process and discuss current projects, future projects and unfunded projects that will have an impact on emissions.                                  |
| Birkenshaw & Birstall Ward Councillors<br>(AQMA 4)   | 6 June 2019      | Cll Smaje<br>Cll Thompson<br>Cll Goodwin<br>Environmental             | Meeting to update councillors on action plan process and discuss current projects, future projects and unfunded projects that will have an impact on emissions.                                  |

## Kirklees Council District Action Plan

| Meeting Title              | Date         | Attendees  | Comments  |
|----------------------------|--------------|--|---|
|                            |              | Health   |   |
| Lindley Councillors (AQMA) | 29 July 2019 | Cll Burke<br>Cll Eastwood<br>Cll Smith<br>Environmental Health | Meeting to update councillors on action plan process and discuss current projects, future projects and unfunded projects that will have an impact on emissions. |

### 5 Source Apportionment

In order to determine appropriate methods which Kirklees Council could employ to reduce Pollution within the district, it is necessary that source apportionment is conducted to identify the primary polluters in the area.

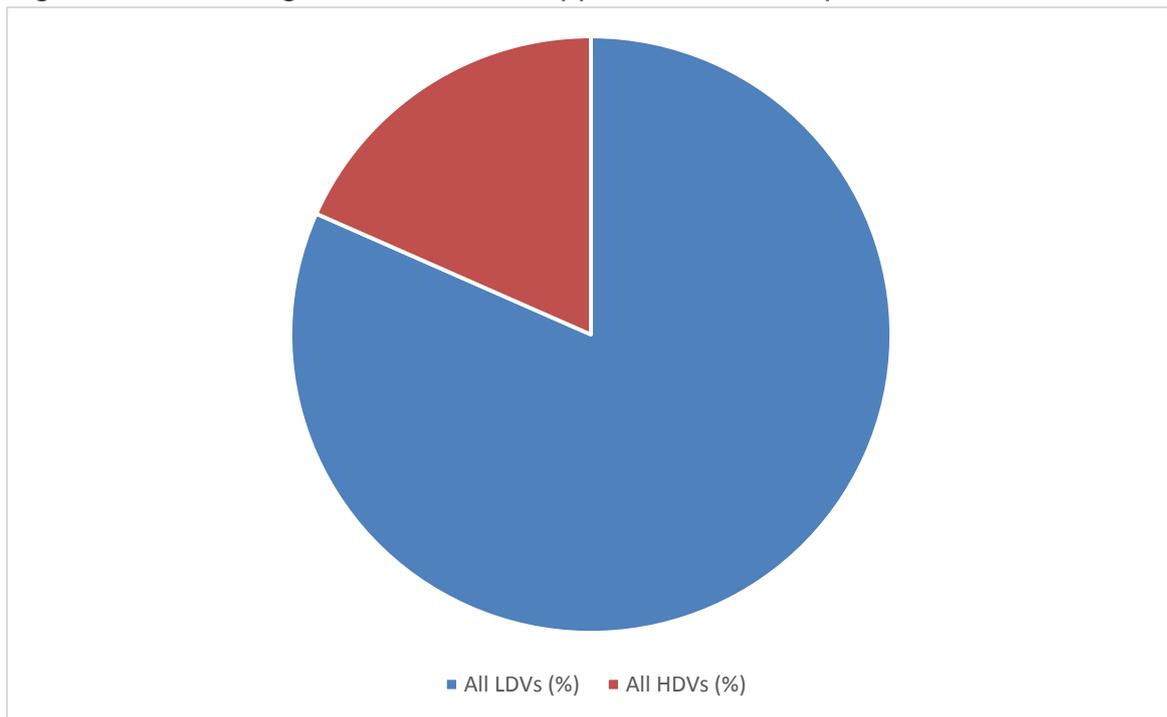
Firstly, it must be noted that 8 of the 10 AQMA's are located at junctions along primary A roads where properties are within 10m of the carriageway and as such, the concentrations are heavily influenced by the stop-start nature of traffic. The remaining 2 AQMAs are located adjacent to the M62 motorway, which results in elevated concentrations due to very high traffic volume.

Emission data obtained from modelling undertaken as part of the LAQM duties which resulted in the declaration of 10 AQMA's. The details for these models are contained within Appendix C.2. Maps for the AQMA's are also included within Appendix C.2

The results generated through the source apportionment exercise were generated using the Emission Factor Toolkit v8.01 and traffic data used within the validated air quality models discussed in the above report. The results of the source apportionment on each individual AQMA is contained within Appendix C.1.

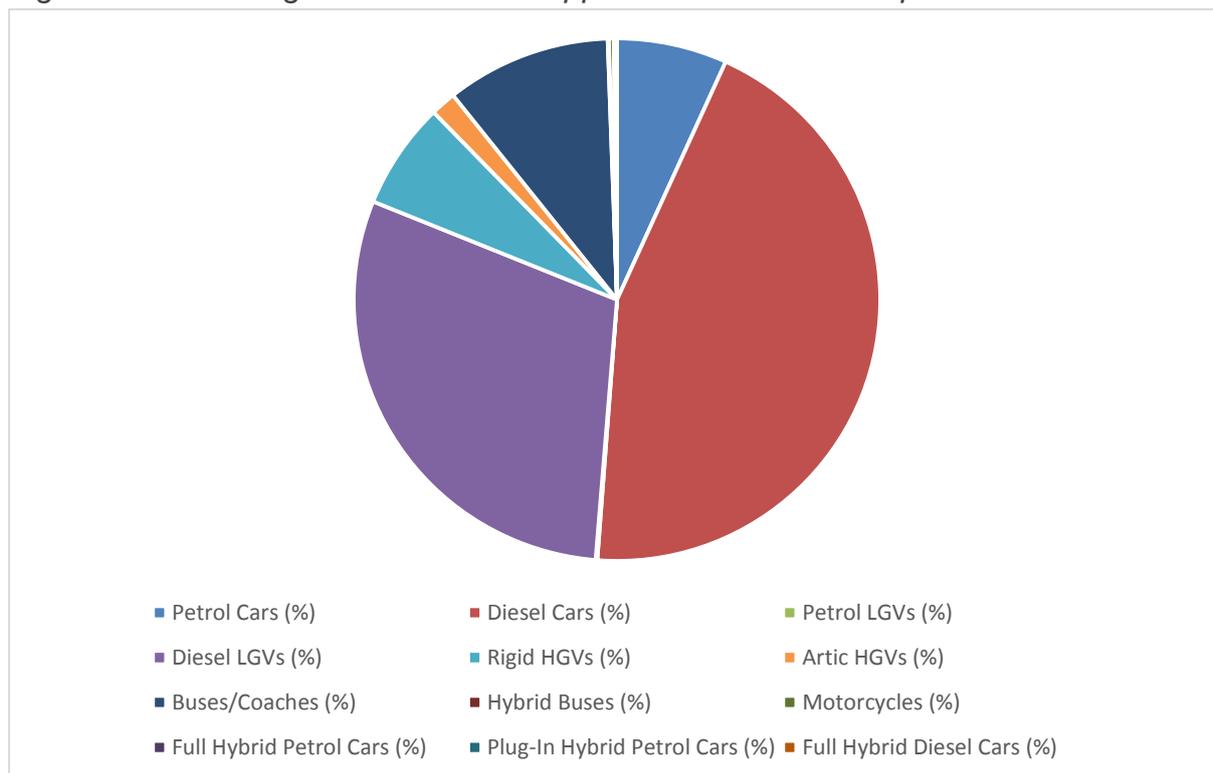
Comparison of the source apportionment results for the 10 AQMA's been broken down in two ways to assist with action plan construction. 9 of the 10 AQMA's have a similar source compositions, which are highlighted in Figure 5.1.

Figure 5.1 – Average AQMA Source Apportionment Composition



NO<sub>2</sub> emissions from the vehicle fleet at 9 of the 10 AQMA's are heavily contributed to by LDV's, with an average of 80% emissions from LDV's and 20% from HGV's. Figure 10.1 has been broken down further in Figure 5.2 to demonstrate the average fleet composition by fuel usage.

Figure 5.2 – Average AQMA Source Apportionment Fuel Composition



Emissions within 9 of our AQMA's are predominantly a result of domestic diesel vehicles or diesel Light Goods Vehicles (LGV's). This composition is common amongst both the motorway influenced roads and also the A road junction AQMA's.

The only AQMA where the composition is significantly different is AQMA 5 and as a result of the AQMA's proximity to the local bus station. Figures 5.3 & 5.4 demonstrates that there is a greater contribution to emissions from the HGV fleet and when the emissions are broken down further there is a greater composition from the bus fleet.

Figure 5.3 –AQMA 5 Source Apportionment Composition

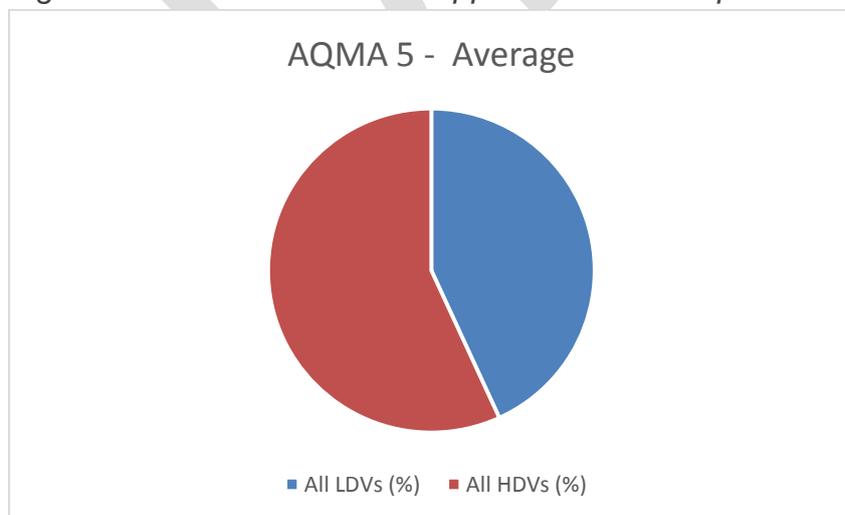
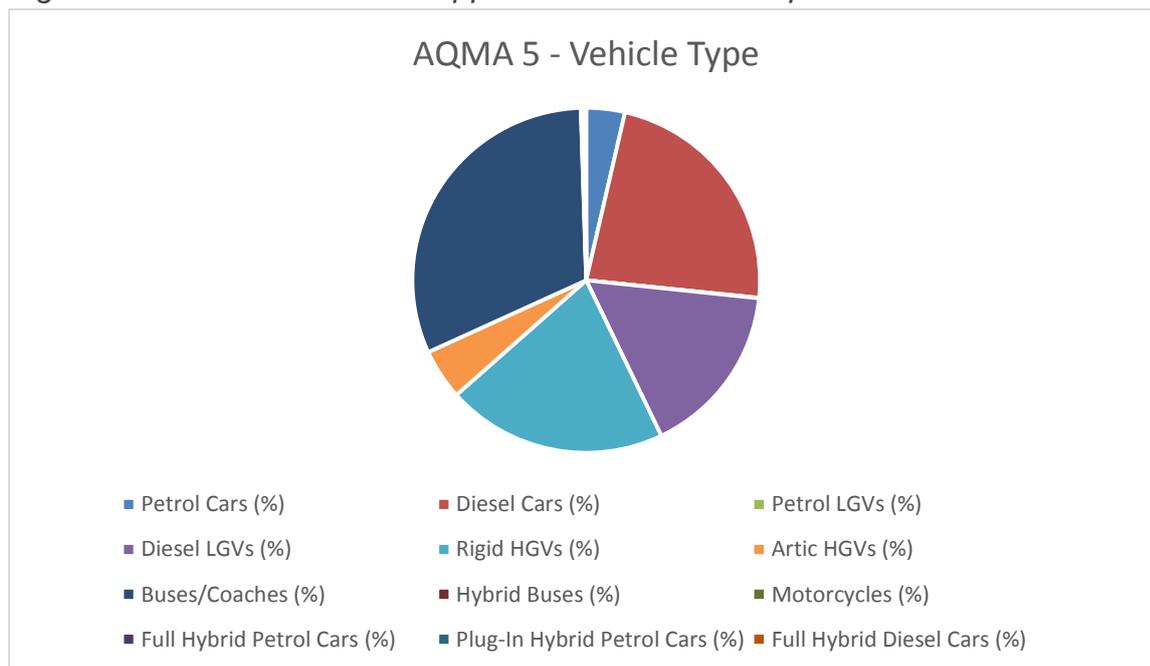


Figure 5.4 –AQMA 5 Source Apportionment Fuel Composition



The information obtained as part of the source apportionment exercise has been used to influence the interventions and mitigation recommended as part of the action planning process. Therefore, there needs to be a focus on flow management, coupled with Domestic and LGV diesel vehicles. Notwithstanding this, interventions centred on the HGV fleet and industry will be included because improvement in all sectors will help to bring about compliance and improve the living environment within Kirklees.

## 6 Air Quality Action Plan Measures

Table 6.1 shows the Kirklees Council AQAP measures. It contains:

- a list of the actions that form part of the plan
- the responsible individual and departments/organisations who will deliver this action
- expected benefit in terms of pollutant emission and/or concentration reduction;
- the timescale for implementation
- how progress will be monitored

NB. Please see future ASRs for regular annual updates on implementation of these measures

Table 6.1 –Air Quality Action Plan Measures

| Measure No.                 | Measure   | Lead Authority                | Planning Phase | Implementation Phase | Targets / Indicator / Measurable  | Target Pollution Reduction in the AQMA | Estimated Completion Date | Further Data Requirements | Comments  |
|-----------------------------|---|-------------------------------|----------------|----------------------|---|--|---------------------------|---------------------------|---|
| <b>Districtwide Actions</b> |   |                               |                |                      |   |  |                           |                           |   |
| G.1                         | Adoption of the West Yorkshire Low Emissions Strategy (WYLES) | Kirklees Environmental Health | 2014           | 2015                 | <p><u>Kirklees Council Target;</u></p> <p>+Conclusions of WYLES benchmarking project demonstrating full compliance with WYLES Objectives</p> <p><u>Kirklees Council Target;</u></p> <p>Delivery of key WYLES objectives;</p> <p><u>Obj 2. Age of vehicles in bus fleet</u><br/>Measured by;<br/>+Change in bus fleet composition towards newer Euro Cat Vehicles</p> <p><u>Obj 3. Electric Vehicle Uptake</u><br/>Measured by increase in the;<br/>+Number of newly registered E.V vehicles within Kirklees<br/>+Number of E.V's using charging Infrastructure<br/>+Number of Green Parking Permits issues within district</p> <p><u>Obj 4. ECO-Stars Freight Recognition Scheme</u><br/>Measured by increase in;<br/>+Number of operators signed up within the district<br/>+Number of fleet vehicles included in the scheme</p> | NO <sub>2</sub> & PM                   | 2025                      |                           | <p>Currently adopted within the authority and integrated into Kirklees Council policy and work instructions. This is a 10 year policy document, of which we are in year 4.<br/>Further plans outlined in action G.22 for a review of the documents and how they are used. Funding received from Air Quality Grant.</p> <p><a href="https://www.kirklees.gov.uk/beta/crime-and-safety/pdf/WYLES-strategy.pdf">Available at;<br/>https://www.kirklees.gov.uk/beta/crime-and-safety/pdf/WYLES-strategy.pdf</a></p> |

| Measure No. | Measure                                    | Lead Authority | Planning Phase | Implementation Phase | Targets / Indicator / Measurable   | Target Pollution Reduction in the AQMA | Estimated Completion Date | Further Data Requirements | Comments   |
|-------------|--|----------------|----------------|----------------------|--|--|---------------------------|---------------------------|--|
|             |  |                |                |                      | <p>+Number of Operators improving their ECO-Star scores after re-visits</p> <p><u>Obj 6. Taxi Fleet Improvements</u><br/>Measured by;<br/>+increase in the number of licensed Hybrid / ULEV vehicles<br/>+reduction in the age of the vehicles licensed<br/>+reduction in number of diesel vehicles licensed</p>   |  |                           |                           |  |
| G.2         | Kirklees Council - workplace active travel | Public Health  | 2018           | 2018                 | <p><u>West Yorkshire Target:</u><br/>+Sustainable travel mode increase from 36% in 2011 to 42% by 2026</p> <p><u>Kirklees Council Targets:</u><br/>+Increase cycling travel mode by 300% between 2018 baseline and 2030<br/>+Increase walking travel mode by 20% between 2018 baseline and 2030</p> <p><u>Kirklees Council Measurable:</u><br/>+Number of employees using sustainable travel modes to commute to work.</p> | NO <sub>2</sub> & PM                   | Ongoing                   | Staff travel selections   | <p>Previously implemented in 2009. Frequency of review and the actual plans are currently under review to ensure they remain relevant and include changes in technology &amp; behaviour since previous iteration.</p> <p>Upon conclusion of the review, conclusions to be implemented and comms plan devised to promote actions within the plans.</p> <p>Once new plans have been adopted, ongoing regular review and promotion will be required to ensure this action is still relevant</p> <p>Data for evaluation for this measure to be collected from Employee Travel Survey Results</p> |

| Measure No. | Measure   | Lead Authority                             | Planning Phase | Implementation Phase | Targets / Indicator / Measurable   | Target Pollution Reduction in the AQMA | Estimated Completion Date | Further Data Requirements  | Comments   |
|-------------|---|--|----------------|----------------------|--|--|---------------------------|--|--|
| G.3         | Kirklees Sustainable Travel to school Strategy    | Public Health / Economy and Infrastructure | 2018           | 2020                 | <p><u>West Yorkshire Target:</u><br/>+Sustainable travel mode increase from 36% in 2011 to 42% by 2026</p> <p><u>Kirklees Council Targets:</u><br/>+Increase cycling travel mode by 300% between 2018 baseline and 2030<br/>+Increase walking travel mode by 20% between 2018 baseline and 2030</p> <p><u>Kirklees Council Measurable:</u><br/>+Number of employees using sustainable travel modes to commute to work.</p> | NO <sub>2</sub> and PM                 | 2030                      | Data development issue – we only have Year 9 survey as intelligence. Question mark over school travel plans. How else will we get this data? | Previously implemented in 2005. Committee set up to review the policy, construction process, pre-existing documents and implementation to reflect changes school operations, in technology and behaviour. Upon conclusion of the review, conclusions to be implemented and comms plan devised to promote actions within the plans. Once new plans have been adopted, ongoing regular review and promotion will be required to ensure this action is still relevant |
| G.4         | Bike-ability training provided to school children | Kirklees Public Health                     | 2009           | 2010                 | <p><u>Kirklees Council Targets:</u><br/>+Increase cycling travel mode by 300% between 2018 baseline and 2030</p> <p><u>Kirklees Council Measurable:</u><br/>+ Number of children participating in scheme</p>   | NO <sub>2</sub> & PM                   | Ongoing within schools    | Bike usage of pupils who have undertaken course versus those that haven't  | This scheme is an ongoing project to provide access and training to children on the use of cycling with the long term goals to promote cycling as a leisure activity and also a mode of transport  |
| G.5         | City Cycle Grant                                  | Kirklees Public Health                     | 2016           | 2016                 | <p><u>Kirklees Council Targets:</u><br/>+ Continued use of the scheme, measured by grant uptake<br/>+Contributes to the wider target to increase cycling travel mode by 300% between 2018 baseline and 2030</p> <p><u>Kirklees Council Measurable:</u><br/>+ Number of grant applications</p>  | NO <sub>2</sub> & PM                   | Ongoing                   |  | This scheme is an ongoing project to provide assistance to funding purchases with the long term goals to promote cycling as a leisure activity and also a mode of transport  |

| Measure No. | Measure   | Lead Authority                      | Planning Phase | Implementation Phase | Targets / Indicator / Measurable   | Target Pollution Reduction in the AQMA | Estimated Completion Date   | Further Data Requirements                                | Comments   |
|-------------|---|-------------------------------------|----------------|----------------------|--|--|-----------------------------|--|--|
| G.6         | Green Parking Permit allowing free parking for ULEV Vehicles within Council owned car parks.                    | Kirklees Economy and Infrastructure | 2007           | 2008                 | <p><u>Kirklees Council Targets:</u><br/>           +Contributes to wider target to increase in percentage of ULEV registered vehicles within the district year on year in line with national average.<br/>           + Contributes to wider target to meet the projected IMF target of 30% of registered cars within the district to be ULEV by 2027<br/>           + Contributes to wider target for 100% car sales to be ULEV's within by 2040 in line with national government targets.</p> <p><u>Kirklees Measurable:</u><br/>           + Number of ULEV vehicles registered within Kirklees District</p> | NO <sub>2</sub> & PM                   | Ongoing within the district | Number of E.V drivers who reside or work within Kirklees | Currently this scheme is available for Kirklees residents and workers. This action is designed to reduce the cost of Electric Vehicles ownership and to increase the uptake of electric vehicle ownership within the domestic market.  |
| G.7         | Service level agreements across West Yorkshire for ULEV Parking permits to allow free parking across the region | Kirklees Environmental Health       | 2019           | 2019                 | <p><u>Kirklees Council Targets:</u><br/>           +Contributes to wider target to increase in percentage of ULEV registered vehicles within the district year on year in line with national average.<br/>           + Contributes to wider target to meet the projected IMF target of 30% of registered cars within the district to be ULEV by 2027<br/>           + Contributes to wider target for 100% car sales to be ULEV's within by 2040 in line with national government targets.</p> <p><u>Kirklees Measurable:</u><br/>           + Number of ULEV vehicles registered within Kirklees District</p> | NO <sub>2</sub> & PM                   | 2019                        | Number of E.V drivers who reside or work within Kirklees | <p>Currently scheme G.6 is available for Kirklees residents and workers. This project is to expand on the Kirklees Scheme to improve viability for users who move across district boundaries within West Yorkshire.</p> <p>This action is designed to reduce the cost of Electric Vehicles ownership and to increase the uptake of electric vehicle ownership within the domestic market.</p> <p>Builds on the success of our own permitting system and to further promote ULEVs</p> |

| Measure No. | Measure                                       | Lead Authority                      | Planning Phase | Implementation Phase | Targets / Indicator / Measurable   | Target Pollution Reduction in the AQMA | Estimated Completion Date   | Further Data Requirements  | Comments  |
|-------------|---|-------------------------------------|----------------|----------------------|--|--|-----------------------------|--|---|
| G.8         | City Car Club ran within Kirklees district    | Kirklees Economy and Resilience     | 2008           | 2009                 | <u>Kirklees Council Measurables:</u><br>+ Number of members within the scheme<br>+ Number of car trips for Kirklees based cars   | NO <sub>2</sub> & PM                   | Ongoing within the district |  | City Car Club is currently available to local residents to use. The scheme reduces vehicle ownership while also providing access to a vehicle when required.  |
| G.9         | Finance & Promote Car Sharing Website         | Kirklees Economy and Infrastructure | 2006           | 2007                 | <u>Kirklees Council Targets:</u><br>+ Increased membership on scheme<br>+ Increase number of car shares on system<br><br><u>Kirklees Council Measurables:</u><br>+ Number of members on the website<br>+ Number of users car sharing   | NO <sub>2</sub> & PM                   | Ongoing within the district | Number of people currently car sharing and whether this intervention influenced them | Currently this scheme is available for Kirklees residents and workers. This action is designed to promote changes to commuter options and to reduce the number of vehicles on the road.<br><br>There are 2 car share websites currently promoted by Kirklees Council:<br><a href="http://www.wycarshare.com">www.wycarshare.com</a><br><a href="http://www.liftshare.com">www.liftshare.com</a> |
| G.10        | E.V Fleet Feasibility Study for council fleet | Kirklees Operational Service        | 2018           | 2019                 | <u>Kirklees Council Targets:</u><br>+Contributes to wider target to increase in percentage of ULEV registered vehicles within the district year on year in line with national average.<br>+ Contributes to wider target to meet the projected IMF target of 30% of registered cars within the district to be ULEV by 2027<br>+ Contributes to wider target for 100% car sales to be ULEV's within by 2040 in line with national government targets.+ Implementation of further recommendation from study upon completion<br><br><u>Kirklees Council Measurables:</u><br>+ Minimum of 27 diesel vehicles to be replaced by 2021<br>+Number of E.V vehicles within the council fleet | NO <sub>2</sub> & PM                   | 2019                        |  | Internal document, which will steer internal fleet purchasing options and help introduction of charging facilities at council depots. Delivery targets to be determined from outcome of survey. Prior to this study, 27 vehicles were identified to be converted to E.V and should be converted by 2021.  |

| Measure No. | Measure   | Lead Authority                | Planning Phase | Implementation Phase | Targets / Indicator / Measurable  | Target Pollution Reduction in the AQMA | Estimated Completion Date   | Further Data Requirements  | Comments  |
|-------------|---|-------------------------------|----------------|----------------------|---|--|-----------------------------|--|---|
| G.11        | Conversion of applicable council fleet to electric vehicles | Kirklees Operational Service  | 2018           | 2019                 | <p><u>Kirklees Council Targets:</u><br/>           +Contributes to wider target to increase in percentage of ULEV registered vehicles within the district year on year in line with national average.<br/>           + Contributes to wider target to meet the projected IMF target of 30% of registered cars within the district to be ULEV by 2027<br/>           + Contributes to wider target for 100% car sales to be ULEV's within by 2040 in line with national government targets.+ Implementation of further recommendation from study upon completion</p> <p><u>Kirklees Council Measurables:</u><br/>           + Initial replacement of 27 diesel vehicles with E.V's by 2021</p> | NO <sub>2</sub> & PM                   | Ongoing                     | Electricity availability at Council Depots   | <p>Delivery targets to be determined from outcome of survey outlined in measure G.10<br/>           Prior to the study outlined in G.10, 27 vehicles were identified to be converted to E.V and should be converted by 2021.<br/>           2018/19 3 EV Vans purchased<br/>           2018-21 Transport Capital budget has a commitment to purchase of 24 EV Vehicles.</p> |
| G.12        | Kirklees Bike to Work Scheme                                | Kirklees Public Health        | 2008           | 2009                 | <p><u>Kirklees Council Targets:</u><br/>           + Continued use of the scheme, measured by grant uptake<br/>           +Contributes to the wider target to increase cycling travel mode by 300% between 2018 baseline and 2030</p> <p><u>Kirklees Council Measurable:</u><br/>           + Number of grant applications</p>  | NO <sub>2</sub> & PM                   | Ongoing within the district | Number of employees using the bikes and accessories as part of their commute to work | This scheme is an ongoing project to provide assistance to funding purchases with the long term goals to promote cycling as a leisure activity and also a mode of transport   |
| G.13        | Update Kirklees Air Quality Strategy                        | Kirklees Environmental Health | 2018           | 2018                 | <p><u>Kirklees Council Measurable:</u><br/>           + Adoption of new 5 year Action Plan</p>  | NO <sub>2</sub> & PM                   | 2019                        |  | <p>Kirklees Council originally adopted an Air Quality Strategy in 2006. This document has been updated to reflect technology, policy and scientific changes in the Air Quality Sector<br/>           This document is in conjunction with the action plan and reviewed periodically in line with Action Plan review process.</p>  |

| Measure No. | Measure  | Lead Authority                           | Planning Phase | Implementation Phase | Targets / Indicator / Measurable   | Target Pollution Reduction in the AQMA | Estimated Completion Date   | Further Data Requirements  | Comments  |
|-------------|--|--|----------------|----------------------|--|--|-----------------------------|--|---|
| G.14        | Assess planning applications in accordance with procedures in the WYLES Planning Guidance Document and require the relevant mitigation included on development | Kirklees Planning & Environmental Health | 2014           | 2015                 | <p><u>Kirklees Council Targets:</u></p> <ul style="list-style-type: none"> <li>+Assess all planning applications in accordance with WYLES Planning Guidance Document</li> <li>+ Require developers to integrate air quality mitigation into developments according to size of building project</li> </ul> <p><u>Kirklees Council Measurables:</u></p> <ul style="list-style-type: none"> <li>+ Number of E.V chargers installed within new developments</li> <li>+Section 106 contributions</li> </ul> | NO <sub>2</sub> & PM                   | Ongoing process             | Number of electric vehicle charger installed as a result of the planning process | <p>The Planning Guidance document is a key document contained within G.1. This document is currently used to assess all planning applications and integrated into Local Plan policy documents. As such all planning applications will be assessed against the West Yorkshire Low Emission Strategy Planning Technical Guidance Document and mitigation requirements for each application will be determined according to criteria outlined within the aforementioned document.</p> <p>The planning guidance is available at;</p> <p><a href="https://www.kirklees.gov.uk/beta/crime-and-safety/pdf/WYLES-air-quality-and-emissions-planning-technical-guide.pdf">https://www.kirklees.gov.uk/beta/crime-and-safety/pdf/WYLES-air-quality-and-emissions-planning-technical-guide.pdf</a></p> |
| G.15        | Create a Green Procurement Toolkit   | Kirklees Procurement                     | 2018           | 2019                 | <p><u>Kirklees Council Targets:</u></p> <ul style="list-style-type: none"> <li>+ Integrate Air Quality as a consideration on all procurement exercises across Council</li> </ul> <p><u>Kirklees Council Measurables:</u></p> <ul style="list-style-type: none"> <li>+ Creation of a Green Procurement Toolkit</li> <li>+Once created, number of procurement exercises assessed against the green procurement toolkit</li> </ul>  | NO <sub>2</sub> & PM                   | Ongoing                     |  | <p>The Green Procurement Toolkit is a key outcome from action G.1. A pre-requisite Procurement Guidance document was included part of the West Yorkshire Low Emission Strategy and is to be used to facilitate the creation of a toolkit that ensures a number of environmental impact is a key consideration in procurement exercises</p> <p>WYLES Procurement Guidance Document is available at;</p> <p><a href="https://www.kirklees.gov.uk/beta/crime-and-safety/pdf/WYLES-procurement-guide.pdf">https://www.kirklees.gov.uk/beta/crime-and-safety/pdf/WYLES-procurement-guide.pdf</a></p>   |
| G.16        | Subsidised Bus/Rail Card for Kirklees Council Staff  | Kirklees Operational Services            | Pre 2006       | Pre 2006             | <p><u>Kirklees Council Targets:</u></p> <ul style="list-style-type: none"> <li>+ Increase in the number of short journeys using public transport</li> <li>+ Reduction in number of low mileage journeys for grey &amp; council fleet</li> </ul> <p><u>Kirklees Council Measurable:</u></p>   | NO <sub>2</sub> & PM                   | Ongoing within the district | Number of miles used on public transport   | <p>The passes are made available in accordance with Council Travel plans, action G.2 and because the council is a member of the travel plan network available to businesses in the West Yorkshire Region (see action G.43).</p> <p>As part of the travel plan network, discounted Bus/Rail Cards are available for Kirklees Council employees to purchase.</p> <p>The council also have company rail cards, allowing officers to use public transport in their duties as a council officer. This mode of transport is preferred</p>   |

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|             |   |  |                |                      | + Number of Bus/Rail Card applications<br>+ Number of bookings of the company railcards<br>+ Number of trips taken in grey fleet or fleet vehicles that are 1mile or less  |  |  |   | for low millage trips or town centre meetings and is a primary tool to reduce the councils fleet emissions.  |
| G.17        | Kirklees Policy on Employee Transport (Employee Handbook)                                 | Kirklees Operational Services                | 2015           | 2015                 | <u>Kirklees Council Targets:</u><br>+Contribute to increase in the number of short journeys using public transport<br>+ Contribute to the reduction in number of low mileage journeys for grey & council fleet<br>+ Reduce grey fleet mileage<br>+ Increase ULEV Council Fleet Mileage year on year from baseline year 2020<br><br><u>Kirklees Council Measurables:</u><br>+Number of grey fleet miles<br>+Number of Fleet vehicle miles<br>+ Number of trips taken using bus/rail cards | NO <sub>2</sub> & PM                   | Ongoing within the Authority                 |   | This is the primary policy document to control employee travel both as part of their commute or within their working capacity. The document outlines best practice for travel options within the work place and also promotes alternative commute options in accordance with council travel plans, action G.2. As such, the document recommendations continue to be relevant and in accordance with the council's ambitions to reduce emissions. Advice contained within the document is to be integrated into a Comms Plan  |
| G.18        | Retro-fitting Applicable vehicles within the Bus Fleet with Emissions Abatement Equipment | West Yorkshire Combined Authority & Kirklees | 2013 & 2017    | 2013 & 2018          | <u>West Yorkshire Target:</u><br>+ 300 Buses Retrofitted with Exhaust abatement technology by Dec 2019<br><br><u>Kirklees Council Measurables:</u><br>+Number of buses Retro-fitted  | NO <sub>2</sub> & PM                   | Ongoing Process as funding becomes available | Bus routes that the retro-fitted vehicles use | Bus fleets within the district are key for model shift and vehicle number controls at the AM and PM peaks. As such it is important that the bus fleet remains a transport option available to the public, but also does incorporate relevant technology to ensure lowest emissions possible. The Clean Bus Technology Fund provides financial incentive to private bus operators to continue to improve their own fleet. Therefore, the council will continue to seek funding within this sector to assist with a full conversion of all Euro V & Euro IV buses within the Kirklees district. Previously, through partnership working with West Yorkshire, we have achieved the following; 2013 - £1m CBTF retrofit of 119 School Buses. School buses were retrofitted in 2014/15 and branding added to sides of the buses to promote pollution reduction<br>2018 - £4.1m CBFT plan to retrofit 300 Buses within WY. |

| Measure No. | Measure                         | Lead Authority                | Planning Phase | Implementation Phase | Targets / Indicator / Measurable  | Target Pollution Reduction in the AQMA | Estimated Completion Date   | Further Data Requirements   | Comments  |
|-------------|---------------------------------|-------------------------------|----------------|----------------------|---|--|-----------------------------|---|---|
| G.19        | Electric Vehicle Strategy       | Kirklees Environmental Health | 2019           | 2019                 | <p><u>Kirklees Council Target:</u></p> <p>+ Creation of an Electric Vehicle Strategy for the District by Dec 2020<br/>           +Contributes to wider target to increase in percentage of ULEV registered vehicles within the district year on year inline with national average.<br/>           + Contributes to wider target to meet the projected IMF target of 30% of registered cars within the district to be ULEV by 2027<br/>           + Contributes to wider target for 100% car sales to be ULEV's within by 2040 in line with national government targets.</p> <p><u>Kirklees Council Measurable:</u><br/>           + Creation and adoption of Electric Vehicle Charging Strategy</p> | NO <sub>2</sub> & PM                   | 2020                        | Local demand<br>Number of houses without drives<br><br>Power Supplies | Currently Kirklees Council have undertaken a number of E.V charging projects to install chargers and also run a green parking permit to reduce the cost of E.V ownership.<br>The strategy is to be created to determine the infrastructure needs within the Kirklees District and to outline an approach to facilitate the move from the combustion engine towards Electric vehicle in both the domestic and commercial sectors within the district |
| G.20        | West Yorkshire ECO-Stars Scheme | Kirklees Environmental Health | 2016           | 2016                 | <p><u>Kirklees Council Targets:</u><br/>           + Year 2 target to get 30 new member for the West Yorkshire Scheme<br/>           + Year 2 target to re-assess 50% of year 1 members (25 re-assessments)</p> <p><u>Kirklees Council Measurables:</u><br/>           +Number of operators signed up within the</p>  | NO <sub>2</sub> & PM                   | Ongoing within the district |   | The West Yorkshire ECO-Stars Scheme is in its second year, providing free advice to Kirklees businesses on how to reduce cost, with the by-product of reducing emissions. This project is funded by the LTP and will the scheme will remain available to businesses while funding is available<br>Current Status;<br>Year 1 - 51 members<br>Year 2 – Success of the scheme to be reviewed to assist with determining viability for Year 3 of Scheme |

| Measure No. | Measure                                     | Lead Authority          | Planning Phase | Implementation Phase | Targets / Indicator / Measurable  | Target Pollution Reduction in the AQMA | Estimated Completion Date | Further Data Requirements | Comments   |
|-------------|---|-------------------------|----------------|----------------------|---|--|---------------------------|---------------------------|--|
|             |   |                         |                |                      | district<br>+Number of fleet vehicles included in the scheme<br>+Number of Operators improving their ECO-Star scores after re-visits  |  |                           |                           |  |
| G.21        | West Yorkshire Electric Vehicle Taxi Scheme | West Yorkshire Combined | 2017           | 2018                 | <p><u>Kirklees Council Target:</u><br/>                     +Contributes to wider target to increase in percentage of ULEV registered vehicles within the district year on year in line with national average.<br/>                     + Contributes to wider target to meet the projected IMF target of 30% of registered cars within the district to be ULEV by 2027<br/>                     + Contributes to wider target for 100% car sales to be ULEV's within by 2040 in line with national government targets.+<br/>                     Implementation of further recommendation from study upon completion<br/>                     +increase in the number of licensed Hybrid / ULEV vehicles<br/>                     +reduction in the age of the vehicles licensed<br/>                     +reduction in number of diesel vehicles licensed<br/>                     + increase E.V Taxi charger network usage year on year</p> <p><u>Kirklees Council Measurables;</u><br/>                     +Installation of 17 Rapid Chargers within Kirklees</p> | NO <sub>2</sub> & PM                   | 2020                      |                           | <p>Currently Kirklees Council have undertaken a number of E.V charging projects to install chargers and also run a green parking permit to reduce the cost of E.V ownership.<br/>                     This project contributes towards the council's ambition towards Electric vehicle adoption in both the domestic and commercial sectors within the district</p> <p>Estimated installation of 34 Rapid Charging Bays within Kirklees. 17 Taxi Bays and 17 Public Bays</p> |

| Measure No. | Measure                                      | Lead Authority                | Planning Phase | Implementation Phase | Targets / Indicator / Measurable  | Target Pollution Reduction in the AQMA | Estimated Completion Date | Further Data Requirements  | Comments  |
|-------------|--|-------------------------------|----------------|----------------------|---|--|---------------------------|--|---|
|             |  |                               |                |                      | District by March 2020<br>+ Number of licensed Hybrid / ULEV vehicles<br>+Number of vehicles 8 years or older   |  |                           |  |   |
| G.22        | West Yorkshire Low Emission Strategy Officer | Kirklees Environmental Health | 2018           | 2019                 | <p><u>Kirklees Council Target:</u></p> <p>+Conclusions of WYLES benchmarking project demonstrating full compliance with WYLES Objectives</p> <p><u>Kirklees Council Target:</u></p> <p>Delivery of key WYLES objectives;</p> <p><u>Obj 2. Age of vehicles in bus fleet</u><br/>Measured by;<br/>+Change in bus fleet composition towards newer Euro Cat Vehicles</p> <p><u>Obj 3. Electric Vehicle Uptake</u><br/>Measured by increase in the;<br/>+Number of newly registered E.V vehicles within Kirklees<br/>+Number of E.V's using charging Infrastructure<br/>+Number of Green Parking Permits issues within district</p> <p><u>Obj 4. ECO-Stars Freight</u></p> | NO <sub>2</sub> & PM                   | 2021                      | Assessment of which services are currently working to the WYLES and identify failing areas | <p>The WYLES Officer was employed June 2019 and is working on benchmarking. Officer is to be based at Kirklees and work across the 5 West Yorkshire Authorities to integrate the WYLES and also facilitate regional projects.</p> <p>Currently the strategy adopted within the authority and integrated into Kirklees Council policy and work instructions. This is a 10 year policy document, of which we are in year 4. Further plans outlined in action G.22 for a review of the documents and how they are used. Funding received from Air Quality Grant.</p> |

| Measure No. | Measure                                    | Lead Authority         | Planning Phase | Implementation Phase | Targets / Indicator / Measurable  | Target Pollution Reduction in the AQMA | Estimated Completion Date | Further Data Requirements | Comments  |
|-------------|--|------------------------|----------------|----------------------|---|--|---------------------------|---------------------------|---|
|             |  |                        |                |                      | <p><u>Recognition Scheme</u><br/>Measured by increase in;<br/>+Number of operators signed up within the district<br/>+Number of fleet vehicles included in the scheme<br/>+Number of Operators improving their ECO-Star scores after re-visits</p> <p><u>Obj 6. Taxi Fleet Improvements</u><br/>Measured by;<br/>+increase in the number of licensed Hybrid / ULEV vehicles<br/>+reduction in the age of the vehicles licensed<br/>+reduction in number of diesel vehicles licensed</p> |  |                           |                           |   |
| G.23        | Joint Strategic Assessment for Air Quality | Kirklees Public Health | 2018           | 2018                 | <p><u>Kirklees Council Target:</u><br/>+Continued partnership working between Public Health and Environmental Health<br/>+ Contribute to the delivery of work streams outlined in KJSA</p> <p><u>Kirklees Council Measurables:</u><br/>+ Adoption of the Strategy</p>   | NO <sub>2</sub> & PM                   | 2019                      |                           | <p>Currently the strategy adopted within the authority and integrated into Kirklees Council policy and work instructions. This is a 10 year policy document, of which we are in year 4.</p> <p><a href="http://observatory.kirklees.gov.uk/jsna/airquality">Available at<br/>http://observatory.kirklees.gov.uk/jsna/airquality</a></p> |

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|-------------|---|--|----------------|----------------------|--|--|---|---------------------------|---|
| G.24        | Corporate Carbon Reduction Targets  | Kirklees Economy and Infrastructure      | 2010-11        | 2020-2021            | <p><u>Kirklees Council Target:</u><br/>+ Reduction of 15,214t CO<sub>2</sub> by 2021</p> <p><u>Kirklees Council Measurables:</u><br/>+ Tonnes of CO<sub>2</sub> reduction per year</p>   | <p>Primary Target: CO<sub>2</sub></p> <p>Secondary reductions in NO<sub>2</sub> &amp; PM</p> | 2031  |                           | <p>Kirklees Council has declared a Climate Emergency and in the process of constructing an action plan to achieve CO<sub>2</sub> reduction goals. Prior to this Kirklees Council has been working towards CO<sub>2</sub> targets outlined in target column. This is an ongoing process with aim of constant reduction, targets of which are subject to change as a result Climate Emergency Board decisions.</p> <p>Air Quality and Carbon reduction have the shared aim of reducing emissions and Kirklees Council are committed to partnership working to reduce both pollutants rather than individual focus</p>                   |
| G.25        | West Yorkshire Energy Accelerator Project   | Kirklees Economy and Infrastructure      | 2018-19        |                      | <p><u>West Yorkshire Target:</u><br/>+ Estimated 590kt CO<sub>2</sub> reduction focusing on high emission industrial sector</p> <p><u>Kirklees Council Measurables:</u><br/>+ Tonnes of CO<sub>2</sub> reduction per year</p>  | <p>Primary Target: CO<sub>2</sub></p> <p>Secondary reductions in NO<sub>2</sub> &amp; PM</p> | 2021  |                           | <p>Kirklees Council has declared a Climate Emergency and in the process of constructing an action plan to achieve CO<sub>2</sub> reduction goals. This project will contribute towards achieving the targets set out in the Climate Emergency process.</p> <p>The project also has the potential to reduce industrial emissions covered in the Air Quality Objectives.</p> <p>Air Quality and Carbon reduction have the shared aim of reducing emissions and Kirklees Council are committed to partnership working to reduce both pollutants rather than individual focus</p> <p>Currently this project is at business case stage</p> |
| G.26        | Air Quality section to be included in Quality Place Supplementary Planning Document | Kirklees Planning & Environmental Health | 2019           | 2020                 | <p><u>Kirklees Council Targets:</u><br/>+Assess all planning applications in accordance with WYLES Planning Guidance Document<br/>+ Require developers to integrate air quality mitigation into developments according to size of building project</p> <p><u>Kirklees Council Measurables:</u><br/>+ Number of E.V chargers installed within new developments<br/>+Section 106 contributions</p> | NO <sub>2</sub> & PM   | Once adopted, use of the SPD would be an ongoing activity |                           | <p>Once the Local Plan is accepted. Kirklees Council planning department to create an SPD. Environmental Health and Planning to work collaboratively to include a robust air quality section which integrates the aims, process and mitigation options outlined in the WYLES Planning Guidance Document.</p>  |

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|-------------|--|--|----------------|----------------------|---|--|---------------------------------|--|--|
| G.27        | Trialling Hybrid and E.V Bin Wagon   | Kirklees Commercial, Regulatory & Operational Services | 2019           | 2020                 | <p><u>Kirklees Council Target:</u><br/>+ Determine the savings / issues around ULEV Bin Wagons<br/>+Promote findings within industry</p> <p><u>Kirklees Council Measurables:</u><br/>+ Report on trial impacts</p>  | NO <sub>2</sub> & PM                   | 2021                            |  | Kirklees Council are currently on a waiting list to borrow a Dennis Eagle Electric Vehicle Bin Wagon and once acquired, will undertake assessment on real world bin routes to determine viability. Upon completion of the study, a report will be constructed and shared with other within the industry. |
| G.28        | Feasibility Study on use of E.V Mobile Maintenance Equipment   | Kirklees Commercial, Regulatory & Operational Services | 2019           | 2019                 | <p><u>Kirklees Council Target:</u><br/>+ Determine cost savings of E.V M.M.E<br/>+ Replace appropriate M.M.E with E.V equivalent<br/>+Promote findings within industry</p> <p><u>Kirklees Council Measurables:</u><br/>+ Construction of a report outlining viability of E.V M.M.E's<br/><br/>+ Number of M.M.E's replaced with E.V alternatives.</p>   | NO <sub>2</sub> & PM                   | 2019                            |  | Internal document, which will steer purchasing options and help introduction of E.V M.M .E's. Delivery targets to be determined from outcome of survey.  |
| G.29        | Feasibility of delivery of Council Officer Car Lease Scheme and delivery (limiting the available options by emission output) | Kirklees Commercial, Regulatory & Operational Services | 2019           | 2020                 | <p><u>Kirklees Council Target:</u><br/>+ Determine the viability of a Council Officer Lease Scheme with built in ULEV promotion</p> <p>Scheme aim is to contribute to;<br/>+Contributes to wider target to increase in percentage of ULEV registered vehicles within the district year on year in line with national average.<br/>+ Contributes to wider target to meet the projected IMF target of 30% of registered cars within the district to be ULEV by 2027</p> | NO <sub>2</sub> & PM                   | Ongoing activity once implement | Employees current vehicle types and commuter choices | Collaborative working between Transport services and Environmental Health to determine viability of providing low emission transport to employees within the local authority   |

| Measure No. | Measure                     | Lead Authority   | Planning Phase | Implementation Phase | Targets / Indicator / Measurable   | Target Pollution Reduction in the AQMA | Estimated Completion Date | Further Data Requirements | Comments  |
|-------------|-----------------------------|--|----------------|----------------------|--|--|---------------------------|---------------------------|---|
|             |                             |  |                |                      | <p>+ Contributes to wider target for 100% car sales to be ULEV's within by 2040 in line with national government targets.</p> <p><u>Kirklees Council's Measurables:</u><br/>           + Number of ULEV Car Leases</p>   |  |                           |                           |   |
| G.30        | Grey Fleet Telematics Trial | Kirklees Commercial, Regulatory & Operational Services | 2018           | 2018                 | <p><u>Kirklees Council Targets:</u><br/>           +Reduce number of grey fleet miles for the council year on year. Baseline year is year prior to introduction of telematics system<br/>           +Contribute to increase in the number of short journeys using public transport<br/>           + Reduce grey fleet mileage<br/>           + Increase ULEV Council Fleet Mileage year on year from baseline year 2020</p> <p><u>Kirklees Council Measurables:</u><br/>           + Number of vehicle miles<br/>           + Number of grey mile trips<br/>           + Number of service car trips</p> | NO <sub>2</sub> & PM                   | 2019                      |                           | Currently trialling a dongle that plugs into the vehicle cigarette lighter port and track via GPS and reports to an app. Initially used to data gather and support future projects to reduce grey millage fleet miles. Analysis of the data will allow the authority to identify short journeys and potentially promote use of public transport |

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|-------------|--|--|----------------|----------------------|--|--|-----------------------------|---------------------------|--|
| G.31        | Master naught Telematics System                                  | Kirklees Commercial, Regulatory & Operational Services | 2017           | 2017                 | <p><u>Kirklees Council Targets:</u><br/>           +Reduction in number of Driver accidents year on year<br/>           +Reduction in number of speeding / unsafe driving reports year on year<br/>           +Identify appropriate targeted driver training for safe and eco driving</p> <p><u>Kirklees Council Measurables:</u><br/>           + Number of speeding exceedances<br/>           +Number of heavy breaking events</p>  | NO <sub>2</sub> & PM                   | Ongoing within the district |                           | Use of the Master naught data allows the Authority to promotes better driving and has already shown a reduction in fleet miles and fuel consumption. Further use of the telematics system can be used for identifying training needs. As such, use of the telematics system is an ongoing process within the lifespan of this action plan. |
| G.32        | Pool Bike Feasibility Study                                      | Kirklees Public Health                                 | 2018           | 2019                 | <p><u>Kirklees Council Targets:</u><br/>           +Assess pool bike usage<br/>           +Determine barriers of pool bike system<br/>           +Promote pool bikes<br/>           + Contributes to the reduction in number of low mileage journeys for grey &amp; council fleet<br/>           +Contributes to the wider target to increase cycling travel mode by 300% between 2018 baseline and 2030</p> <p><u>Kirklees Council Measurables:</u><br/>           + Number of pool bike bookings<br/>           +Number of miles undertaken on pool bike</p> | NO <sub>2</sub> & PM                   | 2019                        |                           | Kirklees Council public health have set up a pilot project of pool bikes to promote modal shift option for shorter journeys. Exploring the viability of pool bike usage as part of a council fleet   |
| G.33        | Robust Travel Survey to determine better travel plans internally | Kirklees Public Health                                 | 2018           | 2019                 | <p><u>Kirklees Council Targets:</u><br/>           + Increase the number of completed travel surveys year on year<br/>           +Collect relevant data to assists with decision making process</p> <p><u>Kirklees Council Measurables:</u><br/>           + Number of Travel Survey responses<br/>           + Yearly report on results of travel survey</p>  | NO <sub>2</sub> & PM                   | 2019                        |                           | Kirklees Council Internal travel survey for all council employees to help better inform further decision making and influence future projects  |

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|-------------|--|--|----------------|----------------------|---|--|---------------------------|--|--|
| G.34        | Installation of pollution sensor technology within our AQMA's in conjunction with recognised monitoring to demonstrate validity of new devices | Kirklees Council<br>UTC &<br>Environmental<br>Health           | 2018           | 2019                 | <p><u>Kirklees Council Targets:</u><br/>+ Create a report analysing the validity of sensor technology<br/>+Analyse cost effectiveness of sensors when measured against existing monitoring tools<br/>+Improve accuracy of current AQ monitoring network</p> <p><u>Kirklees Council Measurables:</u><br/>+ Report outlining the issues relating to Sensor Technology</p> | NO <sub>2</sub> & PM                   | 2021                      |  | This study will be used as part of a rationalisation project to provide the most accurate, cost effective monitoring network to assist the council to safeguard residents and the environment  |
| G.35        | Engagement within the district with regional plans on alternative Low Emission Fuel Sources  | Kirklees<br>Environmental<br>Health                            | 2019           | 2020                 | <p><u>West Yorkshire Target:</u><br/>+ Contribute towards regional low emission fuel source projects currently in development</p>   | NO <sub>2</sub> & PM                   | 2024                      |  | Ongoing regional work exploring introduction of low emission fuel sources into West Yorkshire<br>This is a future project currently going through project planning phase   |
| G.36        | Review how Environmental Health delivers regulatory requirements of the Clean Air Act  | Kirklees<br>Environmental<br>Health                            | 2019           | 2020                 | <p><u>Kirklees Council Targets:</u><br/>+ Reduce number of burning / smoking chimney complaints<br/>+Increased business engagement<br/>+Integrate new Clean Air Act into Kirklees Council work procedures</p> <p><u>Kirklees Council Measurables:</u><br/>+ Number of complaints<br/>Smoking Chimney Complaints to Environmental Health</p>                             | PM                                     | Ongoing                   | Number of domestic solid fuel appliances within the district and locations | Kirklees District is currently a smoke control area and investigates complaints & enforces where required.<br>The process will be reviewed to put the council in a good position for future changes to solid fuel legislation.<br>This process is an ongoing iterative process and planned changes to the Clean Air Act will need to be included into future working practices. As such, completion of this action is reliant on the adoption of the new Clean Air Act, which currently does not have a deadline date. |
| G.37        | Implementation of the Medium Combustion Plant Directive through the planning process   | Kirklees<br>Environmental<br>Health /<br>Environment<br>Agency | 2018           | 2018                 | <p><u>Kirklees Council Target:</u><br/>+ All plant meeting directive to be registered with relevant authority<br/>+ Signpost relevant businesses of directive at development control stage</p>  | NO <sub>2</sub> & PM                   | 2030                      | Number of medium combustion plants   | Kirklees Council to work with Environment Agency to discharge requirements of the Medium Combustion Plan Directive   |

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|             |  |                               |                |                      | <u>Kirklees Council Measurables:</u><br>+ Number of permits issued within the district  |  |                           |                           |  |
| G.38        | Zoning project to identify errant PPC businesses | Kirklees Environmental Health | 2019           | 2019                 | <u>Kirklees Council Targets:</u><br>+ Permit all relevant businesses in accordance with the PPC Regulations.<br><br><u>Kirklees Council Measurables:</u><br>+ Number of errant PPC businesses identified<br>+ Number of areas assessed  | NO <sub>2</sub> & PM                   | 2020                      |                           | Kirklees Council routinely inspects businesses requiring permits as prescribed in the Pollution Prevention and Control Regulations. This measure is a piece of work that aims to identify businesses that require permits, but currently do not possess one.   |
| G39         | Kirklees Walking and Cycling Strategic Framework | Public Health                 | 2018           | 2030                 | <u>West Yorkshire Target:</u><br>+Sustainable travel mode increase from 36% in 2011 to 42% by 2026<br><br><u>Kirklees Council Targets:</u><br>+Increase cycling travel mode by 300% between 2018 baseline and 2030<br>+Increase walking travel mode by 20% between 2018 baseline and 2030<br>+ Increase in number of coaches, leaders & volunteers<br>+ Improvement in communication with public<br><br><u>Kirklees Council Measurables:</u><br>+Creation of a policy document around Walking and Cycling | NO <sub>2</sub> & PM                   | Ongoing                   |                           | This is a policy document to outline the council's ambition to promote walking and cycling and also contain a number of measures to assist in achieving the aim. This policy document is currently under construction and once completed will be the primary policy framework for delivering walking and cycling. Therefore, upon adoption, use of this document will be an ongoing process. |

| Measure No. | Measure   | Lead Authority  | Planning Phase | Implementation Phase | Targets / Indicator / Measurable  | Target Pollution Reduction in the AQMA | Estimated Completion Date                                       | Further Data Requirements | Comments   |
|-------------|---|---|----------------|----------------------|---|--|---|---------------------------|--|
| G.40        | Kirklees Neighbourhood Housing Solid Fuel Policy  | Kirklees Neighbourhood Housing  | 2018           | 2018                 | <p><u>Kirklees Council Targets:</u><br/>           + Prohibit installation of solid fuel stoves<br/>           + Educate residents on the policy</p> <p><u>Kirklees Council Measurables:</u><br/>           + Number of Solid Fuel Stoves within KnH properties</p>   | NO <sub>2</sub> & PM                   | Ongoing   |                           | Policy prohibits installation of solid fuel stoves. Chimneys are blocked up when gas fires are removed in order to prevent solid fuel use. Completion date has been set as ongoing because of the continuous nature of the action.   |
| G.41        | West Yorkshire Travel Plan Network  | West Yorkshire Combined Authority   | 2016           | 2016                 | <p><u>West Yorkshire Targets:</u><br/>           + Sustainable travel mode increase from 36% in 2011 to 42% by 2026<br/>           + Increase number of local businesses registered as members</p> <p><u>Kirklees Council Measurables:</u><br/>           + Number of Kirklees businesses that are members of the Travel Plan Network</p>   | NO <sub>2</sub> & PM                   | Ongoing   |                           | West Yorkshire Travel Plan network visit local businesses and assist with improving employee travel option and promote mode shift. Revisits and frequent promotions to members of the network once assessment has been conducted. AQMA areas are a priority for business engagement. This project is a continuous, though subject to funding requirements. Completion date has been set as ongoing because of the continuous nature of the action. |
| G.42        | Development of a Comms Strategy to promote air quality, mode shift and successful emission reduction projects | <p>Kirklees Environmental Health</p> <p>Kirklees Communications and Marketing</p> | 2019           | 2019                 | <p><u>Kirklees Council Targets:</u><br/>           + Creation of a Comms Strategy for AQ, incorporating joint messages for Green Streets, Public Health, Carbon Reduction and other linked work streams<br/>           + Improve council website &amp; access to AQ information</p> <p><u>Kirklees Council Measurables:</u><br/>           + Strategy document outlining plans to</p> | NO <sub>2</sub> & PM                   | Ongoing review process of strategy as funding becomes available |                           | Once the strategy is developed, further targets can be formulated to measure the success of promoting air quality within the district. More costly methods of promotion may not be viable at time on inception, but can be considered as funding becomes available.  |

| Measure No. | Measure   | Lead Authority   | Planning Phase   | Implementation Phase | Targets / Indicator / Measurable  | Target Pollution Reduction in the AQMA | Estimated Completion Date | Further Data Requirements | Comments  |
|-------------|---|--|------------------|----------------------|---|--|---------------------------|---------------------------|---|
|             |   |  |                  |                      | promote Air Quality<br>+Number of promotion activities  |  |                           |                           |   |
| G.43        | Collaborative working with NHS Trusts within District                   | Kirklees Environmental Health<br>NHS Trusts                  | 2019             | 2019                 | <u>Kirklees Council Targets:</u><br>+ Set up liaison program with NHS Trusts<br>+ Increase number of linked work streams with NHS Trusts  | NO <sub>2</sub> & PM                   | Ongoing                   |                           | Kirklees Council has 2 NHS Trust, Mid Yorkshire and Huddersfield Calderdale Trust. As a key partner in the district the council will work with them to promote / deliver low emission projects and policy   |
| G.44        | Collaborative working with University of Huddersfield                   | Kirklees Environmental Health<br>University of Huddersfield  | 2018             | 2019                 | <u>Kirklees Council Targets:</u><br>+ Increase number of linked work streams with Huddersfield University   | NO <sub>2</sub> & PM                   | Ongoing                   |                           | Kirklees Council has already begun to develop a number of projects with the university. As a key partner in the district the council will continue to work with them to promote / deliver low emission projects and policy                              |
| G.45        | Collaborative working with Commercial Bus Companies within the district | Kirklees Environmental Health<br>WYCA<br>Local Bus Companies | 2018             | 2019                 | <u>Kirklees Council Targets:</u><br>+ Set up liaison program with Bus Companies<br>+ Increase number of linked work streams with Bus Companies                                  | NO <sub>2</sub> & PM                   | Ongoing                   |                           | Kirklees Council has already begun to develop a number of projects with the bus partners and the combined authority. As a key partner in the district the council will continue to work with them to promote / deliver low emission projects and policy |
| G.46        | Collaborative working with Highways England                             | Kirklees Environmental Health<br>Highways England            | 2018             | 2019                 | <u>Kirklees Council Targets:</u><br>+ Set up liaison program with Highways England<br>+ Increase number of linked work streams with Highways England                            | NO <sub>2</sub> & PM                   | Ongoing                   |                           | As a key partner in the district the council will work with them to promote / deliver low emission projects and policy  |
| G.47        | De-centralised Energy Use   | Kirklees Economy and Infrastructure                          | Estimate 2019/20 | TBC                  | <u>Kirklees Council Targets:</u><br>+Contribute towards targets set by Climate Emergency Work Group<br><br><u>Kirklees Council Measurables:</u><br>+ CO <sub>2</sub> reductions | Primary Target: CO <sub>2</sub>        | TBC                       |                           | The plan for this project is to undertake studies into future energy needs and how de-centralised energy supply will impact on emissions.<br><br>This is a future project currently going through project planning phase                                |
| G.48        | Smart Systems to manage energy use within Local Authority Buildings     | Kirklees Economy and Infrastructure                          | Estimate 2019/20 | TBC                  | <u>Kirklees Council Targets:</u><br>+Contribute towards targets set by Climate Emergency Work Group   | Primary Target: CO <sub>2</sub>        | TBC                       |                           | The plan for this project is to integrate smart technology into council buildings to reduce energy usage.<br><br>This is a future project currently going through project planning phase  |

| Measure No. | Measure   | Lead Authority                      | Planning Phase   | Implementation Phase | Targets / Indicator / Measurable   | Target Pollution Reduction in the AQMA | Estimated Completion Date | Further Data Requirements | Comments   |
|-------------|---|-------------------------------------|------------------|----------------------|--|--|---------------------------|---------------------------|--|
|             |   |                                     |                  |                      | <u>Kirklees Council Measurable:</u><br>+ CO <sub>2</sub> Reductions  |  |                           |                           |  |
| G.49        | Study the impact of Green Infrastructure  | Kirklees Environmental Health       | Estimate 2019/20 | TBC                  | <u>Kirklees Council Target:</u><br>+To assess the validity of the use of vegetation as a mitigation solution<br>+To determine the best vegetation to reduce air pollution<br>+To assess cost effectiveness of Green Infrastructure<br>+Promote findings within industry<br><br><u>Kirklees Council Measurables:</u><br>+ Report determining the impact of Green Infrastructure | NO <sub>2</sub> & PM                   | TBC                       |                           | The plan for this project is to undertake a study looking into different vegetation and the impact of green screening along roadsides. This project includes analysing the viability of Moss Trees.<br><br>This is a future project currently going through project planning phase |
| G.50        | Generate a pollutions based calculation similar to that currently used in carbon reduction calculations | Kirklees Economy and Infrastructure | Estimate 2019/20 | TBC                  | <u>Kirklees Council Target:</u><br>+ Aim to create a simple calculation which will allow the organisation to determine theoretical NO <sub>2</sub> / PM <sub>10</sub> concentration , which in turn allows firms to set targets similar to Carbon system<br><br><u>Kirklees Council Measureable:</u><br>+ Creation of an easier system for calculating emission impact         | NO <sub>2</sub> & PM                   | TBC                       |                           | The plan for this project is to create an easier process for calculating emission impacts from projects and schemes.<br><br>This is a future project currently going through project planning phase  |
| G.51        | Research gathering to inform development of neighbourhood plans as part of Local Plan integration       | Kirklees Planning                   | Estimate 2019/20 | TBC                  | <u>Kirklees Council Targets:</u><br>+ Collected dataset of a quality that allows informed development control decisions to be made<br><br><u>Kirklees Council Measurable:</u><br>+ Report containing data  | NO <sub>2</sub> & PM                   | TBC                       |                           | The plan for this project is to collect data that can be used to inform the development of the Council's neighbourhood plans<br>This is a future project currently going through project planning phase  |

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|-------------|---|-------------------------------------|------------------|----------------------|---|--|---------------------------|---------------------------|---|
|             |   |                                     |                  |                      | to inform neighbourhood plans   |  |                           |                           |   |
| G.52        | Development Clusters Research and Solution Systems  | Kirklees Planning                   | Estimate 2019/20 | TBC                  | <p><u>Kirklees Council Targets:</u><br/>+ To collect a dataset of a quality that allows informed development control decisions to be made</p> <p><u>Kirklees Council Measureable:</u><br/>+ Report containing quality dataset</p>   | NO <sub>2</sub> & PM                   | TBC                       |                           | The plan for this project is to collect data that can be used to inform the development of the Council's Development Clusters<br>This is a future project currently going through project planning phase                              |
| G.53        | Feasibility Study of current Traffic Model and identify further highways improvement projects | Kirklees Economy and Infrastructure | Estimate 2019/20 | TBC                  | <p><u>Kirklees Council Targets:</u><br/>+ Use outcomes from feasibility study to identify other highways improvement projects within the district</p> <p><u>Kirklees Council Measureable:</u><br/>+ Report outlining the validity and potential improvements to current traffic model</p> | NO <sub>2</sub> & PM                   | TBC                       |                           | The plan for this project is to review the traffic model, validate and make improvements where required.<br>This is a future project currently going through project planning phase   |
| G.54        | Voluntary Clean Air Zone Feasibility Study  | Kirklees Environmental Health       | Estimate 2019/20 | TBC                  | <p><u>Kirklees Council Targets:</u><br/>+ Full cost analysis measured against impact of implementing non-charging clean air zone.</p> <p><u>Kirklees Council Measureable:</u><br/>+ Report outlining viability of non-charging clean air zone.</p>  | NO <sub>2</sub> & PM                   | TBC                       |                           | The plan for this project is to undertake a feasibility assessment to determine the costs and impacts of both a Chargeable and Non-Charging Clean Air Zone<br>This is a future project currently going through project planning phase |
| G.55        | Study into the impact of topography onto bus  | Kirklees Environmental Health       | Estimate 2019/20 | TBC                  | <p><u>Kirklees Council Targets:</u><br/>+ Determine the best bus technology to utilise within the district<br/>+ Promote findings within industry</p>   | NO <sub>2</sub> & PM                   | TBC                       |                           | The plan for this project is to undertake a research project that looks into the impact topography on ULEV Bus Technology<br>This is a future project currently going through project planning phase                                  |

| Measure No. | Measure  | Lead Authority                | Planning Phase   | Implementation Phase | Targets / Indicator / Measurable  | Target Pollution Reduction in the AQMA | Estimated Completion Date | Further Data Requirements | Comments  |
|-------------|--|-------------------------------|------------------|----------------------|---|--|---------------------------|---------------------------|---|
|             |  |                               |                  |                      | <u>Kirklees Council Measurable:</u><br>+Report demonstrating the most appropriate bus technology to deliver a cost effective low emission service within a district with hilly topography   |  |                           |                           |   |
| G.56        | Project to engage with public on solid fuel regarding compliance into UK Clean Air Strategy                | Kirklees Environmental Health | Estimate 2019/20 | TBC                  | <u>Kirklees Council Targets:</u><br>+ Reduce number of burning / smoking chimney complaints<br>+Increased business engagement<br>+Reduction in particulate associated with solid fuel<br><br><u>Kirklees Council Measurable:</u><br>+ Number of smoking chimney complaints          | NO <sub>2</sub> & PM                   | TBC                       |                           | The plan for this project is to devise and run a comms project for both the domestic and commercial sector to promote clean air and smokeless solid fuel practices<br>This is a future project currently going through project planning phase       |
| G.57        | Feasibility study into changing internal governance and decision making to further incorporate air quality | Kirklees Environmental Health | Estimate 2019/20 | TBC                  | <u>Kirklees Council Targets:</u><br>+ Use outcomes from feasibility study to identify policy to integrate AQ within<br><br><u>Kirklees Council Measurable:</u><br>+ Report outlining the validity and potential improvements to current policy to incorporate AQ in decision making | NO <sub>2</sub> & PM                   | TBC                       |                           | The plan for this project is to undertake an assessment of council working practices and identify areas where improvement could reduce emissions and benefit air quality<br>This is a future project currently going through project planning phase |

| Measure No. | Measure  | Lead Authority                | Planning Phase   | Implementation Phase | Targets / Indicator / Measurable  | Target Pollution Reduction in the AQMA | Estimated Completion Date | Further Data Requirements | Comments  |
|-------------|--|-------------------------------|------------------|----------------------|---|--|---------------------------|---------------------------|---|
| G.58        | Feasibility Study into On street electric vehicle charging solutions | Environmental Health          | Estimate 2019/20 | TBC                  | <p><u>Kirklees Council Targets:</u><br/>           +Contributes to wider target to increase in percentage of ULEV registered vehicles within the district year on year in line with national average.<br/>           + Contributes to wider target to meet the projected IMF target of 30% of registered cars within the district to be ULEV by 2027<br/>           + Contributes to wider target for 100% car sales to be ULEV's within by 2040 in line with national government targets.</p> <p><u>Kirklees Council Measurable:</u><br/>           + Report outlining the viable solutions to provide charging to properties without off-street parking</p> | NO <sub>2</sub> & PM                   | TBC                       |                           | The plan for this project is to undertake an assessment of current E.V infrastructure and devise a funding plan for delivery for future infrastructure<br>This is a future project currently going through project planning phase |
| G.59        | Creation of a delivery plan for Kirklees EV Charging                 | Kirklees Environmental Health | Estimate 2019/20 | TBC                  | <p><u>Kirklees Council Targets:</u><br/>           +Contributes to wider target to increase in percentage of ULEV registered vehicles within the district year on year in line with national average.<br/>           + Contributes to wider target to meet the projected IMF target of 30% of registered cars within the district to be ULEV by 2027<br/>           + Contributes to wider target for 100% car sales to be ULEV's within by 2040 in line with national government targets.</p> <p><u>Kirklees Council Measurable:</u><br/>           + Report outlining the a delivery plan to providing</p>  | NO <sub>2</sub> & PM                   | TBC                       |                           | The plan for this project is to undertake an assessment of current E.V infrastructure and devise a funding plan for delivery for future infrastructure<br>This is a future project currently going through project planning phase |

| Measure No. | Measure   | Lead Authority                | Planning Phase   | Implementation Phase | Targets / Indicator / Measurable  | Target Pollution Reduction in the AQMA | Estimated Completion Date | Further Data Requirements | Comments  |
|-------------|---|-------------------------------|------------------|----------------------|---|--|---------------------------|---------------------------|---|
|             |   |                               |                  |                      | charging network across the district to meet future needs   |  |                           |                           |   |
| G.60        | Provision of EV Charging in all communities of Kirklees | Kirklees Environmental Health | Estimate 2019/20 | TBC                  | <p><u>Kirklees Council Targets:</u></p> <ul style="list-style-type: none"> <li>+ Each council ward to have an even spread of charging network per head of population</li> <li>+Contributes to wider target to increase in percentage of ULEV registered vehicles within the district year on year in line with national average.</li> <li>+ Contributes to wider target to meet the projected IMF target of 30% of registered cars within the district to be ULEV by 2027</li> <li>+ Contributes to wider target for 100% car sales to be ULEV's within by 2040 in line with national government targets.</li> </ul> <p><u>Kirklees Council Measurable:</u></p> <ul style="list-style-type: none"> <li>+ Number of chargers in each ward</li> </ul> | NO <sub>2</sub> & PM                   | TBC                       |                           | The plan for this project is to provide charging to each council ward to meet ULEV demands<br>This is a future project currently going through project planning phase |

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|-------------|--|---|------------------|----------------------|--|--|---------------------------|---------------------------|--|
| G.61        | Improvements to the Cycling Network, linking all the Kirklees Towns and with neighbouring districts              | Kirklees Economy and Infrastructure                             | Estimate 2019/20 | TBC                  | <p><u>West Yorkshire Target:</u><br/>Contribute to;<br/>+Sustainable travel mode increase from 36% in 2011 to 42% by 2026</p> <p><u>Kirklees Council Targets:</u><br/>+Improve pre-existing walking / cycling facilities within district<br/>+ Connect local towns and neighbouring districts with improved cycling and walking facilities<br/>+Increase cycling travel mode by 300% between 2018 baseline and 2030<br/>+Increase walking travel mode by 20% between 2018 baseline and 2030<br/>Improvement in facilities across the district for cycling and clear links between all towns within the district</p> <p><u>Kirklees Council Measurable:</u><br/>+Number of towns connected by cycle network</p> | NO <sub>2</sub> & PM                   | TBC                       |                           | The plan for this project is to maintain the current cycling infrastructure and identify where there are gaps between cycle only routes between the major Kirklees towns. Where towns are not connected, this project aim is to connect them with cycle only infrastructure<br>This is a future project currently going through project planning phase |
| G.62        | Use of Technology and publicity to incentivise and increase active travel during commute and business activities | Kirklees Public Health<br><br>Environmental Health<br>Transport | Estimate 2019/20 | TBC                  | <p><u>Kirklees Council Targets:</u><br/>+Development of an App to collect data and recommend appropriate methods of transport</p> <p>Contribute towards;<br/>+Increase cycling travel mode by 300% between</p>   | NO <sub>2</sub> & PM                   | TBC                       |                           | The plan for this project is to work with Huddersfield University and a 3 <sup>rd</sup> party company to develop an app that monitors travel and recommend mode of transport.<br>This is a future project currently going through project planning phase<br><br>Partnership with Huddersfield University   |

| Measure No. | Measure  | Lead Authority                                | Planning Phase   | Implementation Phase | Targets / Indicator / Measurable   | Target Pollution Reduction in the AQMA | Estimated Completion Date | Further Data Requirements | Comments  |
|-------------|--|---|------------------|----------------------|--|--|---------------------------|---------------------------|---|
|             |  | University of Huddersfield                    |                  |                      | <p>2018 baseline and 2030<br/>+Increase walking travel mode by 20% between 2018 baseline and 2030</p> <p><u>West Yorkshire Target:</u><br/>+Sustainable travel mode increase from 36% in 2011 to 42% by 2026</p> <p><u>Kirklees Council Measurables:</u><br/>+Creation of an App promoting model shift<br/>+Number of journeys made by walking / cycling</p>   |  |                           |                           |   |
| G.63        | Project to promote and incentivise working at home to reduce commuter miles                  | Kirklees Council Environmental Health         | Estimate 2019/20 | TBC                  | <p><u>West Yorkshire Target:</u><br/>+Sustainable travel mode increase from 36% in 2011 to 42% by 2026</p> <p><u>Kirklees Council Targets:</u><br/>+Alter modern way of working and reduction in commuter miles<br/>+Support business to operate in a modern way<br/>+Promote best practice currently being adopted within Kirklees Council</p> <p><u>Kirklees Council Measurable:</u><br/>+ Number of walking / cycling trips</p> | NO <sub>2</sub> & PM                   | TBC                       |                           | <p>The plan for this project is to run a comm project to promote working from home, both within the council and for 3<sup>rd</sup> party companies<br/>This is a future project currently going through project planning phase<br/>Project would promote to companies the benefits of working from home, with the added benefit of emissions reduction.</p> |
| G.64        | E.V research project to identify appropriate demographics and locations within the district. | Kirklees Environmental Health & Public Health | Estimate 2019/20 | TBC                  | <p><u>Kirklees Council Targets:</u><br/>+ Report outlining the best focus for council delivery plan to providing</p>   | NO <sub>2</sub> & PM                   | TBC                       |                           | <p>The piece of work would involve engaging with the community and looking at purchasing trends to identify the E.V market better and would be used to help inform E.V strategy and infrastructure projects</p>   |

| Measure No. | Measure   | Lead Authority                   | Planning Phase   | Implementation Phase | Targets / Indicator / Measurable   | Target Pollution Reduction in the AQMA | Estimated Completion Date | Further Data Requirements | Comments   |
|-------------|---|----------------------------------|------------------|----------------------|--|--|---------------------------|---------------------------|--|
|             |   |                                  |                  |                      | <p>charging network across the district to meet future needs</p> <p>+Contributes to wider target to increase in percentage of ULEV registered vehicles within the district year on year in line with national average.</p> <p>+ Contributes to wider target to meet the projected IMF target of 30% of registered cars within the district to be ULEV by 2027</p> <p>+ Contributes to wider target for 100% car sales to be ULEV's within by 2040 in line with national government targets.</p> <p><u>Kirklees Council Measurable:</u><br/>+Report outlining demand for ULEV within the district</p> |  |                           |                           | <p>The plan for this project is to conduct research into the demand for ULEVS within the district to better inform delivery of infrastructure</p> <p>This is a future project currently going through project planning phase</p>           |
| G.65        | Feasibility study into the integration of National and Local UTMC   | Kirklees UTMC & Highways England | Estimate 2019/20 | TBC                  | <p><u>Kirklees Council Targets:</u></p> <p>+ Linked UTMC system between HE and Kirklees Council systems</p> <p>+Improved Journey Times</p> <p>+Improved Road user experience</p> <p><u>Kirklees Council Measurable:</u><br/>+Report outlining requirements to integrate HE UTMC and Kirklees UTMC</p>  | NO <sub>2</sub> & PM                   | TBC                       |                           | <p>Project will look at the feasibility of integrating local and national UTMC, which would allow for whole network reactivity during traffic events</p> <p>This is a future project currently going through project planning phase</p>    |
| G.66        | Feasibility study into the use of anti-idling measures as a control on emissions, giving focus to areas of poor air quality | Environmental Health             | Estimate 2019/20 | TBC                  | <p><u>Kirklees Council Target:</u></p> <p>+To assess the validity of the use of anti-idling as a mitigation solution</p> <p>+To determine the best / appropriate locations for</p>   | NO <sub>2</sub> & PM                   | TBC                       |                           | <p>Following updates to the legislation from the Environment Bill to undertake feasibility study into the introduction of anti-idling, prioritising areas where there is evidence, through monitoring, there are air quality problems.</p> |

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|-------------------------------|--|-----------------------|----------------|----------------------|--|--|---------------------------|---------------------------|---|
|                               |  |                       |                |                      | anti-idling<br>+To assess cost effectiveness of anti-idling enforcement<br>+Creation of a report determining the impact of anti-idling<br>+Promote findings within industry<br><br><u>Kirklees Council Measurable:</u><br>+ Report outlining feasibility of anti-idling measures within the district   |  |                           |                           |   |
| <b>AQMA 1 Bradley Actions</b> |  |                       |                |                      |  |  |                           |                           |   |
| AQMA1.1                       | Install Split Cycle Offset Optimisation technique (SCOOT) Traffic Managements System within AQMA 1 | Kirklees Highways UTC | 2013           | 2013                 | <u>Kirklees Council Targets:</u><br>+ Reduction in queuing times and increased through flow<br>+ Reduced stop / start driving style<br>+ Increased efficiency in combustion engine process<br><br><u>Kirklees Council Measurable:</u><br>+ Average road speed<br>+AM/PM Queue times  | NO <sub>2</sub> & PM                   | 2013                      |                           | Reduction of pollutants in AQMA 1 of 12ug/m <sup>3</sup> and given rise to further works to improve the system.<br><br>This was stage 1 of a multi stage improvement project with the aim to reduce emissions through the use of technology to improve flow at junctions. Other stages of the project are discussed in actions AQMA.1.3 and P.9 |
| AQMA1.2                       | Feasibility Study to Alter SCOOT to incorporate actual Air Quality pollution levels                | Kirklees Highways UTC | 2016           | 2017                 | <u>Kirklees Council Targets:</u><br>+ Report outlining impact of integrating monitors into UTMC system. Looking at cost, flowtimes and pollutant reduction<br>+Reduction in queuing times and increased through flow<br>+ Reduced stop / start driving style<br>+ Increased efficiency in combustion engine process<br><br><u>Kirklees Council Measurable:</u><br>+ Average road speed | NO <sub>2</sub> & PM                   | 2017                      |                           | This project was a pre-requisite for the development of project AQMA.1.3 and resulted in collaborative working with our business partners to develop a virtual emissions model to improve UTMC.   |

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|             |   |                                     |                |                      | +AM/PM Queue times  |  |                           |                           |  |
| AQMA1.3     | Kirklees "Virtual Emissions Monitoring Project" to rationalise SCOOT system | Kirklees Highways UTC               | 2017           | 2018                 | <u>Kirklees Council Targets:</u><br>+ Reduction in queuing times and increased through flow<br>+ Reduced stop / start driving style<br>+ Increased efficiency in combustion engine process<br><br><u>Kirklees Council Measurable:</u><br>+ Average road speed<br>+AM/PM Queue times | NO <sub>2</sub> & PM                   | 2019                      |                           | Stage 2 of a multi stage Air Quality UTMC improvement project. Stage 3 contained within P.9 and awaiting funding |
| AQMA1.4     | Cooper Bridge Road Improvements Project                                     | Kirklees Economy and Infrastructure | 2018           | 2021                 | <u>Kirklees Council Targets:</u><br>+ Reduction in queuing times and increased through flow<br>+ Increased capacity on the road<br>+ Redistribution of vehicles on network<br><br><u>Kirklees Council Measurable:</u><br>+ Average road speed<br>+AM/PM Queue times                 | NO <sub>2</sub> & PM                   | 2021                      |                           | The project is a highways improvement scheme within the AQMA and is currently at outline Business Case Stage     |
| AQMA1.5     | Resource Smart Corridor   | Kirklees Economy and Infrastructure | 2015           | 2019/20              | <u>Kirklees Council Targets:</u><br>+ Reduction in queuing times and increased through flow<br>+ Increased capacity on the road<br>+ Redistribution of vehicles on network<br><br><u>Kirklees Council Measurable:</u>   | NO <sub>2</sub> & PM                   | 2021                      |                           | The project is a highways improvement scheme within the AQMA and is currently at Business Case Stage             |

| Measure No.                     | Measure   | Lead Authority                      | Planning Phase   | Implementation Phase | Targets / Indicator / Measurable  | Target Pollution Reduction in the AQMA | Estimated Completion Date | Further Data Requirements | Comments   |
|---------------------------------|---|-------------------------------------|------------------|----------------------|---|--|---------------------------|---------------------------|--|
|                                 |   |                                     |                  |                      | + Average road speed<br>+AM/PM Queue times  |  |                           |                           |  |
| AQMA1.6                         | Kirklees Northern Orbital Route                               | Kirklees Economy and Infrastructure | Estimate 2019/20 | TBC                  | <p><u>Kirklees Council Targets:</u><br/> + Reduction in queuing times and increased through flow<br/> + Increased capacity on the road<br/> + Redistribution of vehicles on network<br/> + Bypass current road network and remove traffic from close proximity to residential properties</p> <p><u>Kirklees Council Measurable:</u><br/> + Average road speed<br/> +AM/PM Queue times</p> | NO <sub>2</sub> & PM                   | TBC                       |                           | The project is a highways improvement scheme within the AQMA and is a future project currently going through project planning phase  |
| AQMA1.7                         | Trial of Smart UTMC Technology systems within relevant AQMA's | Kirklees Highways UTC               | Estimate 2019/20 | TBC                  | <p><u>Kirklees Council Targets:</u><br/> + Reduction in queuing times and increased through flow<br/> + Reduced stop / start driving style<br/> + Increased efficiency in combustion engine process</p> <p><u>Kirklees Council Measurable:</u><br/> + Average road speed<br/> +AM/PM Queue times</p>  | NO <sub>2</sub> & PM                   | TBC                       |                           | <p>The project is a Traffic Light improvement scheme within the AQMA and is a future project currently going through project planning phase</p> <p>Funding sought from 2018 AQ Grant</p> |
| <b>AQMA 2 Scouthill Actions</b> |   |                                     |                  |                      |   |  |                           |                           |  |
| AQMA2.1                         | A640 Road improvements (Mirfield to Dewsbury)                 | Kirklees Economy and Infrastructure | 2020             | Post 2021            | <p><u>Kirklees Council Targets:</u><br/> + Reduction in queuing times and increased through flow<br/> + Increased capacity on the road<br/> + Redistribution of</p>   | NO <sub>2</sub> & PM                   | TBC                       |                           | The project is a highways improvement scheme within the AQMA and is at very early stages. Pre outline business case stage  |

| Measure No. | Measure   | Lead Authority                      | Planning Phase   | Implementation Phase | Targets / Indicator / Measurable  | Target Pollution Reduction in the AQMA  | Estimated Completion Date   | Further Data Requirements | Comments  |
|-------------|---|-------------------------------------|------------------|----------------------|---|---|-----------------------------|---------------------------|---|
|             |   |                                     |                  |                      | vehicles on network<br><u>Kirklees Council Measurable:</u><br>+ Average road speed<br>+AM/PM Queue times  |   |                             |                           |   |
| AQMA2.2     | Program of Deep Cleaning to Paths and Road within the AQMA          | Kirklees Environmental Health       | 2013             | 2014                 | <u>Kirklees Council Target:</u><br>+ Keep exceedance of daily PM10 below daily AQO<br><br><u>Kirklees Council Measurable:</u><br>+ Daily Exceedances of PM <sub>10</sub>  | Short Term PM <sub>10</sub> Exceedances | Ongoing within the district |                           | AQMA now compliant after this measure was put into place. Number of exceedance days fell from 36 to 6.                              |
| AQMA2.3     | Extension of Ravensthorpe Train Station                             | WYCA                                | 2016             | 2018                 | <u>West Yorkshire Targets:</u><br>+ Increased services to train station<br>+Increase in patronage<br><br><u>Kirklees Council Measurable:</u><br>+ Number of passengers using Ravensthorpe Station<br>+Number of services stopping at Ravensthorpe Station                           | NO <sub>2</sub> & PM                    | 2019                        |                           | The project is a Network Rail improvement scheme within the AQMA and is at delivery stage   |
| AQMA2.4     | Use "Virtual Emissions Monitoring Project" to determine operate UTC | Kirklees Highways UTC               | 2018             | 2019                 | <u>Kirklees Council Targets:</u><br>+ Reduction in queuing times and increased through flow<br>+ Reduced stop / start driving style<br>+ Increased efficiency in combustion engine process<br><br><u>Kirklees Council Measurable:</u><br>+ Average road speed<br>+AM/PM Queue times | NO <sub>2</sub> & PM                    | 2020                        |                           | Stage 2 of a multi stage Air Quality UTMC improvement project. Stage 3 contained within P.9 and awaiting funding                    |
| AQMA2.5     | Kirklees Northern Orbital Route                                     | Kirklees Economy and Infrastructure | Estimate 2019/20 | TBC                  | <u>Kirklees Council Targets:</u><br>+ Reduction in queuing times and increased through flow<br>+ Increased capacity on the road<br>+ Redistribution of vehicles on network<br>+ Bypass current road network and remove  | NO <sub>2</sub> & PM                    | TBC                         |                           | The project is a highways improvement scheme within the AQMA and is a future project currently going through project planning phase |

| Measure No.                         | Measure   | Lead Authority                      | Planning Phase   | Implementation Phase | Targets / Indicator / Measurable  | Target Pollution Reduction in the AQMA | Estimated Completion Date | Further Data Requirements | Comments   |
|-------------------------------------|---|-------------------------------------|------------------|----------------------|---|--|---------------------------|---------------------------|--|
|                                     |   |                                     |                  |                      | traffic from close proximity to residential properties<br><br><u>Kirklees Council Measurable:</u><br>+ Average road speed<br>+AM/PM Queue times   |  |                           |                           |  |
| AQMA2.6                             | Trial of Smart UTMC Technology systems within relevant AQMA's         | Kirklees Highways UTC               | Estimate 2019/20 | TBC                  | <u>Kirklees Council Targets:</u><br>+ Reduction in queuing times and increased through flow<br>+ Reduced stop / start driving style<br>+ Increased efficiency in combustion engine process<br><br><u>Kirklees Council Measurable:</u><br>+ Average road speed<br>+AM/PM Queue times | NO <sub>2</sub> & PM                   | TBC                       |                           | The project is a UTMC improvement scheme within the AQMA and is a future project currently going through project planning phase<br><br>Funding sought from 2018 AQ Grant |
| <b>AQMA 3 Birchencliffe Actions</b> |   |                                     |                  |                      |   |  |                           |                           |  |
| AQMA3.1                             | A629 Road improvements as part of Halifax to Huddersfield Road Scheme | Kirklees Economy and Infrastructure | 2016             | 2020                 | <u>Kirklees Council Targets:</u><br>+ Reduction in queuing times and increased through flow<br>+ Increased capacity on the road<br>+ Redistribution of vehicles on network<br><br><u>Kirklees Council Measurable:</u><br>+ Average road speed<br>+AM/PM Queue times                 | NO <sub>2</sub> & PM                   | 2021                      |                           | The project is a highways improvement scheme within the AQMA and is currently at Business Case Stage   |

| Measure No. | Measure  | Lead Authority                      | Planning Phase | Implementation Phase | Targets / Indicator / Measurable  | Target Pollution Reduction in the AQMA | Estimated Completion Date | Further Data Requirements | Comments   |
|-------------|--|-------------------------------------|----------------|----------------------|---|--|---------------------------|---------------------------|--|
| AQMA3.2     | Assessment of Cycling Infrastructure between Ainley Top and Huddersfield Town Centre | Kirklees Economy and Infrastructure | 2019           | 2020                 | <p><u>West Yorkshire Target:</u><br/>Contribute to;<br/>+Sustainable travel mode increase from 36% in 2011 to 42% by 2026</p> <p><u>Kirklees Council Targets:</u><br/>Contribute to;<br/>+ Connect local towns and neighbouring districts with improved cycling and walking facilities<br/>+Increase cycling travel mode by 300% between 2018 baseline and 2030<br/>+Increase walking travel mode by 20% between 2018 baseline and 2030<br/>Improvement in facilities across the district for cycling and clear links between all towns within the district</p> <p><u>Kirklees Council Measurable:</u><br/>+ Construction of new Cycling Infrastructure within the district</p> | NO <sub>2</sub> & PM                   | 2021                      |                           | The project is a cycling / highways improvement scheme within the AQMA and is currently at Business Case Stage |

| Measure No.                       | Measure   | Lead Authority                          | Planning Phase   | Implementation Phase | Targets / Indicator / Measurable   | Target Pollution Reduction in the AQMA | Estimated Completion Date | Further Data Requirements | Comments  |
|-----------------------------------|---|---|------------------|----------------------|--|--|---------------------------|---------------------------|---|
| AQMA3.3                           | Feasibility into the development of System Activated Planned Cycles                               | Kirklees Highways UTC                   | Estimate 2019/20 | TBC                  | <p><u>West Yorkshire Target:</u><br/>Contribute to;<br/>+Sustainable travel mode increase from 36% in 2011 to 42% by 2026</p> <p><u>Kirklees Council Targets:</u><br/>Contribute to;<br/>+ Connect local towns and neighbouring districts with improved cycling and walking facilities<br/>+Increase cycling travel mode by 300% between 2018 baseline and 2030<br/>+Increase walking travel mode by 20% between 2018 baseline and 2030<br/>Improvement in facilities across the district for cycling and clear links between all towns within the district</p> <p><u>Kirklees Council Measurable:</u><br/>+ Average road speed<br/>+AM/PM Queue times</p> | NO <sub>2</sub> & PM                   | TBC                       |                           | The project is a UTMC improvement scheme within the AQMA and is a future project currently going through project planning phase   |
| <b>AQMA 4 Birkenshaw</b>          |   |   |                  |                      |  |  |                           |                           |   |
| AQMA4.1                           | Study into the impact of speed control along the national highway as an emissions reduction tool. | Environmental Health / Highways England | Estimate 2019/20 | TBC                  | <p><u>Kirklees Council Targets:</u><br/>+Work with Highways England to implement the recommendations of the study</p> <p><u>Kirklees Council Measurable:</u><br/>+Creation of a document that determines the impact of speed reduction on the motorway and best method to deliver emissions reduction</p>  | NO <sub>2</sub> & PM                   | TBC                       |                           | <p>Study into the impact of speed control along the national highway as an emissions reduction tool.</p> <p>This is a future project currently going through project planning phase</p> |
| <b>AQMA 5 Eastborough Actions</b> |   |   |                  |                      |  |  |                           |                           |   |

| Measure No. | Measure  | Lead Authority                      | Planning Phase | Implementation Phase | Targets / Indicator / Measurable  | Target Pollution Reduction in the AQMA | Estimated Completion Date   | Further Data Requirements | Comments   |
|-------------|--|-------------------------------------|----------------|----------------------|---|--|-----------------------------|---------------------------|--|
| AQMA5.1     | Free City Bus for Dewsbury Town Centre                     | Kirklees Economy and Infrastructure | 2005           | 2006                 | <p><u>West Yorkshire Target:</u><br/>+Sustainable travel mode increase from 36% in 2011 to 42% by 2026</p> <p><u>Kirklees Council Targets:</u><br/>+Increase bus patronage</p> <p><u>Kirklees Council Measurable:</u><br/>+ Number of passengers using service</p>                              | NO <sub>2</sub> & PM                   | Ongoing within the district |                           |  |
| AQMA5.2     | A640 Road improvements (Mirfield to Dewsbury)              | Kirklees Economy and Infrastructure | 2020           | Post 2021            | <p><u>Kirklees Council Targets:</u><br/>+ Reduction in queuing times and increased through flow<br/>+ Reduced stop / start driving style<br/>+ Increased efficiency in combustion engine process</p> <p><u>Kirklees Council Measurable:</u><br/>+ Average road speed<br/>+AM/PM Queue times</p> | NO <sub>2</sub> & PM                   | TBC                         |                           | <p>The project is a highways improvement scheme within the AQMA and is at very early stages.</p> <p>Pre outline business case stage</p>  |
| AQMA5.4     | Install Multi-node SCOOT onto traffic light system in AQMA | Kirklees Highways UTC               | 2018           | 2019                 | <p><u>Kirklees Council Targets:</u><br/>+ Reduction in queuing times and increased through flow<br/>+ Reduced stop / start driving style<br/>+ Increased efficiency in combustion engine process</p> <p><u>Kirklees Council Measurable:</u><br/>+ Average road speed<br/>+AM/PM Queue times</p> | NO <sub>2</sub> & PM                   | 2021                        |                           | <p>This is stage 1 of a multi stage improvement project with the aim to reduce emissions through the use of technology to improve flow at junctions. Other stages of the project are discussed in actions AQMA.5.5 and P.9</p> |

| Measure No.                    | Measure   | Lead Authority                      | Planning Phase   | Implementation Phase | Targets / Indicator / Measurable   | Target Pollution Reduction in the AQMA | Estimated Completion Date | Further Data Requirements | Comments  |
|--------------------------------|---|-------------------------------------|------------------|----------------------|--|--|---------------------------|---------------------------|---|
| AQMA5.5                        | Use "Virtual Emissions Monitoring Project" to determine operate UTC   | Kirklees Highways UTC               | 2018             | 2019                 | <p><u>Kirklees Council Targets:</u><br/> + Reduction in queuing times and increased through flow<br/> + Reduced stop / start driving style<br/> + Increased efficiency in combustion engine process</p> <p><u>Kirklees Council Measurable:</u><br/> + Average road speed<br/> +AM/PM Queue times</p> | NO <sub>2</sub> & PM                   | 2021                      |                           | Stage 2 of a multi stage Air Quality UTMC improvement project. Stage 3 contained within P.9 and awaiting funding        |
| AQMA5.6                        | Trial of Smart UTMC Technology systems within relevant AQMA's         | Kirklees Highways UTC               | Estimate 2019/20 | TBC                  | <p><u>Kirklees Council Targets:</u><br/> + Reduction in queuing times and increased through flow<br/> + Reduced stop / start driving style<br/> + Increased efficiency in combustion engine process</p> <p><u>Kirklees Council Measurable:</u><br/> + Average road speed<br/> +AM/PM Queue times</p> | NO <sub>2</sub> & PM                   | TBC                       |                           | <p>This is a future project currently going through project planning phase</p> <p>Funding sought from 2018 AQ Grant</p> |
| <b>AQMA 6 Edgerton Actions</b> |   |                                     |                  |                      |  |  |                           |                           |   |
| AQMA6.1                        | A629 Road improvements as part of Halifax to Huddersfield Road Scheme | Kirklees Economy and Infrastructure | 2016             | 2020                 | <p><u>Kirklees Council Targets:</u><br/> + Reduction in queuing times and increased through flow<br/> + Increased capacity on the road<br/> + Redistribution of vehicles on network</p> <p><u>Kirklees Council Measurable:</u><br/> + Average road speed<br/> +AM/PM Queue times</p>                 | NO <sub>2</sub> & PM                   | 2021                      |                           | Currently at Business Case Stage  |

| Measure No. | Measure   | Lead Authority        | Planning Phase   | Implementation Phase | Targets / Indicator / Measurable   | Target Pollution Reduction in the AQMA | Estimated Completion Date | Further Data Requirements | Comments  |
|-------------|---|-----------------------|------------------|----------------------|--|--|---------------------------|---------------------------|---|
| AQMA6.2     | Install Multi-node SCOOT onto traffic light system in AQMA          | Kirklees Highways UTC | 2018             | 2019                 | <p><u>Kirklees Council Targets:</u><br/> + Reduction in queuing times and increased through flow<br/> + Reduced stop / start driving style<br/> + Increased efficiency in combustion engine process</p> <p><u>Kirklees Council Measurable:</u><br/> + Average road speed<br/> +AM/PM Queue times</p> | NO <sub>2</sub> & PM                   | 2021                      |                           | This is stage 1 of a multi stage improvement project with the aim to reduce emissions through the use of technology to improve flow at junctions. Other stages of the project are discussed in actions AQMA.6.3 and P.9 |
| AQMA6.3     | Use "Virtual Emissions Monitoring Project" to determine operate UTC | Kirklees Highways UTC | 2018             | 2019                 | <p><u>Kirklees Council Targets:</u><br/> + Reduction in queuing times and increased through flow<br/> + Reduced stop / start driving style<br/> + Increased efficiency in combustion engine process</p> <p><u>Kirklees Council Measurable:</u><br/> + Average road speed<br/> +AM/PM Queue times</p> | NO <sub>2</sub> & PM                   | 2021                      |                           | Stage 2 of a multi stage Air Quality UTMC improvement project. Stage 3 contained within P.9 and awaiting funding  |
| AQMA6.4     | Trial of Smart UTMC Technology systems within relevant AQMA's       | Kirklees Highways UTC | Estimate 2019/20 | TBC                  | <p><u>Kirklees Council Targets:</u><br/> + Reduction in queuing times and increased through flow<br/> + Reduced stop / start driving style<br/> + Increased efficiency in combustion engine process</p> <p><u>Kirklees Council Measurable:</u><br/> + Average road speed<br/> +AM/PM Queue times</p> | NO <sub>2</sub> & PM                   | TBC                       |                           | This is a future project currently going through project planning phase<br><br>Funding sought from 2018 AQ Grant  |

| Measure No.                                     | Measure   | Lead Authority        | Planning Phase   | Implementation Phase | Targets / Indicator / Measurable   | Target Pollution Reduction in the AQMA | Estimated Completion Date | Further Data Requirements | Comments  |
|---|---|-----------------------|------------------|----------------------|--|--|---------------------------|---------------------------|---|
| <b>AQMA 7 Liversedge / Heckmondwike Actions</b> |   |                       |                  |                      |  |  |                           |                           |   |
| AQMA7.1   | Install Multi-node SCOOT onto traffic light system in AQMA          | Kirklees Highways UTC | 2018             | 2019                 | <p><u>Kirklees Council Targets:</u><br/> + Reduction in queuing times and increased through flow<br/> + Reduced stop / start driving style<br/> + Increased efficiency in combustion engine process</p> <p><u>Kirklees Council Measurable:</u><br/> + Average road speed<br/> +AM/PM Queue times</p> | NO <sub>2</sub> & PM                   | 2020                      |                           | This is stage 1 of a multi stage improvement project with the aim to reduce emissions through the use of technology to improve flow at junctions. Other stages of the project are discussed in actions AQMA.7.2 and P.9 |
| AQMA7.2   | Use "Virtual Emissions Monitoring Project" to determine operate UTC | Kirklees Highways UTC | 2018             | 2019                 | <p><u>Kirklees Council Targets:</u><br/> + Reduction in queuing times and increased through flow<br/> + Reduced stop / start driving style<br/> + Increased efficiency in combustion engine process</p> <p><u>Kirklees Council Measurable:</u><br/> + Average road speed<br/> +AM/PM Queue times</p> | NO <sub>2</sub> & PM                   | 2020                      |                           | Stage 2 of a multi stage Air Quality UTMC improvement project. Stage 3 contained within P.9 and awaiting funding  |
| AQMA7.3   | Trial of Smart UTMC Technology systems within relevant AQMA's       | Kirklees Highways UTC | Estimate 2019/20 | TBC                  | <p><u>Kirklees Council Targets:</u><br/> + Reduction in queuing times and increased through flow<br/> + Reduced stop / start driving style<br/> + Increased efficiency in combustion engine process</p> <p><u>Kirklees Council Measurable:</u><br/> + Average road speed<br/> +AM/PM Queue times</p> | NO <sub>2</sub> & PM                   | TBC                       |                           | This is a future project currently going through project planning phase<br><br>Funding sought from 2018 AQ Grant  |

| Measure No.                                    | Measure   | Lead Authority                                   | Planning Phase   | Implementation Phase | Targets / Indicator / Measurable   | Target Pollution Reduction in the AQMA | Estimated Completion Date   | Further Data Requirements | Comments   |
|--|---|--|------------------|----------------------|--|--|-----------------------------|---------------------------|--|
| <b>AQMA 8 Outlane</b>                          |   |  |                  |                      |  |  |                             |                           |  |
| AQMA6.1  | Study into the impact of speed control along the national highway as an emissions reduction tool. | Kirklees Environmental Health / Highways England | Estimate 2019/20 | TBC                  | <u>Kirklees Council Targets:</u><br>+Work with Highways England to implement the recommendations of the study<br><br><u>Kirklees Council Measurable:</u><br>+Creation of a document that determines the impact of speed reduction on the motorway and best method to deliver emissions reduction | NO <sub>2</sub> & PM                   | TBC                         |                           | Study into the impact of speed control along the national highway as an emissions reduction tool.<br><br>This is a future project currently going through project planning phase |
| <b>AQMA 9 Huddersfield Town Centre Actions</b> |   |  |                  |                      |  |  |                             |                           |  |
| AQMA9.1  | Free City Bus for Huddersfield Town Centre  | Kirklees Economy and Infrastructure              | 2005             | 2006                 | <u>West Yorkshire Target:</u><br>+Sustainable travel mode increase from 36% in 2011 to 42% by 2026<br><br><u>Kirklees Council Targets:</u><br>+Increase bus patronage<br><br><u>Kirklees Council Measurable:</u><br>+ Number of passengers using service   | NO <sub>2</sub> & PM                   | Ongoing within the district |                           |  |
| AQMA9.2  | Huddersfield Heat Network Scheme  | Kirklees Economy and Infrastructure              | 2018             | 2020                 | <u>Kirklees Council Target:</u><br>+Contribute towards targets set by Climate Emergency Work Group<br><br><u>Kirklees Council Measurables:</u><br>+Number of boilers removed<br>+ CO <sub>2</sub> reductions   | NO <sub>2</sub> & PM                   | 2022                        |                           | Currently at Business Case Stage   |
| AQMA9.3  | Resource Smart Corridor   | Kirklees Economy and Infrastructure              | 2015             | 2019/20              | <u>Kirklees Council Targets:</u><br>+ Reduction in queuing times and increased through flow<br>+ Increased capacity on the road<br>+ Redistribution of vehicles on network<br><u>Kirklees Council</u>  | NO <sub>2</sub> & PM                   | 2021                        |                           | Currently at Business Case Stage   |

| Measure No. | Measure   | Lead Authority                      | Planning Phase | Implementation Phase | Targets / Indicator / Measurable  | Target Pollution Reduction in the AQMA | Estimated Completion Date | Further Data Requirements | Comments                    |
|-------------|---|-------------------------------------|----------------|----------------------|---|--|---------------------------|---------------------------|-----------------------------|
|             |   |                                     |                |                      | <u>Measurable:</u><br>+ Average road speed<br>+AM/PM Queue times  |  |                           |                           |                             |
| AQMA9.4     | Huddersfield Southern Gateway Transport Scheme                                  | Kirklees Economy and Infrastructure | 2018           | 2021                 | <u>Kirklees Council Targets:</u><br>+ Reduction in queuing times and increased through flow<br>+ Increased capacity on the road<br>+ Redistribution of vehicles on network<br><br><u>Kirklees Council Measurable:</u><br>+ Average road speed<br>+AM/PM Queue times   | NO <sub>2</sub> & PM                   | 2022                      |                           | At Full Business Case Stage |
| AQMA9.5     | Huddersfield Ring Road Junction Improvements                                    | Kirklees Economy and Infrastructure | 2018           | 2021                 | <u>Kirklees Council Targets:</u><br>+ Reduction in queuing times and increased through flow<br>+ Reduced stop / start driving style<br>+ Increased efficiency in combustion engine process<br><br><u>Kirklees Council Measurable:</u><br>+ Average road speed<br>+AM/PM Queue times   | NO <sub>2</sub> & PM                   | 2022                      |                           | At Full Business Case Stage |
| AQMA9.6     | Feasibility Study in to Pedestrianizing Areas of Town Centre for Cycling Access | Kirklees Economy and Infrastructure | 2019           | 2021                 | <u>West Yorkshire Target:</u><br>Contribute to;<br>+Sustainable travel mode increase from 36% in 2011 to 42% by 2026<br><br><u>Kirklees Council Targets:</u><br>Contribute to;<br>+ Connect local towns and neighbouring districts with improved cycling and walking facilities<br>+Increase cycling travel mode by 300% between 2018 baseline and 2030<br>+Increase walking travel mode by 20% between | NO <sub>2</sub> & PM                   | TBC                       |                           |                             |

| Measure No. | Measure   | Lead Authority        | Planning Phase | Implementation Phase | Targets / Indicator / Measurable   | Target Pollution Reduction in the AQMA | Estimated Completion Date | Further Data Requirements | Comments   |
|-------------|---|-----------------------|----------------|----------------------|--|--|---------------------------|---------------------------|--|
|             |   |                       |                |                      | 2018 baseline and 2030 Improvement in facilities across the district for cycling and clear links between all towns within the district<br><br><u>Kirklees Council Measurable;</u><br>+ Creation of a document cost analysing benefits of pedestrianizing / cycling only in town centre areas |  |                           |                           |  |
| AQMA9.7     | Trans-Pennine Express Improvement Scheme                            | WYCA                  | 2018           | 2019                 | <u>West Yorkshire Target:</u><br>Contribute to;<br>+Sustainable travel mode increase from 36% in 2011 to 42% by 2026<br><br><u>Kirklees Council Measurable;</u><br>+Number of rail passengers  | NO <sub>2</sub> & PM                   | 2024                      |                           | Currently at Business Case Stage   |
| AQMA9.8     | Use "Virtual Emissions Monitoring Project" to determine operate UTC | Kirklees Highways UTC | 2018           | 2019                 | <u>Kirklees Council Targets:</u><br>+ Reduction in queuing times and increased through flow<br>+ Reduced stop / start driving style<br>+ Increased efficiency in combustion engine process<br><br><u>Kirklees Council Measurable;</u><br>+ Average road speed<br>+AM/PM Queue times          | NO <sub>2</sub> & PM                   | 2021                      |                           | Stage 2 of a multi stage Air Quality UTMC improvement project. Stage 3 contained within P.9 and awaiting funding |
| AQMA9.9     | Input into the  | Kirklees              | 2019           | 2020                 | <u>Kirklees Council Targets;</u>   | NO <sub>2</sub> & PM                   | 2021                      |                           |  |

| Measure No.                           | Measure   | Lead Authority                      | Planning Phase   | Implementation Phase | Targets / Indicator / Measurable   | Target Pollution Reduction in the AQMA | Estimated Completion Date | Further Data Requirements | Comments   |
|---------------------------------------|---|-------------------------------------|------------------|----------------------|--|--|---------------------------|---------------------------|--|
|                                       | development of the Town Centre Master Plan                    | Environmental Health                |                  |                      | +Inclusion of Air Quality within the Town Centre Master Plan Document<br><br>Contribute towards targets for planning;<br>+ Number of E.V chargers installed within new developments<br>+Predicted monetary damage compared against mitigation spend / Section 106 contributions<br><br><u>Kirklees Council Measurables:</u><br>+ Number of E.V chargers within the town centre<br>+ Section 106 money spent on town centre AQ improvements |  |                           |                           |  |
| AQMA9.10                              | Trial of Smart UTMC Technology systems within relevant AQMA's | Kirklees Highways UTC               | Estimate 2019/20 | TBC                  | <u>Kirklees Council Targets:</u><br>+ Reduction in queuing times and increased through flow<br>+ Reduced stop / start driving style<br>+ Increased efficiency in combustion engine process<br><br><u>Kirklees Council Measurable:</u><br>+ Average road speed<br>+AM/PM Queue times  | NO <sub>2</sub> & PM                   | TBC                       |                           | This is a future project currently going through project planning phase<br><br>Funding sought from 2018 AQ Grant |
| <b>AQMA 10 Thornton Lodge Actions</b> |   |                                     |                  |                      |  |  |                           |                           |  |
| AQMA10.1                              | Huddersfield Southern Gateway Transport Scheme                | Kirklees Economy and Infrastructure | 2018             | 2021                 | <u>Kirklees Council Targets:</u><br>+ Reduction in queuing times and increased through flow<br>+ Increased capacity on the road<br>+ Redistribution of vehicles on network<br><br><u>Kirklees Council Measurable:</u><br>+ Average road speed  | NO <sub>2</sub> & PM                   | 2022                      |                           | At Full Business Case Stage  |

| Measure No. | Measure   | Lead Authority        | Planning Phase   | Implementation Phase | Targets / Indicator / Measurable   | Target Pollution Reduction in the AQMA | Estimated Completion Date | Further Data Requirements | Comments   |
|-------------|---|-----------------------|------------------|----------------------|--|--|---------------------------|---------------------------|--|
|             |   |                       |                  |                      | +AM/PM Queue times   |  |                           |                           |  |
| AQMA10.2    | Install Multi-node SCOOT onto traffic light system in AQMA          | Kirklees Highways UTC | 2018             | 2019                 | <p><u>Kirklees Council Targets:</u><br/> + Reduction in queuing times and increased through flow<br/> + Reduced stop / start driving style<br/> + Increased efficiency in combustion engine process</p> <p><u>Kirklees Council Measurable:</u><br/> + Average road speed<br/> +AM/PM Queue times</p> | NO <sub>2</sub> & PM                   | 2020                      |                           | This is stage 1 of a multi stage improvement project with the aim to reduce emissions through the use of technology to improve flow at junctions. Other stages of the project are discussed in actions AQMA.10.3 and P.9 |
| AQMA10.3    | Use "Virtual Emissions Monitoring Project" to determine operate UTC | Kirklees Highways UTC | 2018             | 2019                 | <p><u>Kirklees Council Targets:</u><br/> + Reduction in queuing times and increased through flow<br/> + Reduced stop / start driving style<br/> + Increased efficiency in combustion engine process</p> <p><u>Kirklees Council Measurable:</u><br/> + Average road speed<br/> +AM/PM Queue times</p> | NO <sub>2</sub> & PM                   | 2020                      |                           | Stage 2 of a multi stage Air Quality UTMC improvement project. Stage 3 contained within P.9 and awaiting funding   |
| AQMA10.4    | Trial of Smart UTMC Technology systems within relevant AQMA's       | Kirklees Highways UTC | Estimate 2019/20 | TBC                  | <p><u>Kirklees Council Targets:</u><br/> + Reduction in queuing times and increased through flow<br/> + Reduced stop / start driving style<br/> + Increased efficiency in combustion engine process</p> <p><u>Kirklees Council Measurable:</u><br/> + Average road speed<br/> +AM/PM Queue times</p> | NO <sub>2</sub> & PM                   | TBC                       |                           | <p>This is a future project currently going through project planning phase</p> <p>Funding sought from 2018 AQ Grant</p>  |

**Appendix A - Response to Consultation**

**Appendix A, Part 1 – Consultee response Overview**

Table A.1 contains a list of consultee types and reference to specific consultation responses, which have been collated and recorded within Appendix A, part 2.

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

| <b>Category</b>     | <b>Reference</b> |
|---------------------|------------------|
| Local Councillor    | Response A1      |
| Local Councillor    | Response A2      |
| Local Councillor    | Response A3      |
| Local Councillor    | Response A4      |
| Town Council        | Response A5      |
| NHS Trust           | Response A6      |
| Local Business      | Response A7      |
| Local Business      | Response A8      |
| Local Civic Society | Response A9      |
| Local Resident      | Response A10     |
| Local Resident      | Response A11     |
| Local Resident      | Response A12     |
| Local Resident      | Response A13     |
| Local Resident      | Response A14     |
| Local Resident      | Response A15     |
| Anonymous           | Response A16     |
| Anonymous           | Response A17     |
| Anonymous           | Response A18     |

**Appendix A, Part 2 – Consultee responses**

**Response A1**

Some brief points to note,

If the aim of this is to encourage people onto public transport, there has to be public transport that works. Currently there are infrequent and unreliable bus services in my ward. These also seem very expensive so put off working people, as it is far easier, cheaper and quicker to drive.

I also think that there are different challenges across the very different areas within Kirklees. The area I represent is rural and therefore the car is seen as a necessity. Perhaps for people in more urban parts of the district it may be possible to look at public transport as an alternative. The other thing of course is that in the more rural areas, air quality is much less of an issue, because we do not have huge amounts of traffic jams, etc.

Not quite sure what Kirklees can do to encourage people to work at home. This is down to employers. On an infrastructure front, clearly to make this possible, there needs to be high quality, low cost, reliable fibre broadband across the region. Moreover there needs to be a recognition that almost everyone with a job will have an employer who has a policy on whether or not it is permissible to work remotely. It even goes as far as within one organisation having different managers with different opinions on remote working, so clearly there is a challenge here in getting this moving effectively. There are, of course, many jobs that it is not possible to do unless you are physically in the building.

Hope these brief, initial observations are helpful

**Response A2**

I have read the Action Plan which Aidan Hopson shared with us as Councillors. I have not filled in the pro forma feedback form as I am not sure exactly where my comments should lie. I represent the Kirkburton ward and we do not currently have any AQMA in my ward, however I do think there are some shortcomings in the overall strategy which should be addressed.

G65 talks about promoting and incentivising people to work at home and so reduce commuting miles. I fully support this but see nothing in Kirklees's broader economic plans that would support this in the rural south of Huddersfield, there is no planned investment or strategy for these areas. For example, the gigabit proposals for City Fibre focus only on the urban areas where there is reasonable public transport provision, this does not extend to areas such as mine, so people are expected to

commute to access the gigabit provision in our town or further afield, Manchester, Leeds, Sheffield.

I know from local knowledge that most people in this patch commute and do so using public transport and so no doubt contribute to the air quality issues in places like Huddersfield Town Centre, Bradley, Dewsbury etc.

This links to my second point is the failure to recognise in the strategy the role that can be played by public transport provision in the rural south to counteract commuting. We have a train line which is not recognised in the plans (Pennine Line is) and yet an improved service could reduce the traffic heading into Huddersfield from the South. Bus provision is another omission in my mind, as an example the current bus service from my village, Shepley, into Huddersfield takes between 50 minutes & an hour not because of traffic congestion but because of the convoluted route that it takes. I can get into Huddersfield by car in 15-120 minutes even at peak times, so the poor bus provision in the area is actually forcing people to commute by car and so contribute to the congestion and poor air quality in town and on the commuter routes to Leeds.

I would like to see these points acknowledged in the action plan as it seems to suggest that South Huddersfield, which does not have a AQMA is therefore not a contributory factor to the problems we face and I would dispute this and suggest the lack of strategies for this area are contributing to problems elsewhere.

### **Response A3**

Have looked at the action plan and table for Birkenshaw. There is very little information for Birkenshaw other than stating the zone. No schemes are listed as part of the plan that would help the problems in Birkenshaw at all. The item that research is going to be done to help with integration of local plan is going to be too late for us in Birkenshaw as planning requests are currently being put in for development of houses next to the air quality action zone. This would mean over 300 houses extra next to the zone. Nor is there anything about working with Highways England re the motorway. Nor is there anything any connections to the proposed Bradford link road, or the extra houses planned by Bradford that would impact on our roads. Surely there should be something in the action plan about working with neighbouring councils on assuring that the effects of development do not increase the problems with air quality.

I cannot see a very definite link to health or the JSA in the plan. There are some generic statements but nothing about health conditions in the areas of the zones. Why not? Better Linkages should be made to health inequalities.

### **Response A4**

**Did you find the document clear to understand?:** Not really - Exec summary was far too short but included preamble, whilst the full report was too long !

**What are your thoughts on the targets set out within the document?:** Fine

**What are your thoughts on the actions presented within the table?:** Fine

**Are there any areas/specific projects you feel have not been covered as part of the plan?:** It would have been good to have identified and acknowledged other areas in Kirklees where there are air quality concerns and perhaps to have given pollution readings - and to have a plan showing how they will be monitored and to introduce reduction measures at these locations too.

**Are there any other comments you wish to make relating to Air Quality or this Action plan?:** The work focuses on locations where readings are high - is there also a need to look at air quality for people who spend long times on or near our road network - i.e. professional drivers, Street / Place workers (e.g. School Crossing Patrol), utility workers etc, and to give advice.

### Response A5

The following motion was resolved at our meeting 2nd July 2019 regarding the above:

MTC52/2019 (2)

Cllr Naisbett Proposed MTC send the following response to Kirklees: MTC are concerned that the last survey in 2017 may be incorrect. There is currently no data to say what the air pollution could be if the Cooper Bridge Link goes ahead. All roads out of and in to Mirfield are congested at Peak times with excessive queue lengths. From Mirfield's perspective the air quality is lamentable in Mirfield and the report shows unrealistic length of traffic flow i.e. Norristhorpe Lane – Sunnybank 2.41 minutes. MTC believe the Local Plan will have significant impact on traffic from Cooper Bridge to Dewsbury Riverside, with no reference in the report of proposed developments within the Local Plan, which could have a significant impact on air quality within Mirfield. MTC are concerned that there is sensory equipment within the AQMA areas but not in areas not in AQMA, which will not show how levels have changed since the report was conducted. MTC believes Kirklees to be disingenuous with journey times and queue lengths within Mirfield. MTC would also request Kirklees look at natural means of absorbing noxious substances like moss walls Cllr Guy Seconded Vote: All in favour

### Response A6

**Did you find the document clear to understand?:** Yes

**What are your thoughts on the targets set out within the document?:** There's no specific numerical targets, just the primary or secondary pollutant.

**What are your thoughts on the actions presented within the table?:** They do not seem to be prioritised in terms of actions that will have the greatest impact, a timeline for achieving targets. Table is quite confusing as some actions are older/expired.

**Are there any areas/specific projects you feel have not been covered as part of the plan?:** No

**Are there any other comments you wish to make relating to Air Quality or this Action plan?:** Calderdale and Huddersfield NHS Foundation Trust will be updating the Sustainable Development Action Plan, and air quality actions will be included. We are also looking to provide more provision for electric vehicles and tendering for new fleet, specifying minimum of hybrid vehicles.

New Environment Manager in place since May 2019

### **Response A7**

#### **Introduction**

Consulting With Purpose Ltd. (CWP) are primarily Sustainability, Renewable Energy, Waste to Energy, Standardisation, Certification and Accreditation, Policy and Regulations Consultancy based in Huddersfield. Our CEO also is a shareholder in a wind energy company based in Kirklees.

Our experience of Air Quality comes mainly through our work on electric and heating networks and transportation. We have advised Kirklees Council on a number of projects over the years, including the provisions for a heat network and on eco-industrial parks, a for runner to the circular economy discussions.

#### **Responsibilities and Commitments**

The council commit to reviewing the AQAP annually, appraisal of progress and reporting to the relevant Council Committee. However, in the introduction there appears to be a 5 year review period in the worst case. We would like the council to commit to an annual review and integrate this with the Climate Emergency Motion commitments in as much as improving air quality and reducing the Carbon Dioxide Equivalent Emissions (CO<sub>2</sub>e) go hand in hand.

#### **Consultation and Stakeholder Engagement**

From the Table 4.1 it is unclear whether due process of consultation has fully been achieved at this stage. E.g. There is no confirmation whether the stakeholders have been consulted with or not – as there is no ‘yes’ or ‘no’ indicated in the table.

We note that Huddersfield Town Centre has moved wards into Netherton, given this is the ward our company resides in and is an important ward, it would be helpful that the document specifies the ward correctly.

### **Source Apportionment and Emission Reduction Activities**

The consultation document highlights some 67 measure in table ? on pages 21-34, which many are due for implementation. Are there targets against these strategies? And for those that have been implemented for a while the document does not confirm how successful they have been at changing behaviour or reducing emissions. It would have been useful to see that information as part of the consultation to see how well the council implements measures, given the vast number that are now being proposed.

### **Electric and Alternative Fuel Vehicles**

In figure 6.2 – Average AQMA Source Apportionment Fuel Composition you have 12 categories of vehicle by fuel and yet only 6 segments on the graph. There is no percentage figures and no identification of what the other categories represent in terms of emissions apportionment. This does not allow for easy engagement with the data.

Your assertion is that the predominant emissions from within the 9 AQMAs are from domestic diesel vehicles or diesel Light Goods Vehicles (LGVs). Have the emissions from Plug-in Hybrid Vehicles (PHEV), Full Hybrid Diesel Cars (FHDC) and Full Hybrid Petrol Vehicles (FHPC) been evaluated against their use in electric mode, to establish if promoting and establishing low emissions zones or other such measures will be effective with hybrid vehicles as opposed to battery only versions? We see this as an issue, not only in establishing the Battery Electric Vehicle (BEV) in the market for light vehicles of all types but also as a potential lost opportunity to move away from fossil fuels in the district.

For instance, if the Council were to decide to develop a utility scale Renewable Energy company, then moving the demand away from fossil fuels and towards electric charging from locally sourced renewable energy could provide bigger benefits than moving vehicles from fossil fuel only to hybrid. These kinds of a policy decisions by the Authority could easily benefit cleaner transportation and green jobs through infrastructure development and sustainable employment in the motor trades.

Further concentration should also be made in developing strategies and policies that stimulate the use of alternative fuels (electric and hydrogen) for other types of road transport. While these markets are embryonic and limited at the moment, Kirklees

could potentially lead by example and work with the anchor organisations in the district to stimulate the demand through providing a pilot hydrogen fuelling station.

None of the above takes away from the clear policy of reducing transport movements by private and commercial vehicles, which we note is a clear policy direction.

It is noted, that the document states, there are already BEV charge point across the Kirklees district, which have been part of the Kirklees previous activities. Being an Electric Vehicle driver, it would be useful to understand where these are, their charge rates and if they are available to non-Kirklees Council employees as we have not seen any such charge points in Kirklees?

We understand that the council as part of the West Yorkshire Combined Authority (WYCA) are to receive a number of rapid charge points in the district. Rapid charge points are generally considered to be greater than 50kWh. With the increased battery capacity of BEV the lower rated rapid charge points may not be fast enough for some motorists.

We would also urge the council to consider the dwell-time of those using the charge points in key locations, such as, surrounding the town centres, as reliance on rapid charge points may distort the effects of dwell-time in areas the Council is already trying to regenerate with major investments and infrastructure projects. E.g. having rapid charge points with 45-minute charge limits in areas where the experience would better be suited to 2-4 hour dwell-times. While these are not directly Air Quality issues, the impact of air quality policies and drivers may have a significant effect on other Council strategies.

If the council provide dedicated electric vehicle charge points (EVPs) in the district for taxis, that then use them with hybrid cars (see above), the emissions benefit will be diminished substantially against the requirement for BEV taxis. There are a number of geographic locations and taxi firms where taxi fleets are all BEV and we would encourage the council to ensure that the taxi fleets in Kirklees are '*nudged*' into using BEV and not PHEV vehicles. Range cannot be used as an excuse for taxis to be PHEV any longer.

It would be useful to understand how many vehicles are registered in Kirklees and how many enter Kirklees on a regular basis for work and other activities. Relating this over the five year period would be useful in evaluating the impacts from the reduction of vehicles in favour of public transport and in the changing mix of drivetrains being used.

While we assume pure (BEV) are not categorised on figure 6.2 chart due to the low volume and the fact that they do not give of NO<sub>x</sub>, it would be useful to understand the PM<sub>2.5</sub> and PM<sub>10</sub> starting point for all vehicles given that there is a significant discussion with regards to the potential emissions reduction not being achieved even

if we move to more BEVs. Has the council any data to quantify the emissions from tyres and brakes as a baseline?

If we are to rapidly increase the use of BEV vehicles at all scales and for all logistical requirements, it would also be helpful if the council provide the strong 'nudge' stimulus for commercial and public vehicles to utilise these technologies. Therefore, strategies for having deliveries with BEV vehicles could not only ensure lower emissions but could also help with the Huddersfield Town Centre (HTC) regeneration by providing quite deliveries at night, thereby not disturbing residents.

We applaud the free parking scheme for BEV vehicles around our towns and would ask as part of the WYCA and WYLES programmes that this be integrated into a broader region wide scheme that allows vehicles to park not just in Kirklees but also the whole of the Leeds City Region. This would help stimulate the uptake of BEV vehicles commuting and business in general.

### **Clean Air Zones (CAZ)**

While we appreciate that Kirklees has not been allocated as a Clean Air Zone under the government funding schemes, we have a concern that the CAZ in Leeds could have a detrimental effect on Kirklees public transport emissions by moving the less efficient vehicles out to Kirklees. Kirklees should be looking for and expecting the same emissions reducing vehicles as on our roads as in the formal CAZ.

What evaluation of measure to introduce a CAZ have been made for Kirklees main towns? It would be useful to understand that evaluation as part of the consultation exercise.

As an interim measure we would suggest the implementation of no idling zones around key establishments and emissions hot spots, particularly around schools and areas where vulnerable people are.

### **Cycling and Walking**

While we note a number of good initiatives for increasing walking and cycling and we note the emphasis on these in the recently published Huddersfield Town Transformation, these will only be accepted if there are safe routes and safe cycle storage. It should also be recognised that many of our public services do not serve our rural communities well and therefore lead to more private car and taxi use. Making it easy to get a bus stop, having reliable transport, in a timely manner and at times needed throughout the day will be a crucial aspect of persuading people to walk to the public transport. From the position of using rail and bus as part of a journey, it will be necessary to have more access to bike facilities on the trains and buses.

Better still, having a bike borrow scheme in the town centres would encourage more cycling within the towns and to outlying flat areas. Another aspect of cycling would be to have an ability to have more than one cycle as they have in the Netherlands and to some extent in London where cycle parks at bus and train stations facilitate the ability to commute on a bus or train and then take your bike to the final destination or vice versa.

However, that only works if the costs are perceived to be commensurate with the journey.

Given our geographic location, for many that could walking and cycling are not perceived as such a great option and while encouraging these forms of mobility for many good reasons, such as, health and wellbeing, there needs to be a recognition as to how to enable people to do this without making them feel guilty or disenfranchised.

We support the idea of “quiet routes” and providing more space for parking bikes securely. However, going up some of our big hills and travelling to the further reaches of the district need to be considered in terms of single trip access for bikes, to allow people to start with taking short journeys on foot and using public transport and building up to more strenuous activity. Riding downhill is great, even with a pannier of documents or shopping but getting back up again is much more daunting and restricting.

We would support additional supplementary planning guidance requiring more funds to go to linking any new development with cycle routes and for the council to have a strategy that includes developing the networks into an integrated transport mode between towns and new developments.

### **Response A8**

#### **1. Introduction**

We welcome the draft five-year Air Quality Action Plan (AQAP) for Kirklees. Progress on air quality has been slow since the publication of the West Yorkshire Low Emission Strategy in 2015.

To successfully combat poor air quality will require a range of local actions, some of which will take time to implement. It is clear that West Yorkshire Combined Authority (WYCA) through City Connect is gradually implementing or a programme of measures to increase the infrastructure for cycling but there is a lack of urgency in the draft AQAP. We need to see continued increase in the proportion of trips made by walking and cycling and by public transport. Similarly we need to accelerate the adoption of ultra low carbon vehicles and the measures employed to date have not resulted in significant take up.

Nationally the conditions are not all favourable to reducing pollution from motor vehicles and many of the trends are in the wrong direction. Use of the bus is declining; costs of public transport continued to increase faster than the cost of motoring; new petrol and diesel cars sold in 2018 had emission ratings than in 2017, (Note 1). These trends illustrate how the government has failed to create conditions for a growth in walking, cycling and public transport use.

### 2. Clean Air Zones (CAZ)

We would like to see a more detailed analysis of the use of Clean Air Zones (CAZ) in the AQAP, even if initially it is established as an *Advisory* CAZ. We believe that the introduction of a large zone in Leeds from spring 2020 will make this proposal increasingly relevant to promote clean air in Kirklees.

We also propose the use of **no idling** bans in streets close to school gates. Initially this could be established at the most polluted of Kirklees schools to demonstrate how to enforce such a ban.

### 3. Modal shift

There is a need to measure progress in achieving modal shift on all local journeys as part of setting long term targets. Our aim should be to expand cycling and walking and use of public transport and reduce the number of trips by private car.

The adoption of targets for cycling, public transport and car use for the relevant travel to work areas for 2024 and 2029 would help to demonstrate that progress is being made.

### 4. Cycling and walking

We want to see more recognition of **cycling as a transport mode**, particularly in the flatter areas (e.g. into Huddersfield from valleys, using new “quiet routes” alongside A629 to Lindley and links into town from Dewsbury, Mirfield and Brighouse using routes that parallel the Leeds Road/Huddersfield Broad canal.) This will require effective links from/to Huddersfield town centre (railway station, civic centre) across or under the ring road, to integrate the main feeder routes.

Delivering an integrated cycling and walking strategy, which builds on the successful greenways, needs to be more clearly shown as a strategic element of the 5-year plan.

We propose a planning requirement (supplementary planning guidance) for developers to fund the **links from new housing to cycling and walking routes**.

In planning new housing the cycling, walking and public transport links are often not future proofed. Growth in car ownership in new developments can only be arrested by a series of improvements in the alternative travel options.

**More secure cycle storage** for people working or studying or attending events in the major towns is needed to encourage cycle use, particularly e-bikes. Parking on street is also now possible for cycles using existing car parking spaces – showing that bikes are also road users and a transport mode.

**Support for schools in developing and implementing travel plans** is no longer available and is increasingly desirable. Kirklees Council needs to partner with voluntary sector organisations to secure funds for promoting cycling, wider use of e-bikes and cycle maintenance in schools from bodies such as UK Cycling.

### 5. Traffic reduction/public transport

By promoting modal integration we can encourage **traffic reduction**. Effective use of bus and rail needs more facilities for multi-modal travel – through expanding **Park and Ride (P&R)** – and better integration of modes.

In Kirklees one way this could be achieved is a commitment to expanding use of rail (which itself needs key investment decisions made by Network Rail, WYCA and South Yorkshire authorities) and by expanding car parking and secure bike parking at selected railway stations.

In particular the potential of the **Penistone Line** to reduce car traffic travelling into Huddersfield has been ignored consistently by Kirklees Council and WYCA. Its potential is that much greater if the frequency is increased and the use of P&R made possible.

To increase passenger numbers is a long-term objective as it would require investment in track and rolling stock to permit half hour services. Land would be required at stations for increased parking (e.g. at Honley). Its potential contribution to the local economy and environment has regularly been demonstrated by the Huddersfield, Pensitone and Sheffield Rail Users Assocation (HPSRUA)

There is also a need for expanded services on trains on the Transpennine stations in Kirklees (e.g to allow more cycles to be carried).

### 6. Cleaner vehicles

The plan lacks a comprehensive strategy to encourage mainstream adoption of ultra low emission vehicles (ULEVs). A future plan for **recharging points** is not spelt out.

Kirklees Council adoption of ULEVs is welcome but we need to encourage **fleet users to work together to adopt** more use of ULEVs (e.g. NHS Trusts, University of Huddersfield, larger local private sector operators).

**All taxi and Private Hire (PH) vehicles** need to be cleaner by 2023 and progressively improved. Use of diesel vehicles as taxis and private hire should be phased out by 2025. A progressive policy of reducing fees for ULEVs and raising them for polluting diesels would assist this policy. In addition the taxi owners will

need help from the licensing authority in promoting the business case for hybrids and ULEVs (as undertaken by Leeds City Council).

Given the effect of motorway traffic on air quality, it is noticeable that support for the AQAP has not been offered by Highways England.

**The free car parking** concession for ULEVs on streets and sites managed by Kirklees Council needs effective promotion to make more people aware of this facility, which will encourage more people to switch to fully electric.

**Local householders without parking on site** cannot charge at home. We would like to see proposals to support such households to switch to ULEVs through the use of on-street recharging (e.g. through lighting columns).

### 7. Adopting the plan

**The monitoring of AQ in all Kirklees Council policy decision** needs urgent adoption at committee level along with **Climate Emergency**. The AQAP does not yet acknowledge the implications of the climate emergency stance of Kirklees and WYCA.

#### Note 1

**Campaign for Better Transport has reported on** declining bus use outside London and continuing increases in the costs of bus and rail travel which has increased faster than the cost of motoring

**Transport & Environment** (June 2019) Rising CO2 emissions a problem of carmakers own making as they push SUVs but hold back electric cars

#### Response A9

##### 1. Introduction

We welcome the draft five-year Air Quality Action Plan (AQAP) for Kirklees. Progress on air quality has been slow since the publication of the West Yorkshire Low Emission Strategy in 2015. Action to improve air quality is measurable, but only if a performance measurement methodology is put in place. We recommend that this includes agreed targets; baselines; monitoring frequency; inputs and outputs. We also recommend a higher level of Council-led public engagement regarding the results of air quality monitoring. The likelihood of public support (and action) will be increased through transparent communication of trends. To successfully combat poor air quality will require a range of local actions, some of which will take time to implement. It is clear that West Yorkshire Combined Authority through City Connect is gradually implementing a programme of measures to increase the infrastructure for cycling but there is a lack of urgency in the draft AQMA plan. We need to see continued increase in the proportion of trips made by walking and cycling and by public transport. Similarly we need to accelerate the adoption of ultra low carbon vehicles and the measures employed to date have not resulted in significant take up. Nationally the conditions are not all favourable to reducing pollution from motor vehicles and many of the trends are in the wrong direction. Use of the bus is declining; costs of public transport continued to increase faster than the cost of

motoring; new petrol and diesel cars sold in 2018 had higher emission ratings than in 2017. These trends illustrate how the government has failed to create conditions for a growth in walking, cycling and public transport use - making even more important that local authorities take decisive action using the powers available to them.

### 2. Clean Air Zones (CAZ)

We would like to see a more detailed analysis of the use of Clean Air Zones (CAZ) in the AQAP, even if initially it is established as an *Advisory CAZ*. We believe that the introduction of a large zone in Leeds from spring 2020 will make this proposal increasingly relevant to promote clean air in Kirklees. We also propose the use of **no idling** bans in streets close to school gates. Initially this could be established at the most polluted of Kirklees schools to demonstrate how to enforce such a ban. Traffic idling is already illegal on public roads. We recommend that the Council communicates this and enforces it through traffic wardens.

### 3. Modal shift

There is a need to measure progress in achieving modal shift on all local journeys as part of setting long term targets. Our aim should be to expand cycling and walking and use of public transport and reduce the number of trips by private car. The adoption of targets for 2024 and 2029 would help to demonstrate progress.

### 4. Cycling and walking

We want to see more recognition of **cycling as a transport mode**, particularly in the flatter areas (e.g. into Huddersfield from valleys, using new “quiet routes” alongside A629 to Lindley and links into town from Dewsbury, Mirfield and Brighouse using routes that parallel the Leeds Road/Huddersfield Broad canal.) This will require effective links from/to Huddersfield town centre (railway station, civic centre) across or under the

ring road, to integrate the main feeder routes. Delivering an integrated cycling and walking strategy, which builds on the successful greenways, needs to be more clearly shown as a strategic element of the 5-year plan.

We propose a planning requirement (supplementary planning guidance) for developers to fund the **links from new housing to cycling and walking routes**. In planning new housing the cycling, walking and public transport links are often not future proofed. Growth in car ownership in new developments needs can only be arrested by a series of improvements in the alternative travel options.

**More secure cycle storage** for people working or studying or attending events in the major towns is needed to encourage cycle use, particularly ebikes. Parking on street is also now possible for cycles using existing car parking spaces – showing that bikes are also road users and a transport mode.

**Support for schools in developing and implementing travel plans** is no longer available and is increasingly desirable. Kirklees Council needs to partner with voluntary sector organisations to secure funds for promoting cycling, wide use of e-bikes and cycle maintenance in schools from bodies such as UK Cycling.

### 5. Traffic reduction/public transport

By promoting modal integration we can encourage **traffic reduction**. Effective use of bus and rail needs more facilities for multi-modal travel – largely through expanding **park and ride**. In Kirklees this could be achieved by expanding use of rail (which itself

needs key investment decisions made by Network Rail, WYCA and South Yorkshire authorities) and by expanding car parking and secure bike parking at selected railway stations

In particular the potential of the **Penistone Line** to reduce car traffic travelling into Huddersfield has been ignored consistently. Its potential is that much greater if the frequency is increased and the use of P&R made possible.

To increase passenger numbers is a long term objectives as it would require investment in track and rolling stock to permit half hour services. Land would be required at stations for increased parking (e.g. at Honley) as has been regularly demonstrated by the Huddersfield, Pensitone and Sheffield Rail Users Assoaciation (HPSRUA) There is also a need for expanded services on trains on the Transpennine

stations in Kirklees (e.g to allow more cycles to be carried).

### **6. Cleaner vehicles**

The plan lacks a comprehensive strategy to encourage mainstream adoption of ultra low emission vehicles (ULEVs). A future plan for **recharging points** is not spelt out. Kirklees Council adoption of EVs is welcome but we need to encourage **fleet users to work together to adopt** more use of ULEVs by other fleet users (e.g. NHS Trusts, University of Huddersfield, private sector operators).

Given the effect of motorway traffic on air quality it is noticeable that support for the AQMA has not been offered by Highways England.

**The free car parking** concession for ULEVs on streets and sites managed by Kirklees Council needs effective promotion to encourage more people to switch to fully electric.

**Local householders without parking on site** cannot charge at home. We would like to see proposals to support such households to switch to ULEVs through the use of on-street recharging (e.g. through lighting columns).

**All taxi and PH vehicles** need to be cleaner by 2023 and progressively improved. Use of diesel vehicles as taxis and private hire should be phased out by 2025. A progressive policy of reducing fees for ULEVs and raising them for polluting diesels would assist this policy. In addition the taxi owners will need help from the licensing authority in promoting the business case for hybrids and ULEVs (as undertaken by Leeds City Council).

### **7. Adopting the plan**

**The monitoring of AQ in all Kirklees Council policy decision** needs urgent adoption at committee level along with **Climate Emergency**. The AQAP does not yet acknowledge the implications of the climate emergency stance of Kirklees and WYCA.

## **Response A10**

**Did you find the document clear to understand?:** Yes, the charts were very enlightening. I will be unable to comment upon a lot of the areas as I know nothing of them.

**What are your thoughts on the targets set out within the document?:** Any death associated to pollution is unacceptable. Outside of the cities, Kirklees falls around the median. If Kirklees intends to achieve these targets as they stand today, they should not throw petrol on the fire and make them any worse than they currently are

**What are your thoughts on the actions presented within the table?:** I see no point in employing a person to be responsible, if the current Council plans are to create an environment whereby the problem is just shifted elsewhere.

**Are there any areas/specific projects you feel have not been covered as part of the plan?:** Yes, these should be areas where the pollution maybe only of a temporary nature ie. Where high levels are concentrated at a time when vulnerable members of the public would be gathering. There are no plans for improving infrastructure when embarking on increasing density where traffic is a major issue. Improved roads in certain areas would disperse current traffic levels thereby reducing the queuing of traffic. Continuous expansion without improvements will only fuel future problems as you concentrate on those mentioned in the report. Electric cars are sadly a fair way off being the norm. If everyone took an electric car there would be insufficient power available to power them and its unlikely to be for many years to come.

#### Response A11

**Did you find the document clear to understand?:** Not really. I had a sense that it was an overload of information and data which was not all necessary in specifying ACTIONS i.e. the focus of an Action Plan

**What are your thoughts on the targets set out within the document?:** Of the 100+ actions in the **Air Quality Action Plan Measures** table, very few had measurable targets

**What are your thoughts on the actions presented within the table?:** Overall, I think them to be laudable ambitions, but unrealistic in the context of resource constraints within the Council depts. For example, some 42 out of the 100+ actions are either still at business case stage (13) or only identified as a potential future project (29).

In my view it is better to concentrate on those projects which have the greatest potential to improve air quality and reduce CO2 emissions rather than listing everything the Council would like to do, regardless of resource constraints.

**Are there any areas/specific projects you feel have not been covered as part of the plan?:** Yes. This action plan is not framed in the context of the current Climate Emergency, despite the Council having declared its own emergency in January this year. I think it needs to be more aspirational and radical in terms of CO2 reduction and that means acting in whatever ways it can to drastically reduce diesel and petrol fuelled transport. As a cyclist, it seems to me that actions on pedestrianisation such as AQMA 9.6, will only prove fruitful if the Council addresses safe cycle routes into the town centre crossing the ring road. The dangers of the ring road are the single biggest deterrent to cycling into the town centre as an alternative to driving

**Are there any other comments you wish to make relating to Air Quality or this Action plan?:** I acknowledge that due to austerity driven cuts by central government, the Council's resources are depleted for tackling the the climate emergency and

delivering a strong AQAP. My suggestions are: 1) Inform the public of Kirklees about the seriousness of the Climate Emergency (in line with the Motion passed on 16 Jan 2019) - this will help to engage us in actions we can take for ourselves. An emergency needs to feel like an emergency. 2) Seek greater collaboration from willing partners outside the Council, such as the University departments, the Cycling Campaign, the Climate Emergency Group, Friends of the Earth, the Civic Society, etc - many of whom can help with projects, measurement, communications etc.

### **Response A12**

#### **General comment about the scope of the AQAP**

As a long-standing resident of Kirklees and non-expert but strong supporter of promoting improvement in air quality, I welcome the new action plan within which there is much in to be commended. However, though I recognise the legal constraints on the Local Authority in its powers to innovate and also the severe financial pressures it is under in endeavouring to carry out its statutory and non-statutory duties, I am not convinced that the visioning of the LA's proposals is ambitious enough to create the necessary step-wise change in the culture of our towns and communities, one for example that might substantially increase awareness and ownership of and precipitate constructive responses to the air pollution problem: one that may result in substantial road and pavement infrastructure change to realistically facilitate people choosing to cycle and/ or walk knowing that it will be a safe and not an unhealthy experience; one that might enable car drivers to recognise that they too are not free from exposure to air pollution and that there are actions they and others should take to mitigate this; one that enables local communities and schools to be aware of the pollution hot spots within their midst and to help monitor this and promote solutions; moreover, one that could put Kirklees on the map as an innovative authority in this matter, as a leading example to others with regards to what can be achieved.

#### **Community involvement**

Despite the magnitude of the challenge, the fact that very many of us daily are exposed to excessive exposure to high levels of air pollution and that this constitutes a serious threat to long term and even current health goes largely unrecognised by a wide section of the community. I believe that the strategy and consequent actions of an AQAP should be more wide ranging in involving a higher level of public health engagement and education through schools, churches and mosques, and voluntary organisations and local business with LA reports of actions undertaken and progress, presented in person to such groups.

#### **Setting out of LAQMA's**

The establishment of LAQMA's in response to identified primary and major sources of air pollution as priority areas is perfectly understandable. However, as important as this is, it appears to me that the plan appears to have little to say or to offer in identifying more disseminated hot spots and for possible actions to respond to such

outside of these areas. The need for ameliorative action within the LAQMA's takes into account the presence of occupied housing within those areas and rightly prioritises actions in relation to the likely exposure of occupants to excessive levels of pollution even though, mostly, only relatively few residences are affected. It is my understanding, however, that these priority areas have been defined by Air Quality Objectives based on an annualised NO<sub>2</sub> index and (DEFRA/EU) threshold. If one were to apply the hourly threshold of 200 micro grams per M cubed it would be my guess that many thousands of household and/ or individuals would be exposed to levels in excess of this with exceedences in their exposure "more than 18 times per year", thus placing them at clear risk of experiencing "harmful" levels of air pollution. To my knowledge, little or no data or action has been presented in the plan to address this distinct possibility.

In line with the Local Authority's Corporate Plan's first priority that "children (should) have the best start in life", it would be eminently sensible to make a priority of monitoring and facilitating pollution level change within the immediate areas involving children's' ingress and egress to and from school. To this end School management teams and governors should be included as active partners with the LA and bolder solutions to the problem should be envisaged.

### **Traffic idling**

Idling of cars and other vehicles is a significant contributor to single and repeated exposure of the public to above threshold levels of pollution. The LA should seek to ensure together with the police, stronger reinforcement of Rule 123 of the Highway Code. Initiatives with publicity and legal enforcement within school zones should be a priority but the LA should also seek to highlight this issue in the context of its broader air quality improvement publicity and campaigning within the multiple organisations including churches and mosques who themselves can be asked to identify policies and champions to sustain pro-air quality behaviour. The same should be extended to owners of private car parks, including supermarkets.

### **Solid fuel and wood burning stoves**

The proposed measure and indicator (G.38: reduction in PM & number of complaints of smoking chimney complaints) in relation to regulatory requirements of the Clean Air Act would seem rather minimalist. There has been an exponential growth in wood burning in the last 10 years. UK government survey data led to official pollution emission levels being revised to say that wood burning was producing 2.6 times more particle emissions than exhausts (this includes people who are burning wood in open fire places but also households with wood burning stoves. This, unfortunately, reintroduces some of the pollution problems that were successfully dealt with under

the clean air act. Wood burning can frequently cause local air pollution problems that expose near neighbours to, in single dose, harmful levels of pollution. Even new stoves are known to omit harmful levels of pollution and the uncontrolled burning of wood with preservative in (CCA) adds a further harmful element. Furthermore, wood-burning is not climate neutral and needs to be discouraged under the Climate Emergency provisions agreed by the LA. These are good reasons for the LA to have some more ambitious actions in nudging people away from wood-burning and to have a more pro-active stance than envisaged to identifying when chimney effluents are non-compliant with legal standards.

### **Cycling and walking health and safety**

The systematic introduction and/ or extension of safe and low pollution cycling routes into and through the town is crucial if significantly more people are going to be induced to see cycling as a viable alternative to the car. The LA needs to do more than pay lip service to this. Infrastructure for safer cycling is mostly lacking and further plans for cycle routes need to ensure that cyclists are not just squeezed in to a notional but unsatisfactory, from the point of view of cyclist safety, cycle lanes. Cycle routes intended to be a serious corridor into the town centre should not be so circuitous as to make their use for commuting too impractical. More secure cycle lock ups at town centre locations are needed. Cycle lane policy and infrastructure developments will need to take into the account the potential for a sizeable increase in hybrid/electric bicycle use.

Pedestrians, equally, should have safer, well maintained walking routes into the town centre without having to endure substantial parts of their journey exposed to high levels of traffic exhaust fumes. Both these and cycle lanes should incorporate clear signage to highlight the route and to warn motorists against parking on the pavement or cycle way, which currently is so hugely under-policed that it has become the norm rather than the exception. More pedestrian crossings are required in key places on some of the principle routes into town as are additional central refuges on the busiest of roads. Pedestrian light controlled crossings on the ring road and other dual carriageways, should not capture users in the central reservation but grant their right of way in a single crossing.

### **Traffic speed in suburban areas**

Proper consideration needs to be given to the adjunctive value of the roll out of a “20’s plenty” policy, which has been substantially achieved in neighbouring Calderdale and Leeds authorities. This, if seriously pursued, can lead to reduced and safer conditions for cyclist and pedestrians and greater awareness by the motorist of the rights and needs of these other street and road users. Research (\*\*) would suggest that, in general, it is incorrect to state that a 20mph speed restriction will lead to greater pollutant emissions for vehicles.

\* Abstracted from chapter 11 in: “The Invisible Killer”, 2018, Melville House U.K.j

\*\* An evaluation of the estimated impacts on vehicle emissions of a 20mph speed restriction in central London, Transport and Environmental Analysis Group, Centre for Transport Studies, Imperial College London, FINAL REPORT, April 2013.

<https://www.cityoflondon.gov.uk/business/environmental-health/environmental-protection/air-quality/Documents/speed-restriction-air-quality-report-2013-for-web.pdf>

### Response A13

**Did you find the document clear to understand?:** Yes

**What are your thoughts on the targets set out within the document?:** Focus too heavily on changing transport habits; changing from cars to buses, petrol/diesel to electric, getting people to cycle.

**What are your thoughts on the actions presented within the table?:** Ok as far as they go and within the targets highlighted.

**Are there any areas/specific projects you feel have not been covered as part of the plan?:** Planting trees. Focus on areas around schools to ensure pupils not breathing polluted air. Tree planting on school grounds. Congestion in areas of high population, reducing standing traffic. Footpaths and cycleways away from traffic rather than alongside.

**Are there any other comments you wish to make relating to Air Quality or this Action plan?:** If you want to encourage people to leave cars behind and use public transport you need better parking and park and ride schemes

### Response A14

**Did you find the document clear to understand?:** Lengthy

**What are your thoughts on the targets set out within the document?:**  
Unambitious

**What are your thoughts on the actions presented within the table?:** Unambitious and lacking the required urgency

**Are there any areas/specific projects you feel have not been covered as part of the plan?:** Raising public awareness of the scandalously poor air quality in our residential areas and its impact on health. lack of education about what individuals can do about this. backed up by a high profile and ambitious cycle/bus/train/walk strategy. consider park and ride for Huddersfield.

**Are there any other comments you wish to make relating to Air Quality or this Action plan?:** Just to say again: not enough energy, urgency or scope.

### Response A15

**Did you find the document clear to understand?:** Yes

**What are your thoughts on the targets set out within the document?:** Kirklees Council need to do more. I understand this is a fluid document. There should be a plan for Batley and Dewsbury Town Centres. A plan to deal with traffic at the bottom of Halifax Road, Heckmondwike especially the queues caused when Heckmondwike Grammar School finishes for the day.

**What are your thoughts on the actions presented within the table?:** Difficult to have an opinion at this stage.

**Are there any areas/specific projects you feel have not been covered as part of the plan?:** Batley Town Centre and the traffic problems (air pollution levels) caused by the school run.

**Are there any other comments you wish to make relating to Air Quality or this Action plan?:**

#### Response A16

**Did you find the document clear to understand?:** No

**What are your thoughts on the targets set out within the document?:** I don't think you will achieve anything near what is necessary for better roads and public transport.

**What are your thoughts on the actions presented within the table?:**

**Are there any areas/specific projects you feel have not been covered as part of the plan?:** Non of the Waterways have been explored as a great alternative highway including the towpath links to residential areas and villages/towns and is environmentally friendly. They can be linked with other routes but must be maintained correctly.

**Are there any other comments you wish to make relating to Air Quality or this Action plan?:** I don't get most of what is trying to be done and im not your average resident but an ex TRA rep.

#### Response A17

**Did you find the document clear to understand?:** No. But it is a technical document with a lot of data. It requires careful reading

**What are your thoughts on the targets set out within the document?:** The targets feel very modest and not sufficiently ambitious

**What are your thoughts on the actions presented within the table?:** The emphasis is too much about increasing the flow of traffic and not enough about reducing volumes of traffic by improving the use that is made of alternatives such as public transport, particularly buses. There is too much about tiny schemes within the local authority aimed specifically at council employees such as bike-sharing schemes. Why include these? To pad out the table? To give the impression of taking action? The table accords equal weight to everything. It would be more helpful if the table identified the Top Ten actions according to impact on improving air quality.

**Are there any areas/specific projects you feel have not been covered as part of the plan?:** The high cost of using local public transport, especially buses, is not addressed. The cost of using a bus has risen far beyond the RPI and the use of buses has fallen. It is a dis-incentive to using buses and encourages more car drivers on local roads.

**AQMA 6 – Edgerton What are your thoughts on the actions presented within the table?:** The proposal emphasises the desire to 'improve the flow of traffic'. Road improvement schemes elsewhere in the UK and abroad have demonstrated that if

this is achieved it is simply a short-term gain. Once drivers realise that the flow has improved then more will start to use the road and it becomes congested once again. This isn't addressed in the proposals although it is a well known tendency.

**AQMA 6 – Edgerton Are there any areas/specific projects you feel have not been covered as part of the plan?:** There is nothing in the Kirklees proposals to stop vehicles leaving the A629 when it is busy and using the local residential roads as rat-runs. This already happens. By contrast, Calderdale has made all residential roads 20mph. Why doesn't Kirklees do the same? Failing to put measures in place to prevent vehicles looking for short-cuts on residential roads leads to worse air quality on residential streets.

**Are there any other comments you wish to make relating to Air Quality or this Action plan?:** The Council could do far more to engage with local people on this subject. I recently visited Norwich. The local authority there uses display boards in the city to inform people about air pollution and the measures it is taking. The equipment used to monitor air pollution is made highly visible and is accompanied with information about why it is being deployed. So rather than being a 'dirty secret' that is hidden away the issue is brought more into the open and acknowledged. Walking around Norwich one is left with the impression that there is a problem with air pollution but that something is being done and the local authority is open and honest about it.

### Response A18

**Did you find the document clear to understand?:** It was OK

**What are your thoughts on the targets set out within the document?:** Good but Kirklees still accepting new builds housing in areas of very high air pollution from traffic congestion. Increasing pollution so making air pollution worse

**What are your thoughts on the actions presented within the table?:** Kirklees not putting into practice as agreeing to new house residential developments in high pollution and over congested areas ie Merchants fields Hunsworth Cleckheaton  
**Are there any areas/specific projects you feel have not been covered as part of the plan?:**No.

**AQMA 4 – Birkenshaw What are your thoughts on the actions presented within the table?:** Birkenshaw high pollution due to traffic congestion but yet new building developments agreed to make it worse going into Hunsworth

**Are there any other comments you wish to make relating to Air Quality or this Action plan?:** It's not achievable by approving new residential housing developments in already congested and high polluted areas. Agreeing to build on green belt when this helps to clean the air. New plans to build on merchants fields will impact on more pollution from over congested roads already

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**Appendix B - Reasons for Not Pursuing Action Plan Measures**

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

## Kirklees Council District Action Plan

| <b>Action category</b> | <b>Action description</b> | <b>Reason action is not being pursued (including Stakeholder views)</b>  |
|------------------------|---------------------------|--|
| Other                  | Charging Clean Air Zone   | There is no mandatory requirement to do so. High infrastructure costs. Could adversely affect local economy, as well as potentially displacing the problem to other areas. |

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Appendix C – Source Apportionment

Table C.1 AQMA 1 Bradley Source Apportionment

| Source Name         | All LDVs (%) | All HDVs (%) | Petrol Cars (%) | Diesel Cars (%) | Petrol LGVs (%) | Diesel LGVs (%) | Rigid HGVs (%) | Artic HGVs (%) | Buses/Coaches (%) | Hybrid Buses (%) | Motorcycles (%) | Full Hybrid Petrol Cars (%) | Plug-In Hybrid Petrol Cars (%) | Full Hybrid Diesel Cars (%) |
|---------------------|--------------|--------------|-----------------|-----------------|-----------------|-----------------|----------------|----------------|-------------------|------------------|-----------------|-----------------------------|--------------------------------|-----------------------------|
| AQMA 1 Leeds Road   | 63%          | 37%          | 5.2%            | 32.5%           | 0.1%            | 24.4%           | 13.6%          | 3.0%           | 20.6%             | 0.2%             | 0.3%            | 0.1%                        | 0.0%                           | 0.1%                        |
| AQMA 1 Bradley Road | 80%          | 20%          | 6.6%            | 41.1%           | 0.1%            | 31.8%           | 7.2%           | 1.5%           | 10.9%             | 0.1%             | 0.4%            | 0.1%                        | 0.0%                           | 0.1%                        |
| AQMA 1 B6118        | 93%          | 7%           | 7.7%            | 49.5%           | 0.1%            | 34.8%           | 2.6%           | 0.6%           | 4.0%              | 0.0%             | 0.4%            | 0.1%                        | 0.0%                           | 0.1%                        |
| AQMA 1 A62          | 67%          | 33%          | 5.5%            | 34.5%           | 0.1%            | 26.0%           | 12.1%          | 2.7%           | 18.4%             | 0.1%             | 0.3%            | 0.1%                        | 0.0%                           | 0.1%                        |
| AQMA 1 A644         | 55%          | 45%          | 4.6%            | 29.4%           | 0.1%            | 20.7%           | 16.2%          | 3.7%           | 24.8%             | 0.2%             | 0.2%            | 0.1%                        | 0.0%                           | 0.1%                        |
| AQMA 1 Average      | 66%          | 34%          | 5%              | 34%             | 0%              | 26%             | 12%            | 3%             | 19%               | 0.1%             | 0.3%            | 0.1%                        | 0.0%                           | 0.1%                        |

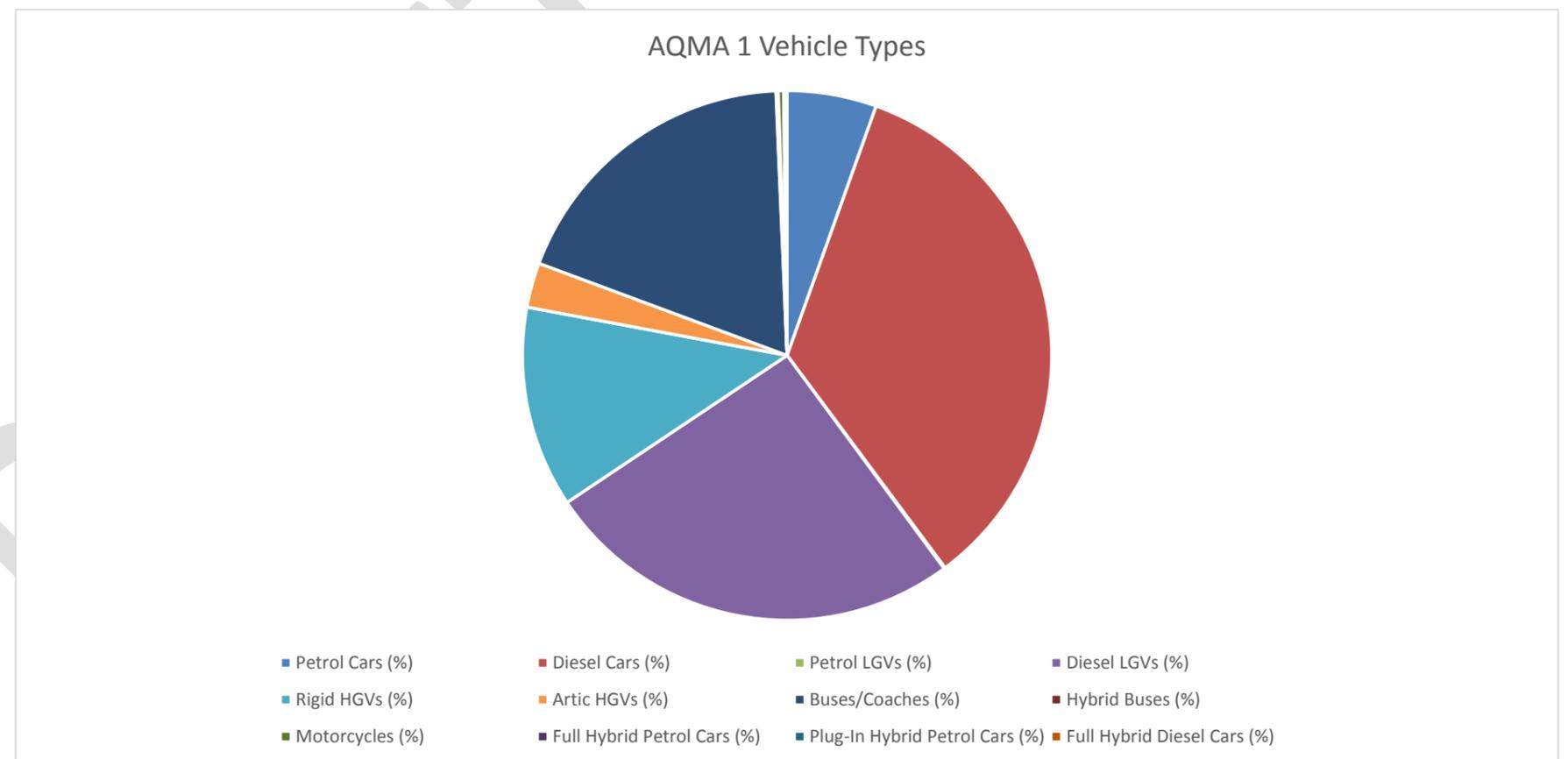
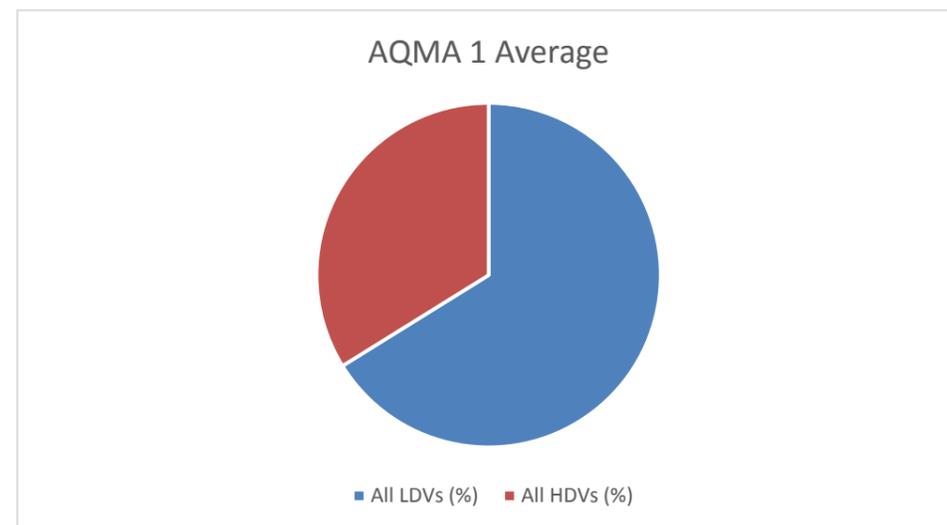


Table C.2 AQMA 3 – Ainley Top Source Apportionment

| Source Name                     | All LDVs (%) | All HDVs (%) | Petrol Cars (%) | Diesel Cars (%) | Petrol LGVs (%) | Diesel LGVs (%) | Rigid HGVs (%) | Artic HGVs (%) | Buses/Coaches (%) | Hybrid Buses (%) | Motorcycles (%) | Full Hybrid Petrol Cars (%) | Plug-In Hybrid Petrol Cars (%) | Full Hybrid Diesel Cars (%) |
|---------------------------------|--------------|--------------|-----------------|-----------------|-----------------|-----------------|----------------|----------------|-------------------|------------------|-----------------|-----------------------------|--------------------------------|-----------------------------|
| AQMA 3 - M62 East               | 75.7%        | 24.3%        | 2.8%            | 40.5%           | 0.1%            | 31.9%           | 9.3%           | 13.6%          | 1.3%              | 0.0%             | 0.2%            | 0.1%                        | 0.0%                           | 0.1%                        |
| AQMA 3 - M62 West               | 71.9%        | 28.1%        | 2.6%            | 38.5%           | 0.1%            | 30.3%           | 10.8%          | 15.8%          | 1.5%              | 0.0%             | 0.2%            | 0.1%                        | 0.0%                           | 0.1%                        |
| AQMA 3 - M62 East Slip          | 69.4%        | 30.6%        | 2.8%            | 38.1%           | 0.1%            | 28.1%           | 11.7%          | 17.1%          | 1.7%              | 0.0%             | 0.2%            | 0.1%                        | 0.0%                           | 0.1%                        |
| AQMA 3 - West Slip Road         | 88.0%        | 12.0%        | 3.5%            | 48.3%           | 0.1%            | 35.6%           | 4.6%           | 6.7%           | 0.7%              | 0.0%             | 0.2%            | 0.1%                        | 0.0%                           | 0.1%                        |
| AQMA 3 - Halifax Road South     | 69.7%        | 30.3%        | 5.8%            | 36.9%           | 0.1%            | 26.5%           | 11.0%          | 2.5%           | 16.7%             | 0.1%             | 0.3%            | 0.1%                        | 0.0%                           | 0.1%                        |
| AQMA 3 - Halifax Road North     | 69.7%        | 30.3%        | 5.8%            | 36.9%           | 0.1%            | 26.5%           | 11.0%          | 2.5%           | 16.7%             | 0.1%             | 0.3%            | 0.1%                        | 0.0%                           | 0.1%                        |
| AQMA 3 - Lindley Moor Road East | 90.5%        | 9.5%         | 7.2%            | 44.9%           | 0.1%            | 37.4%           | 3.4%           | 0.7%           | 5.3%              | 0.0%             | 0.6%            | 0.1%                        | 0.0%                           | 0.1%                        |
| AQMA 3 - Lindley Moor Road West | 90.5%        | 9.5%         | 7.2%            | 44.9%           | 0.1%            | 37.4%           | 3.4%           | 0.7%           | 5.3%              | 0.0%             | 0.6%            | 0.1%                        | 0.0%                           | 0.1%                        |
| AQMA 3 - Brighouse Road East    | 93.1%        | 6.9%         | 7.6%            | 47.3%           | 0.1%            | 37.3%           | 2.5%           | 0.5%           | 3.8%              | 0.0%             | 0.5%            | 0.1%                        | 0.0%                           | 0.1%                        |
| AQMA 3 - Brighouse Road West    | 93.1%        | 6.9%         | 7.6%            | 47.3%           | 0.1%            | 37.3%           | 2.5%           | 0.5%           | 3.8%              | 0.0%             | 0.5%            | 0.1%                        | 0.0%                           | 0.1%                        |
| AQMA 3 - Average                | 81%          | 19%          | 5%              | 42%             | 0%              | 33%             | 7%             | 6%             | 6%                | 0%               | 0%              | 0.1%                        | 0.0%                           | 0.1%                        |

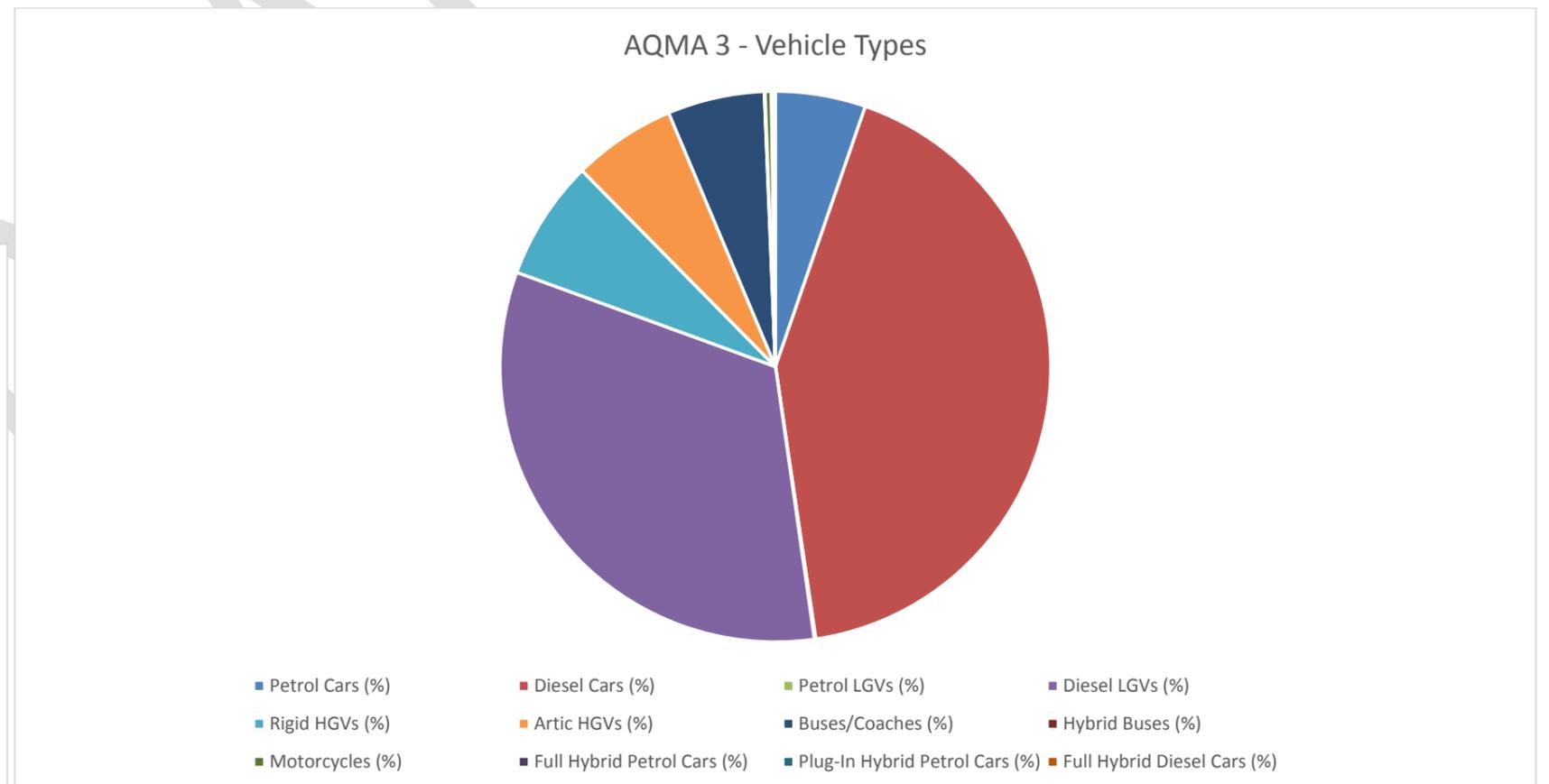
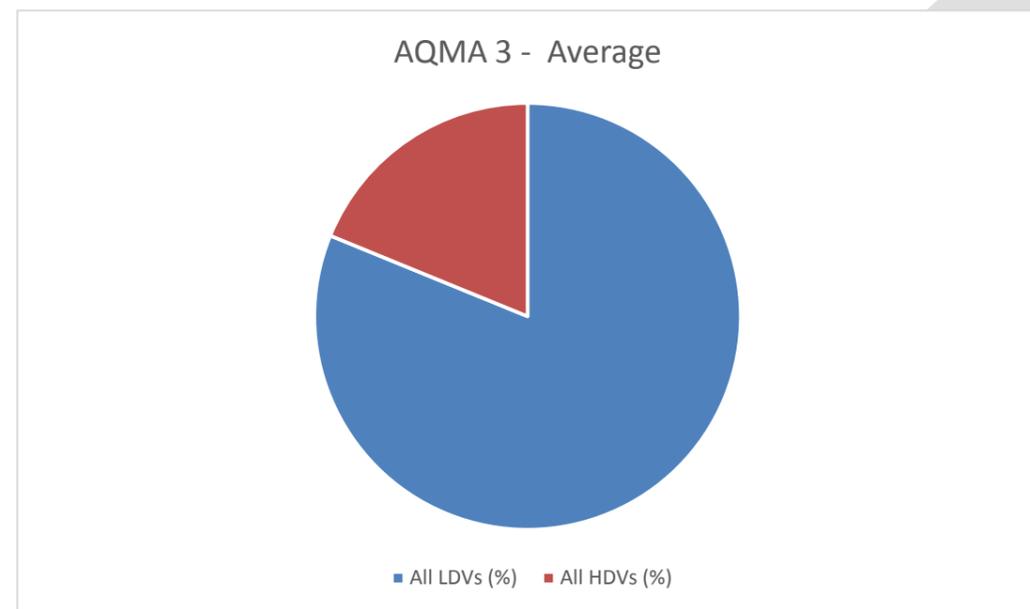


Table C.3 AQMA 4 – Birkenshaw Source Apportionment

| Source Name                  | All LDVs (%) | All HDVs (%) | Petrol Cars (%) | Diesel Cars (%) | Petrol LGVs (%) | Diesel LGVs (%) | Rigid HGVs (%) | Artic HGVs (%) | Buses/Coaches (%) | Hybrid Buses (%) | Motorcycles (%) | Full Hybrid Petrol Cars (%) | Plug-In Hybrid Petrol Cars (%) | Full Hybrid Diesel Cars (%) |
|------------------------------|--------------|--------------|-----------------|-----------------|-----------------|-----------------|----------------|----------------|-------------------|------------------|-----------------|-----------------------------|--------------------------------|-----------------------------|
| AQMA 4 - M62 East            | 71.2%        | 28.8%        | 2.6%            | 38.1%           | 0.1%            | 30.0%           | 11.1%          | 16.1%          | 1.6%              | 0.0%             | 0.2%            | 0.1%                        | 0.0%                           | 0.1%                        |
| AQMA 4 - M62 West            | 71.2%        | 28.8%        | 2.6%            | 38.1%           | 0.1%            | 30.0%           | 11.1%          | 16.1%          | 1.6%              | 0.0%             | 0.2%            | 0.1%                        | 0.0%                           | 0.1%                        |
| AQMA 4 B-Bradford Road North | 73.6%        | 26.4%        | 6.1%            | 39.7%           | 0.1%            | 27.2%           | 9.5%           | 2.2%           | 14.6%             | 0.1%             | 0.3%            | 0.1%                        | 0.0%                           | 0.1%                        |
| AQMA 4 B-Bradford Road South | 76.2%        | 23.8%        | 6.3%            | 41.1%           | 0.1%            | 28.2%           | 8.6%           | 2.0%           | 13.1%             | 0.1%             | 0.3%            | 0.1%                        | 0.0%                           | 0.1%                        |
| AQMA 4 - Whitehall Road East | 73.6%        | 26.4%        | 6.1%            | 39.7%           | 0.1%            | 27.2%           | 9.5%           | 2.2%           | 14.6%             | 0.1%             | 0.3%            | 0.1%                        | 0.0%                           | 0.1%                        |
| AQMA 4 -Whitehall Road West  | 62.4%        | 37.6%        | 5.2%            | 33.7%           | 0.1%            | 23.1%           | 13.5%          | 3.2%           | 20.7%             | 0.1%             | 0.2%            | 0.1%                        | 0.0%                           | 0.1%                        |
| AQMA 4 - Average             | 71%          | 29%          | 5%              | 38%             | 0%              | 28%             | 11%            | 7%             | 11%               | 0%               | 0%              | 0.1%                        | 0.0%                           | 0.1%                        |

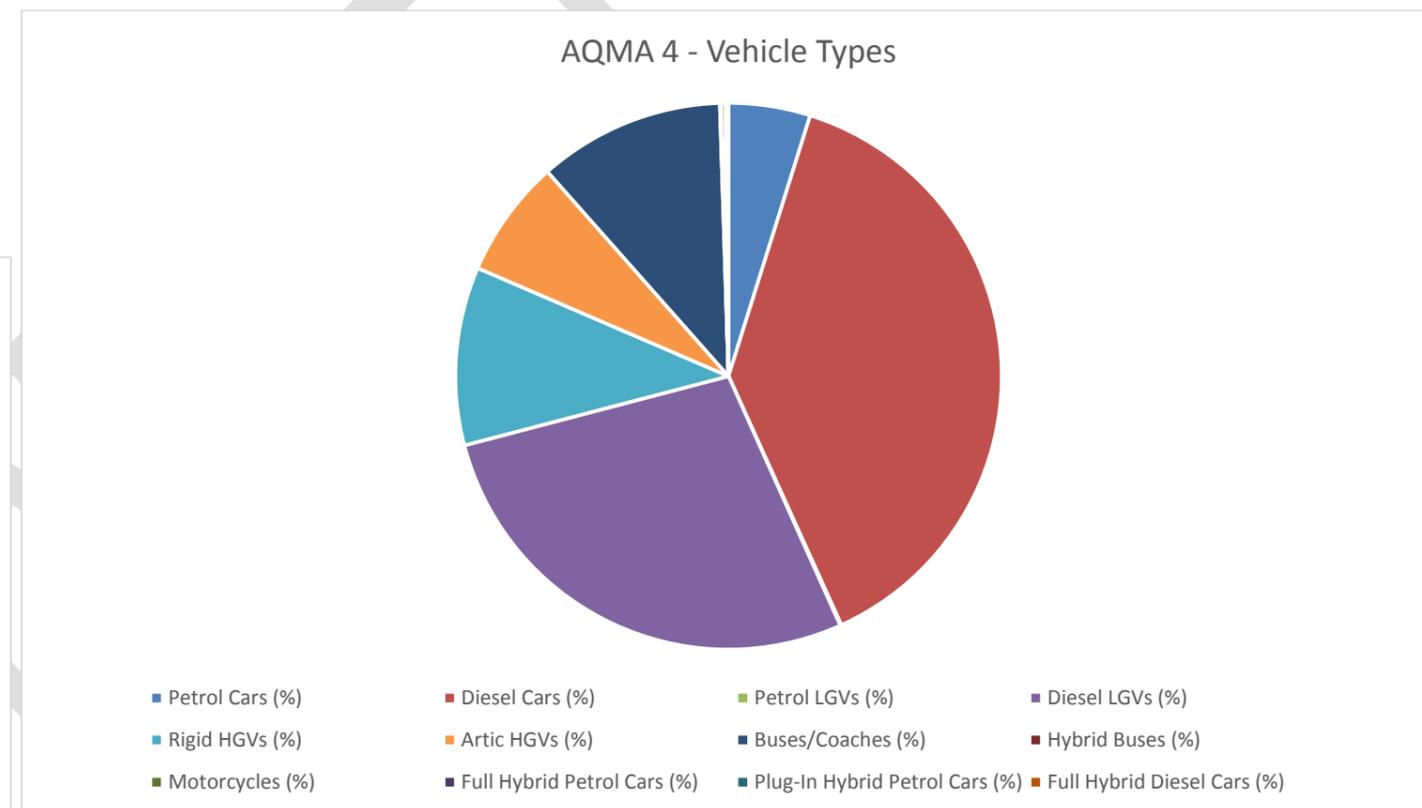
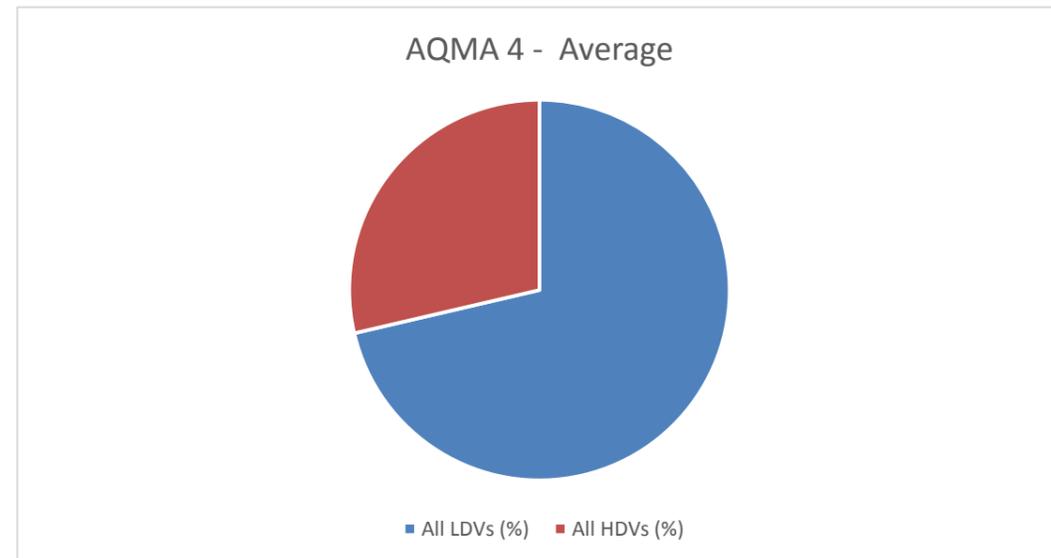


Table C.4 AQMA 5 – Eastborough Source Apportionment

| Source Name             | All LDVs (%) | All HDVs (%) | Petrol Cars (%) | Diesel Cars (%) | Petrol LGVs (%) | Diesel LGVs (%) | Rigid HGVs (%) | Artic HGVs (%) | Buses/Coaches (%) | Hybrid Buses (%) | Motorcycles (%) | Full Hybrid Petrol Cars (%) | Plug-In Hybrid Petrol Cars (%) | Full Hybrid Diesel Cars (%) |
|-------------------------|--------------|--------------|-----------------|-----------------|-----------------|-----------------|----------------|----------------|-------------------|------------------|-----------------|-----------------------------|--------------------------------|-----------------------------|
| AQMA 5 - Leeds Road     | 40.2%        | 59.8%        | 3.3%            | 21.5%           | 0.0%            | 15.1%           | 21.6%          | 5.0%           | 33.0%             | 0.2%             | 0.2%            | 0.0%                        | 0.0%                           | 0.1%                        |
| AQMA 5 - Wakefield Road | 44.6%        | 55.4%        | 3.7%            | 23.8%           | 0.0%            | 16.8%           | 20.0%          | 4.6%           | 30.5%             | 0.2%             | 0.2%            | 0.0%                        | 0.0%                           | 0.1%                        |
| AQMA 5 - Ring Road      | 44.6%        | 55.4%        | 3.7%            | 23.8%           | 0.0%            | 16.8%           | 20.0%          | 4.6%           | 30.5%             | 0.2%             | 0.2%            | 0.0%                        | 0.0%                           | 0.1%                        |
| AQMA 5 - Average        | 43%          | 57%          | 4%              | 23%             | 0%              | 16%             | 21%            | 5%             | 31%               | 0%               | 0%              | 0.0%                        | 0.0%                           | 0.1%                        |

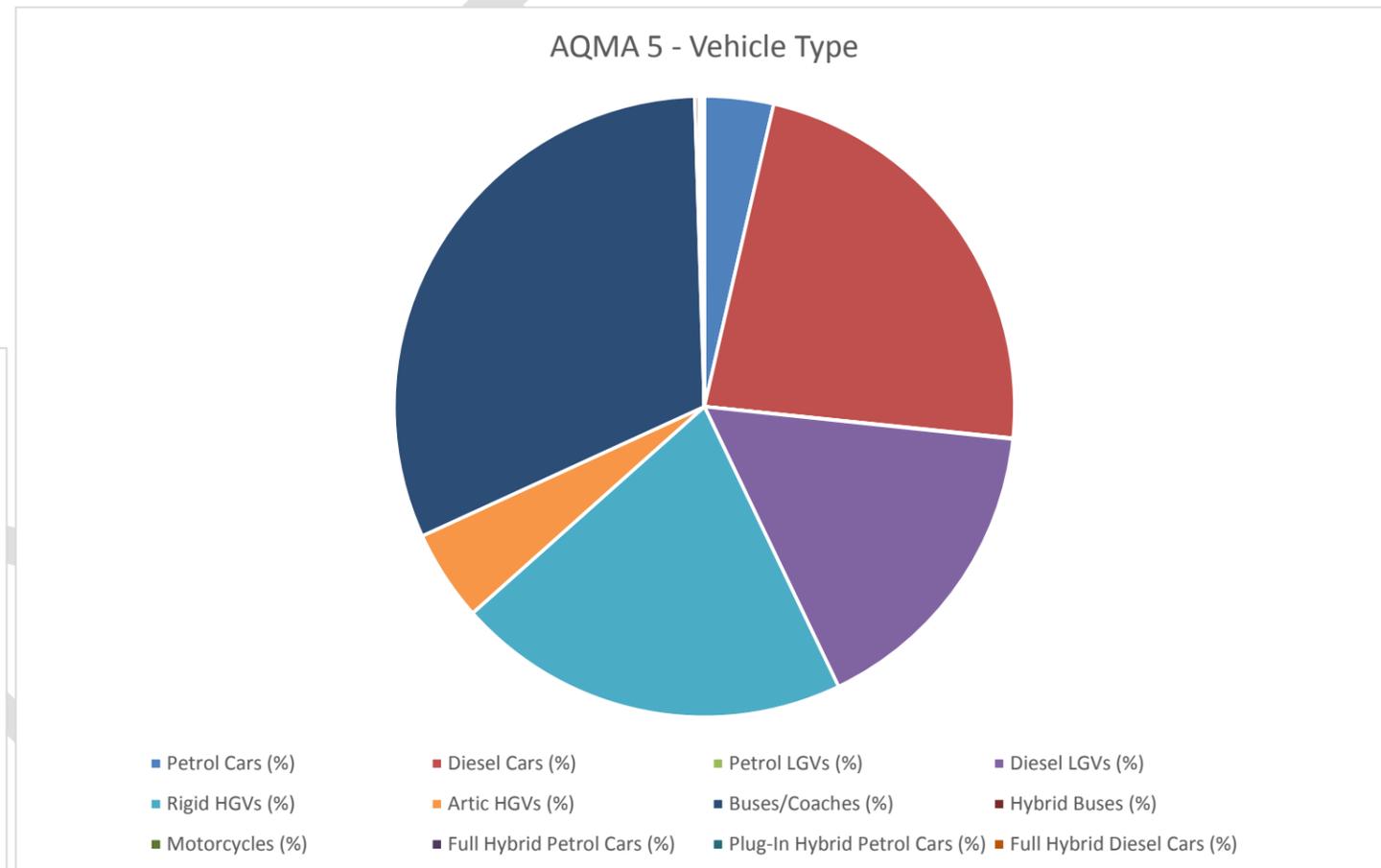
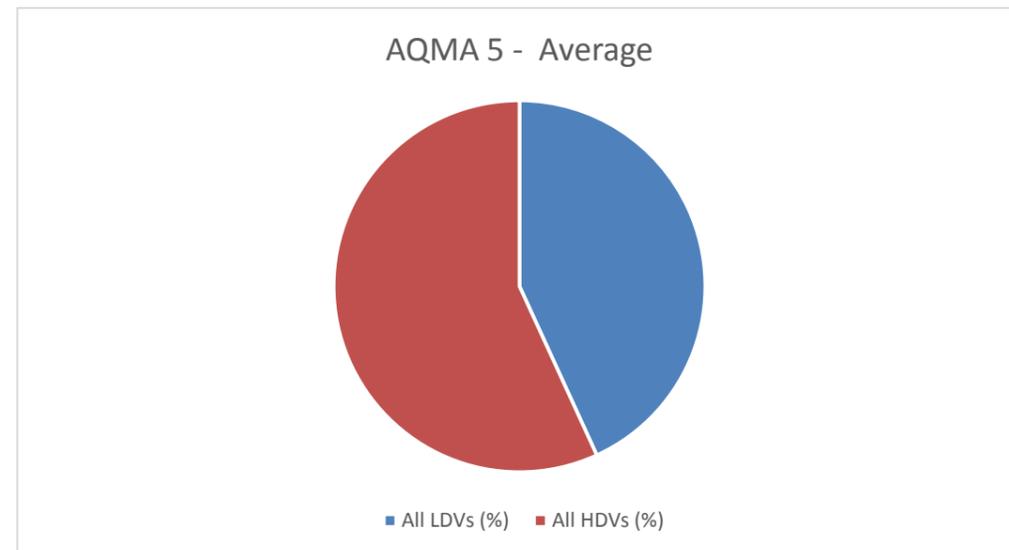


Table C.5 AQMA 6 – Eastborough Source Apportionment

| Source Name                  | All LDVs (%) | All HDVs (%) | Petrol Cars (%) | Diesel Cars (%) | Petrol LGVs (%) | Diesel LGVs (%) | Rigid HGVs (%) | Artic HGVs (%) | Buses/Coaches (%) | Hybrid Buses (%) | Motorcycles (%) | Full Hybrid Petrol Cars (%) | Plug-In Hybrid Petrol Cars (%) | Full Hybrid Diesel Cars (%) |
|------------------------------|--------------|--------------|-----------------|-----------------|-----------------|-----------------|----------------|----------------|-------------------|------------------|-----------------|-----------------------------|--------------------------------|-----------------------------|
| AQMA 6 - Halifax Road        | 71.2%        | 28.8%        | 5.9%            | 38.0%           | 0.1%            | 26.7%           | 10.4%          | 2.4%           | 15.9%             | 0.1%             | 0.3%            | 0.1%                        | -                              | 0.1%                        |
| AQMA 6 - Blacker Road        | 84.5%        | 15.5%        | 7.0%            | 46.3%           | 0.1%            | 30.5%           | 5.6%           | 1.4%           | 8.6%              | 0.1%             | 0.3%            | 0.1%                        | -                              | 0.1%                        |
| AQMA 6 - Edgerton Grove Road | 89.3%        | 10.7%        | 7.4%            | 49.0%           | 0.1%            | 32.3%           | 3.8%           | 0.9%           | 5.9%              | -                | 0.3%            | 0.1%                        | -                              | 0.1%                        |
| AQMA 6 - Average             | 82%          | 18%          | 7%              | 44%             | 0%              | 30%             | 7%             | 2%             | 10%               | 0%               | 0%              | 0.1%                        | 0.0%                           | 0.1%                        |

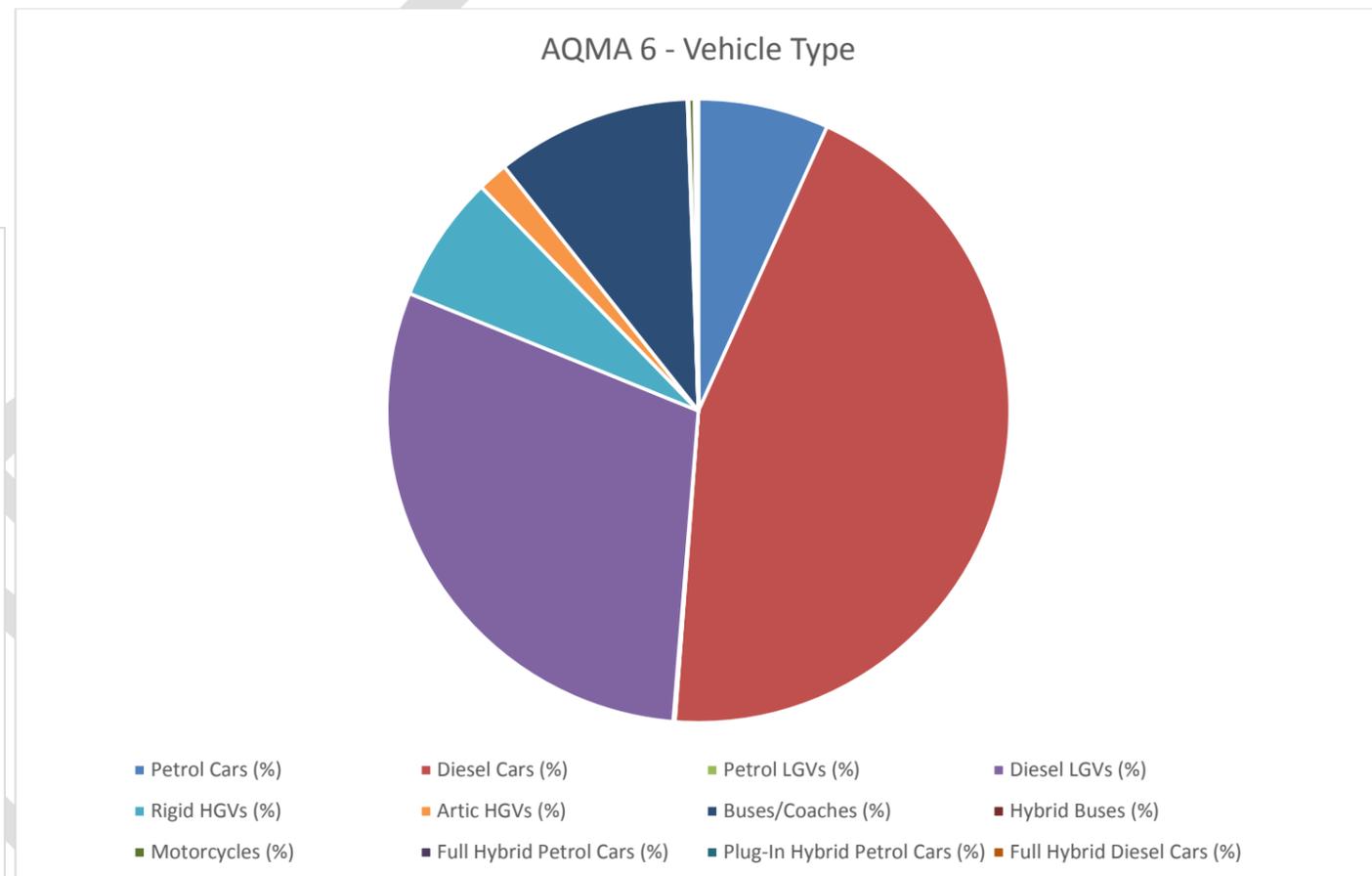
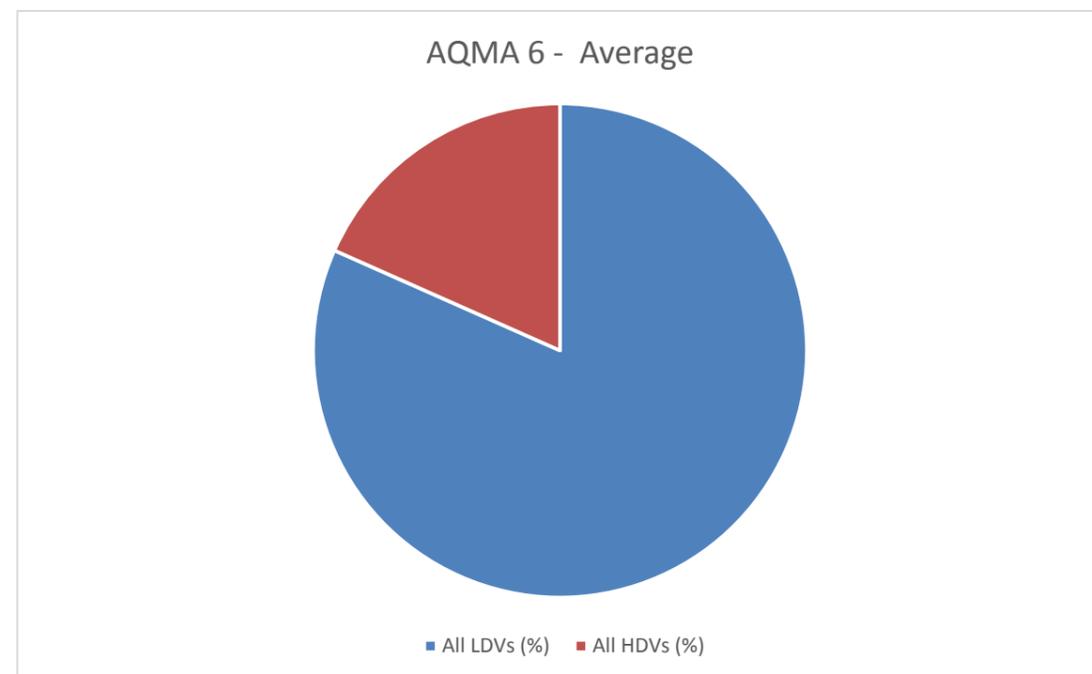


Table C.6 AQMA 7 – Liversedge / Heckmondwike Source Apportionment

| Source Name             | All LDVs (%) | All HDVs (%) | Petrol Cars (%) | Diesel Cars (%) | Petrol LGVs (%) | Diesel LGVs (%) | Rigid HGVs (%) | Artic HGVs (%) | Buses/Coaches (%) | Hybrid Buses (%) | Motorcycles (%) | Full Hybrid Petrol Cars (%) | Plug-In Hybrid Petrol Cars (%) | Full Hybrid Diesel Cars (%) |
|-------------------------|--------------|--------------|-----------------|-----------------|-----------------|-----------------|----------------|----------------|-------------------|------------------|-----------------|-----------------------------|--------------------------------|-----------------------------|
| AQMA 7 - Leeds Road     | 88.0%        | 12.0%        | 7.3%            | 47.0%           | 0.1%            | 33.1%           | 4.3%           | 1.0%           | 6.6%              | -                | 0.4%            | 0.1%                        | -                              | 0.1%                        |
| AQMA 7 - Wakefield Road | 90.4%        | 9.6%         | 7.5%            | 49.6%           | 0.1%            | 32.7%           | 3.5%           | 0.8%           | 5.3%              | -                | 0.3%            | 0.1%                        | -                              | 0.1%                        |
| AQMA 7 - Bradford Road  | 76.7%        | 23.3%        | 6.4%            | 40.9%           | 0.1%            | 28.8%           | 8.4%           | 1.9%           | 12.9%             | 0.1%             | 0.3%            | 0.1%                        | -                              | 0.1%                        |
| AQMA 7 - Halifax Road   | 78.8%        | 21.2%        | 6.6%            | 42.0%           | 0.1%            | 29.6%           | 7.7%           | 1.8%           | 11.7%             | 0.1%             | 0.3%            | 0.1%                        | -                              | 0.1%                        |
| AQMA 7 - Average        | 83%          | 17%          | 7%              | 45%             | 0%              | 31%             | 6%             | 1%             | 9%                | 0%               | 0%              | 0.1%                        | 0.0%                           | 0.1%                        |

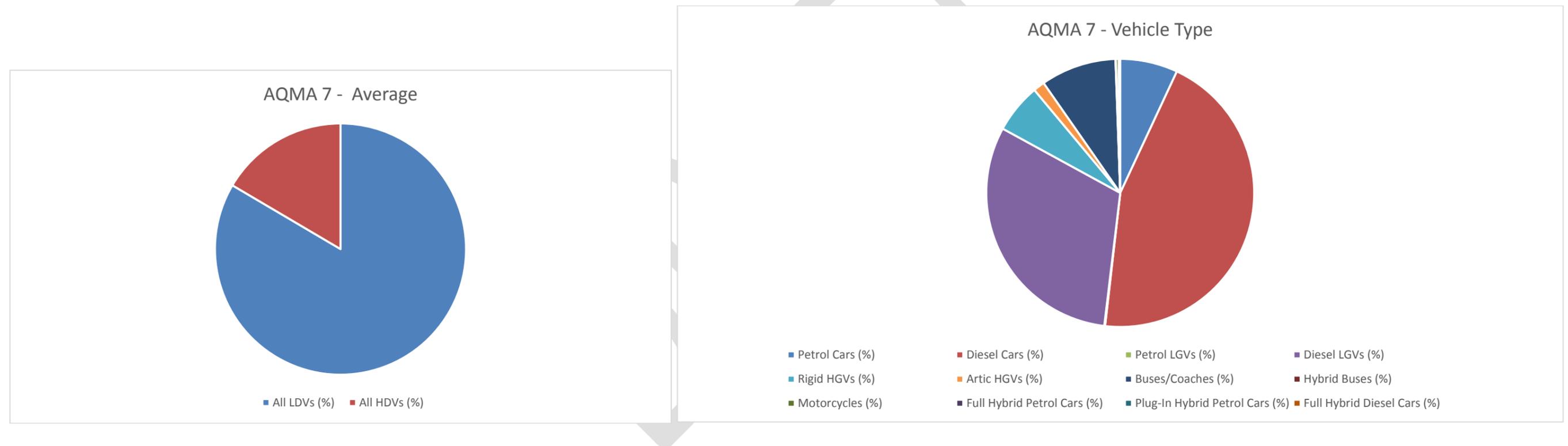


Table C.7 AQMA 8 – Outlane Source Apportionment

| Source Name             | All LDVs (%) | All HDVs (%) | Petrol Cars (%) | Diesel Cars (%) | Petrol LGVs (%) | Diesel LGVs (%) | Rigid HGVs (%) | Artic HGVs (%) | Buses/Coaches (%) | Hybrid Buses (%) | Motorcycles (%) | Full Hybrid Petrol Cars (%) | Plug-In Hybrid Petrol Cars (%) | Full Hybrid Diesel Cars (%) |
|-------------------------|--------------|--------------|-----------------|-----------------|-----------------|-----------------|----------------|----------------|-------------------|------------------|-----------------|-----------------------------|--------------------------------|-----------------------------|
| AQMA 8 - M62 East       | 74.4%        | 25.6%        | 2.7%            | 39.7%           | 0.1%            | 31.5%           | 9.9%           | 14.4%          | 1.4%              | -                | 0.2%            | 0.1%                        | -                              | 0.1%                        |
| AQMA 8 - M62 West       | 74.4%        | 25.6%        | 2.7%            | 39.7%           | 0.1%            | 31.5%           | 9.9%           | 14.4%          | 1.4%              | -                | 0.2%            | 0.1%                        | -                              | 0.1%                        |
| AQMA 8 -Round Ings Road | 87.4%        | 12.6%        | 7.3%            | 46.0%           | 0.1%            | 33.4%           | 4.6%           | 1.0%           | 6.9%              | -                | 0.4%            | 0.1%                        | -                              | 0.1%                        |
| AQMA 8 - Average        | 79%          | 21%          | 4%              | 42%             | 0%              | 32%             | 8%             | 10%            | 3%                | 0%               | 0%              | 0.1%                        | 0.0%                           | 0.1%                        |

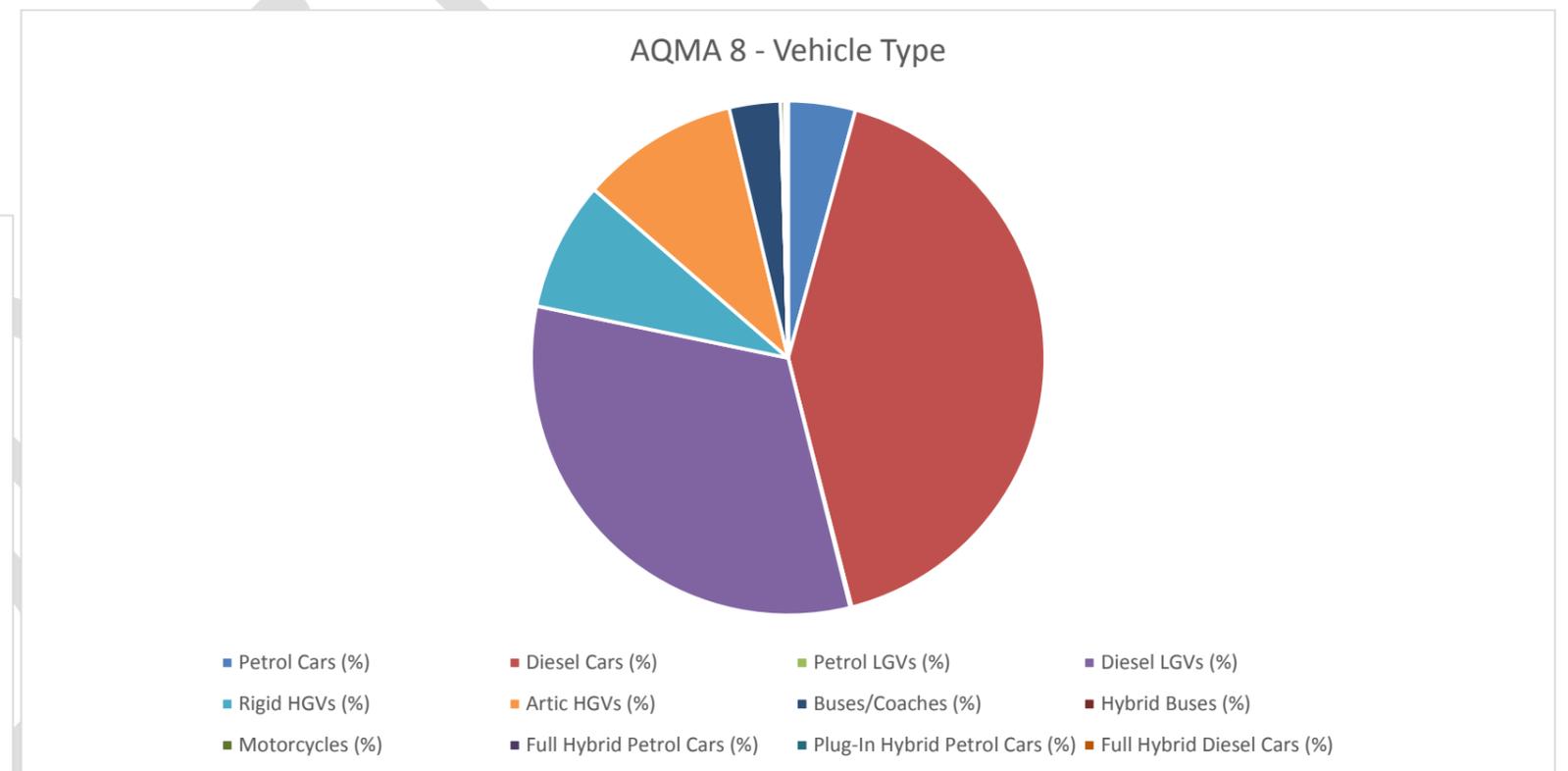
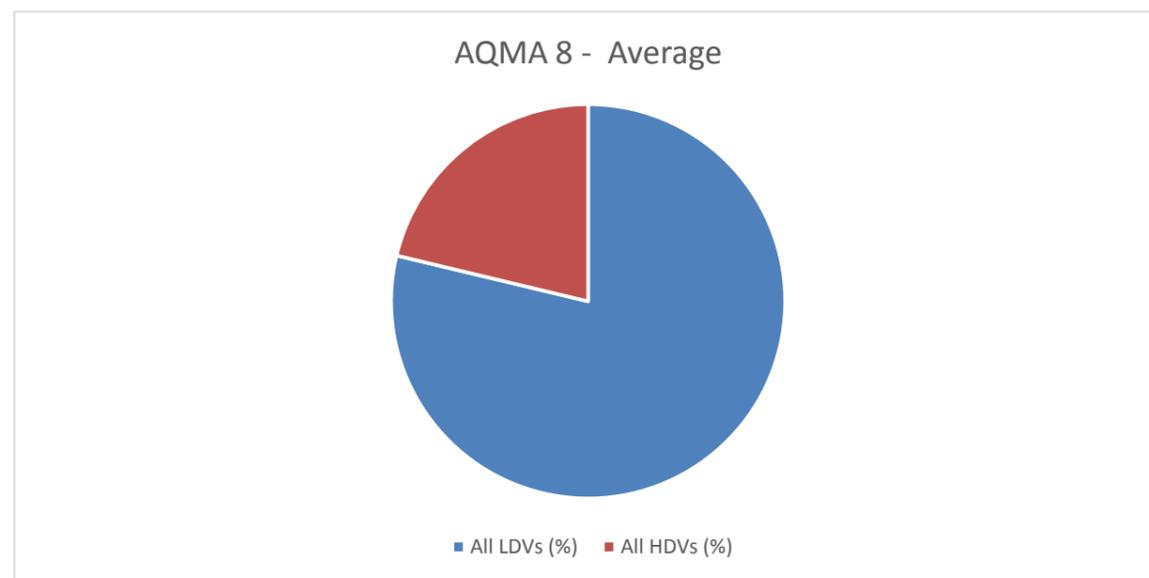


Table C.8 AQMA 9 – Huddersfield Town Centre Source Apportionment

| Source Name          | All LDVs (%) | All HDVs (%) | Petrol Cars (%) | Diesel Cars (%) | Petrol LGVs (%) | Diesel LGVs (%) | Rigid HGVs (%) | Artic HGVs (%) | Buses/Coaches (%) | Hybrid Buses (%) | Motorcycles (%) | Full Hybrid Petrol Cars (%) | Plug-In Hybrid Petrol Cars (%) | Full Hybrid Diesel Cars (%) |
|----------------------|--------------|--------------|-----------------|-----------------|-----------------|-----------------|----------------|----------------|-------------------|------------------|-----------------|-----------------------------|--------------------------------|-----------------------------|
| Wakefield Rd EB 1    | 91.9%        | 8.1%         | 7.6%            | 48.6%           | 0.1%            | 34.9%           | 2.9%           | 0.7%           | 4.5%              | 0.0%             | 0.4%            | 0.1%                        | 0.0%                           | 0.1%                        |
| Wakefield Rd WB 1    | 91.9%        | 8.1%         | 7.6%            | 48.6%           | 0.1%            | 34.9%           | 2.9%           | 0.7%           | 4.5%              | 0.0%             | 0.4%            | 0.1%                        | 0.0%                           | 0.1%                        |
| St Andrews Rd        | 79.4%        | 20.6%        | 6.6%            | 42.2%           | 0.1%            | 29.9%           | 7.4%           | 1.7%           | 11.4%             | 0.1%             | 0.3%            | 0.1%                        | 0.0%                           | 0.1%                        |
| Firth St             | 82.1%        | 17.9%        | 6.8%            | 43.7%           | 0.1%            | 30.9%           | 6.5%           | 1.5%           | 9.9%              | 0.1%             | 0.3%            | 0.1%                        | 0.0%                           | 0.1%                        |
| Queensgate EB 1      | 89.5%        | 10.5%        | 7.5%            | 47.6%           | 0.1%            | 33.7%           | 3.8%           | 0.9%           | 5.8%              | 0.0%             | 0.4%            | 0.1%                        | 0.0%                           | 0.1%                        |
| Queensgate WB 1      | 89.5%        | 10.5%        | 7.5%            | 47.6%           | 0.1%            | 33.7%           | 3.8%           | 0.9%           | 5.8%              | 0.0%             | 0.4%            | 0.1%                        | 0.0%                           | 0.1%                        |
| Southgate SB1        | 89.1%        | 10.9%        | 7.4%            | 47.3%           | 0.1%            | 33.7%           | 3.9%           | 0.9%           | 6.0%              | 0.0%             | 0.4%            | 0.1%                        | 0.0%                           | 0.1%                        |
| Southgate NB1        | 89.1%        | 10.9%        | 7.4%            | 47.3%           | 0.1%            | 33.7%           | 3.9%           | 0.9%           | 6.0%              | 0.0%             | 0.4%            | 0.1%                        | 0.0%                           | 0.1%                        |
| Kingsgate Roundabout | 87.9%        | 12.1%        | 7.2%            | 48.9%           | 0.1%            | 31.2%           | 4.3%           | 1.1%           | 6.7%              | 0.0%             | 0.3%            | 0.1%                        | 0.0%                           | 0.1%                        |
| Kirkgate             | 10.3%        | 89.7%        | 0.9%            | 5.5%            | 0.0%            | 3.8%            | 32.3%          | 7.6%           | 49.5%             | 0.3%             | 0.0%            | 0.0%                        | 0.0%                           | 0.0%                        |
| Leeds Rd WB          | 76.5%        | 23.5%        | 6.4%            | 40.5%           | 0.1%            | 29.0%           | 8.5%           | 1.9%           | 13.0%             | 0.1%             | 0.3%            | 0.1%                        | 0.0%                           | 0.1%                        |
| Leeds Rd EB          | 76.5%        | 23.5%        | 6.4%            | 40.5%           | 0.1%            | 29.0%           | 8.5%           | 1.9%           | 13.0%             | 0.1%             | 0.3%            | 0.1%                        | 0.0%                           | 0.1%                        |
| Northumberland St    | 90.8%        | 9.2%         | 7.6%            | 48.0%           | 0.1%            | 34.5%           | 3.3%           | 0.8%           | 5.1%              | 0.0%             | 0.4%            | 0.1%                        | 0.0%                           | 0.1%                        |
| Castle/Southgate SB  | 79.2%        | 20.8%        | 6.6%            | 42.0%           | 0.1%            | 30.0%           | 7.5%           | 1.7%           | 11.5%             | 0.1%             | 0.3%            | 0.1%                        | 0.0%                           | 0.1%                        |
| Castle/Southgate NB  | 79.2%        | 20.8%        | 6.6%            | 42.0%           | 0.1%            | 30.0%           | 7.5%           | 1.7%           | 11.5%             | 0.1%             | 0.3%            | 0.1%                        | 0.0%                           | 0.1%                        |
| Lower Fitzwilliam St | 89.4%        | 10.6%        | 7.4%            | 48.3%           | 0.1%            | 32.9%           | 3.8%           | 0.9%           | 5.9%              | 0.0%             | 0.3%            | 0.1%                        | 0.0%                           | 0.1%                        |
| Castlegate EB        | 88.6%        | 11.4%        | 7.4%            | 47.0%           | 0.1%            | 33.5%           | 4.1%           | 0.9%           | 6.3%              | 0.0%             | 0.4%            | 0.1%                        | 0.0%                           | 0.1%                        |
| Castlegate WB        | 88.6%        | 11.4%        | 7.4%            | 47.0%           | 0.1%            | 33.5%           | 4.1%           | 0.9%           | 6.3%              | 0.0%             | 0.4%            | 0.1%                        | 0.0%                           | 0.1%                        |
| John William St 1    | 89.4%        | 10.6%        | 7.4%            | 48.3%           | 0.1%            | 32.9%           | 3.8%           | 0.9%           | 5.9%              | 0.0%             | 0.3%            | 0.1%                        | 0.0%                           | 0.1%                        |
| Castlegate NB 1      | 82.0%        | 18.0%        | 6.8%            | 43.4%           | 0.1%            | 31.1%           | 6.5%           | 1.5%           | 9.9%              | 0.1%             | 0.3%            | 0.1%                        | 0.0%                           | 0.1%                        |
| Castlegate SB 1      | 82.0%        | 18.0%        | 6.8%            | 43.4%           | 0.1%            | 31.1%           | 6.5%           | 1.5%           | 9.9%              | 0.1%             | 0.3%            | 0.1%                        | 0.0%                           | 0.1%                        |
| Fitzwilliam St       | 92.3%        | 7.7%         | 7.7%            | 49.9%           | 0.1%            | 34.0%           | 2.8%           | 0.7%           | 4.2%              | 0.0%             | 0.3%            | 0.1%                        | 0.0%                           | 0.1%                        |
| Castlegate Slip      | 88.2%        | 11.8%        | 7.3%            | 46.7%           | 0.1%            | 33.5%           | 4.3%           | 1.0%           | 6.5%              | 0.0%             | 0.4%            | 0.1%                        | 0.0%                           | 0.1%                        |
| New North Rd Slip    | 89.7%        | 10.3%        | 7.5%            | 47.5%           | 0.1%            | 34.1%           | 3.7%           | 0.8%           | 5.7%              | 0.0%             | 0.4%            | 0.1%                        | 0.0%                           | 0.1%                        |
| New North Rd         | 90.3%        | 9.7%         | 7.5%            | 47.8%           | 0.1%            | 34.3%           | 3.5%           | 0.8%           | 5.4%              | 0.0%             | 0.4%            | 0.1%                        | 0.0%                           | 0.1%                        |
| Westgate 1           | 26.6%        | 73.4%        | 2.2%            | 14.1%           | 0.0%            | 10.0%           | 26.6%          | 6.1%           | 40.5%             | 0.3%             | 0.1%            | 0.0%                        | 0.0%                           | 0.0%                        |
| Railway St           | 65.6%        | 34.4%        | 5.5%            | 35.5%           | 0.1%            | 24.2%           | 12.4%          | 2.9%           | 19.0%             | 0.1%             | 0.2%            | 0.1%                        | 0.0%                           | 0.1%                        |
| Trinity St           | 80.5%        | 19.5%        | 6.7%            | 43.5%           | 0.1%            | 29.7%           | 7.0%           | 1.7%           | 10.7%             | 0.1%             | 0.3%            | 0.1%                        | 0.0%                           | 0.1%                        |
| Market St 1          | 41.0%        | 59.0%        | 3.4%            | 22.2%           | 0.0%            | 15.1%           | 21.2%          | 5.0%           | 32.5%             | 0.2%             | 0.2%            | 0.0%                        | 0.0%                           | 0.1%                        |
| Dundas St            | 96.7%        | 3.3%         | 8.0%            | 52.3%           | 0.1%            | 35.6%           | 1.2%           | 0.3%           | 1.8%              | 0.0%             | 0.4%            | 0.1%                        | 0.0%                           | 0.2%                        |
| Bus Station Route    | -            | 100.0%       | -               | -               | -               | -               | 35.3%          | 9.1%           | 55.2%             | 0.4%             | -               | -                           | -                              | -                           |

| Source Name      | All LDVs (%) | All HDVs (%) | Petrol Cars (%) | Diesel Cars (%) | Petrol LGVs (%) | Diesel LGVs (%) | Rigid HGVs (%) | Artic HGVs (%) | Buses/Coaches (%) | Hybrid Buses (%) | Motorcycles (%) | Full Hybrid Petrol Cars (%) | Plug-In Hybrid Petrol Cars (%) | Full Hybrid Diesel Cars (%) |
|------------------|--------------|--------------|-----------------|-----------------|-----------------|-----------------|----------------|----------------|-------------------|------------------|-----------------|-----------------------------|--------------------------------|-----------------------------|
| Manchester Rd NB | 70.5%        | 29.5%        | 5.8%            | 39.2%           | 0.1%            | 25.0%           | 10.5%          | 2.6%           | 16.3%             | 0.1%             | 0.2%            | 0.1%                        | 0.0%                           | 0.1%                        |
| Manchester Rd SB | 70.5%        | 29.5%        | 5.8%            | 39.2%           | 0.1%            | 25.0%           | 10.5%          | 2.6%           | 16.3%             | 0.1%             | 0.2%            | 0.1%                        | 0.0%                           | 0.1%                        |
| Chapel Hill      | 77.1%        | 22.9%        | 6.4%            | 42.9%           | 0.1%            | 27.3%           | 8.1%           | 2.0%           | 12.6%             | 0.1%             | 0.2%            | 0.1%                        | 0.0%                           | 0.1%                        |
| Bradford RD NB 1 | 94.1%        | 5.9%         | 7.8%            | 49.8%           | 0.1%            | 35.7%           | 2.1%           | 0.5%           | 3.3%              | 0.0%             | 0.4%            | 0.1%                        | 0.0%                           | 0.1%                        |
| Bradford RD SB   | 88.7%        | 11.3%        | 7.4%            | 46.9%           | 0.1%            | 33.7%           | 4.1%           | 0.9%           | 6.2%              | 0.0%             | 0.4%            | 0.1%                        | 0.0%                           | 0.1%                        |
| AQMA 9 - Average | 79.8%        | 20.2%        | 6.6%            | 42.7%           | 0.1%            | 29.9%           | 7.3%           | 1.7%           | 11.1%             | 0.1%             | 0.3%            | 0.1%                        | 0.0%                           | 0.1%                        |

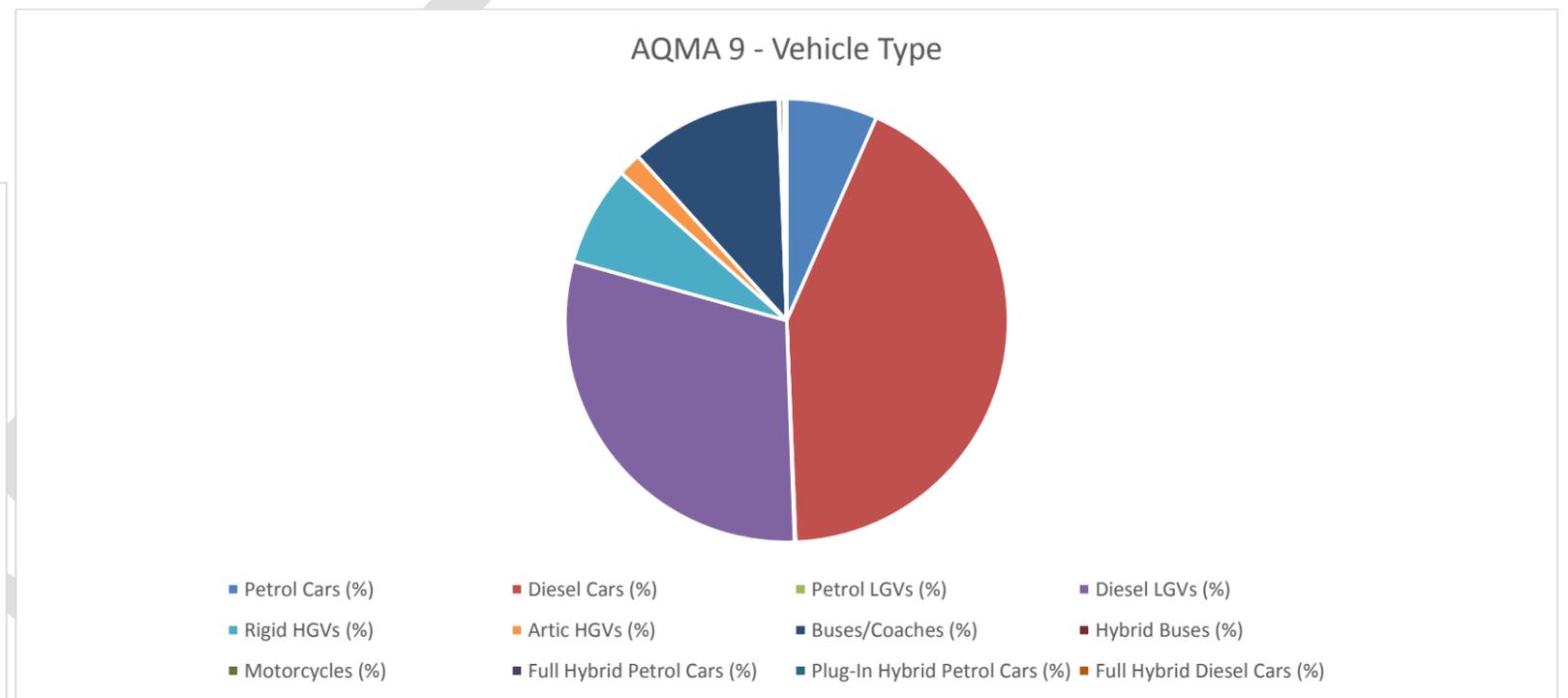
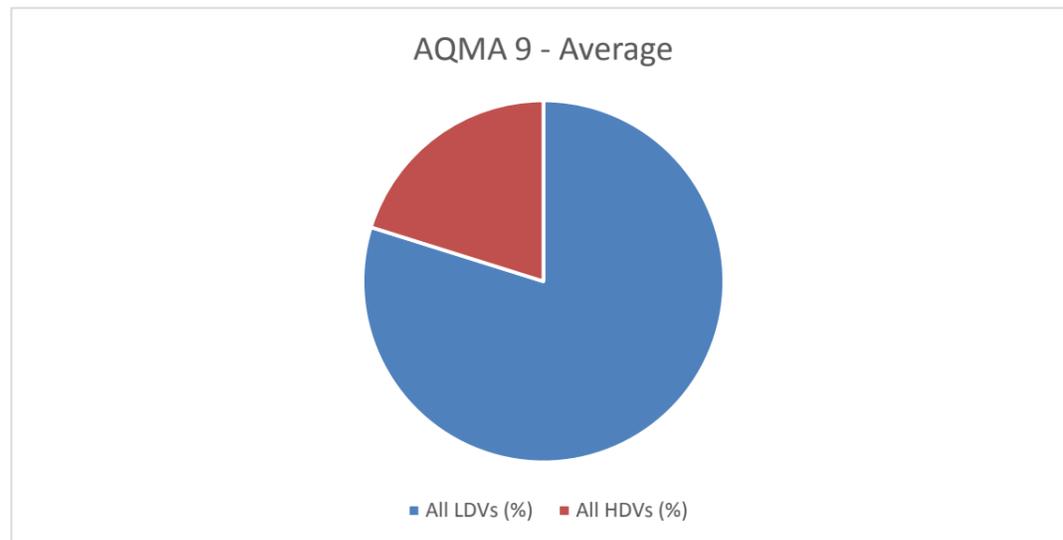


Table C.9 AQMA Emissions Contributions

| Source Name                 | Pollutant Name | All Vehicles (g/km/s) | All LDVs (g/km/s) | All HDVs (g/km/s) |
|-----------------------------|----------------|-----------------------|-------------------|-------------------|
| AQMA 1 Leeds Road           | NOx            | 1.14302               | 0.71624           | 0.42677           |
| AQMA 1 Bradley Road         | NOx            | 0.03514               | 0.02820           | 0.00695           |
| AQMA 1 B6118                | NOx            | 0.00265               | 0.00246           | 0.00019           |
| AQMA 1 A62                  | NOx            | 0.15341               | 0.10224           | 0.05117           |
| AQMA 1 A644                 | NOx            | 0.12321               | 0.06788           | 0.05533           |
| AQMA 3 - M62 East           | NOx            | 0.31961               | 0.24195           | 0.07766           |
| AQMA 3 - M62 West           | NOx            | 0.29122               | 0.20928           | 0.08194           |
| AQMA 3 - M62 East Slip      | NOx            | 0.02684               | 0.01863           | 0.00821           |
| AQMA 3 - West Slip Road     | NOx            | 0.06672               | 0.05874           | 0.00798           |
| AQMA 3 - Halifax Road South | NOx            | 0.05382               | 0.03753           | 0.01629           |

| Source Name                     | Pollutant Name | All Vehicles (g/km/s) | All LDVs (g/km/s) | All HDVs (g/km/s) |
|---------------------------------|----------------|-----------------------|-------------------|-------------------|
| AQMA 3 - Halifax Road North     | NOx            | 0.05382               | 0.03753           | 0.01629           |
| AQMA 3 - Lindley Moor Road East | NOx            | 0.02445               | 0.02214           | 0.00231           |
| AQMA 3 - Lindley Moor Road West | NOx            | 0.02445               | 0.02213           | 0.00231           |
| AQMA 3 - Brighouse Road East    | NOx            | 0.02153               | 0.02004           | 0.00149           |
| AQMA 3 - Brighouse Road West    | NOx            | 0.02153               | 0.02004           | 0.00149           |
| AQMA 4 - M62 East               | NOx            | 0.31392               | 0.22348           | 0.09044           |
| AQMA 4 - M62 West               | NOx            | 0.31392               | 0.22348           | 0.09044           |
| AQMA 4 B-Bradford Road North    | NOx            | 0.10036               | 0.07382           | 0.02654           |
| AQMA 4 B-Bradford Road South    | NOx            | 0.11198               | 0.08532           | 0.02665           |
| AQMA 4 - Whitehall Road East    | NOx            | 0.10036               | 0.07382           | 0.02654           |
| AQMA 4 -Whitehall Road West     | NOx            | 0.11889               | 0.07424           | 0.04465           |
| AQMA 5 - Leeds Road             | NOx            | 0.14380               | 0.05783           | 0.08597           |
| AQMA 5 - Wakefield Road         | NOx            | 0.21450               | 0.09575           | 0.11875           |
| AQMA 5 - Ring Road              | NOx            | 0.21450               | 0.09575           | 0.11875           |
| AQMA 6 - Halifax Road           | NOx            | 0.92131               | 0.65562           | 0.26569           |
| AQMA 6 - Blacker Road           | NOx            | 0.05157               | 0.04356           | 0.00802           |
| AQMA 6 - Edgerton Grove Road    | NOx            | 0.03659               | 0.03268           | 0.00391           |
| AQMA 7 - Leeds Road             | NOx            | 0.21516               | 0.18941           | 0.02575           |
| AQMA 7 - Wakefield Road         | NOx            | 0.08435               | 0.07621           | 0.00814           |
| AQMA 7 - Bradford Road          | NOx            | 0.18724               | 0.14353           | 0.04371           |
| AQMA 7 - Halifax Road           | NOx            | 0.12274               | 0.09670           | 0.02604           |
| AQMA 8 - M62 East               | NOx            | 0.97387               | 0.72410           | 0.24977           |
| AQMA 8 - M62 West               | NOx            | 0.97387               | 0.72410           | 0.24977           |
| AQMA 8 -Round Ings Road         | NOx            | 0.03300               | 0.02885           | 0.00414           |
| AQMA 9 Wakefield Rd EB 1        | NOx            | 0.08627               | 0.07925           | 0.00702           |
| AQMA 9 Wakefield Rd WB 1        | NOx            | 0.08627               | 0.07925           | 0.00702           |
| AQMA 9 St Andrews Rd            | NOx            | 0.08109               | 0.06440           | 0.01669           |
| AQMA 9 Firth St                 | NOx            | 0.09267               | 0.07608           | 0.01659           |
| AQMA 9 Wakefield Rd EB 2        | NOx            | 0.08765               | 0.08036           | 0.00729           |
| AQMA 9 Wakefield Rd WB 2        | NOx            | 0.08765               | 0.08036           | 0.00729           |
| AQMA 9 Queensgate EB 1          | NOx            | 0.07116               | 0.06371           | 0.00746           |
| AQMA 9 Queensgate WB 1          | NOx            | 0.07116               | 0.06371           | 0.00746           |
| AQMA 9 Southgate SB1            | NOx            | 0.07618               | 0.06788           | 0.00830           |
| AQMA 9 Southgate NB1            | NOx            | 0.07618               | 0.06788           | 0.00830           |
| AQMA 9 Kingsgate Roundabout     | NOx            | 0.28156               | 0.24752           | 0.03404           |
| AQMA 9 Kirkgate                 | NOx            | 0.03829               | 0.00393           | 0.03436           |
| AQMA 9 Leeds Rd WB              | NOx            | 0.06387               | 0.04884           | 0.01503           |
| AQMA 9 Leeds Rd EB              | NOx            | 0.06387               | 0.04884           | 0.01503           |
| AQMA 9 Northumberland St        | NOx            | 0.02596               | 0.02357           | 0.00239           |
| AQMA 9 Castle/Southgate SB      | NOx            | 0.04457               | 0.03528           | 0.00928           |
| AQMA 9 Castle/Southgate NB      | NOx            | 0.04457               | 0.03528           | 0.00928           |
| AQMA 9 Lower Fitzwilliam St     | NOx            | 0.03422               | 0.03059           | 0.00364           |
| AQMA 9 Castlegate EB            | NOx            | 0.06803               | 0.06026           | 0.00776           |
| AQMA 9 Castlegate WB            | NOx            | 0.06803               | 0.06026           | 0.00776           |
| AQMA 9 John William St 1        | NOx            | 0.03090               | 0.02762           | 0.00328           |
| AQMA 9 Castlegate NB 1          | NOx            | 0.10645               | 0.08728           | 0.01917           |
| AQMA 9 Castlegate SB 1          | NOx            | 0.10645               | 0.08728           | 0.01917           |

| Source Name              | Pollutant Name | All Vehicles (g/km/s) | All LDVs (g/km/s) | All HDVs (g/km/s) |
|--------------------------|----------------|-----------------------|-------------------|-------------------|
| AQMA 9 Fitzwilliam St    | NOx            | 0.01619               | 0.01495           | 0.00125           |
| AQMA 9 Castlegate Slip   | NOx            | 0.03650               | 0.03219           | 0.00431           |
| AQMA 9 New North Rd Slip | NOx            | 0.03510               | 0.03149           | 0.00360           |
| AQMA 9 New North Rd      | NOx            | 0.03316               | 0.02993           | 0.00323           |
| AQMA 9 Castlegate NB 2   | NOx            | 0.10840               | 0.08850           | 0.01990           |
| AQMA 9 Castlegate SB 2   | NOx            | 0.10840               | 0.08850           | 0.01990           |
| AQMA 9 Westgate 1        | NOx            | 0.05157               | 0.01370           | 0.03787           |
| AQMA 9 Westgate 2        | NOx            | 0.06021               | 0.02640           | 0.03381           |
| AQMA 9 John William St 2 | NOx            | 0.02790               | 0.02509           | 0.00280           |
| AQMA 9 Railway St        | NOx            | 0.03497               | 0.02292           | 0.01204           |
| AQMA 9 Trinity St        | NOx            | 0.07667               | 0.06173           | 0.01494           |
| AQMA 9 Castlegate SB 3   | NOx            | 0.07664               | 0.06559           | 0.01105           |
| AQMA 9 Castlegate NB 3   | NOx            | 0.07664               | 0.06559           | 0.01105           |
| AQMA 9 Market St 1       | NOx            | 0.03992               | 0.01637           | 0.02354           |
| AQMA 9 Market St 2       | NOx            | 0.03992               | 0.01637           | 0.02354           |
| AQMA 9 Dundas St         | NOx            | 0.00919               | 0.00888           | 0.00031           |
| AQMA 9 Bus Station Route | NOx            | 0.07461               | -                 | 0.07461           |
| AQMA 9 Manchester Rd NB  | NOx            | 0.02744               | 0.01934           | 0.00810           |
| AQMA 9 Manchester Rd SB  | NOx            | 0.02744               | 0.01934           | 0.00810           |
| AQMA 9 Chapel Hill       | NOx            | 0.08959               | 0.06907           | 0.02051           |
| AQMA 9 Bradford RD NB 1  | NOx            | 0.01367               | 0.01286           | 0.00081           |
| AQMA 9 Bradford RD NB 2  | NOx            | 0.01495               | 0.01407           | 0.00089           |
| AQMA 9 Bradford RD NB 3  | NOx            | 0.03005               | 0.02666           | 0.00340           |
| AQMA 9 Bradford RD SB    | NOx            | 0.03095               | 0.02745           | 0.00350           |

## Appendix D – Air Quality Modelling Details

### D.1 Ainley Top Detailed Assessment

Kirklees Council has modelled the annual mean NO<sub>x</sub> for 2014 in the area around Ainley Top Roundabout. This modelling was conducted to determine the boundaries of the AQMA.

Kirklees Council has used Atmospheric Dispersion Modelling System for Urban areas (ADMS Urban) to create this model and validated it against the 2014 automatic monitoring data.

Meteorological Data for the model has been taken from Huddersfield Civic 3 Weather Station. The weather data for 2004 has been selected as the weather patterns in that year are representative of the usual weather conditions in the district.

The Traffic Figures have been obtained from the Department of Transport for 2013 count points in close proximity to the assessment areas.

Traffic counts and average speeds were entered into the Emission Factor Toolkit 2014

Background figures for the model have been taken from the *2014 based background maps* (DEFRA).

The topography and road layout was obtained from Kirklees Council GIS data and ordinance survey records.

Kirklees conducted a statistical procedure as set out in TG(09) to determine the model uncertainty and performance. Table D.1.1 indicates the results at diffusion tube sites and the results of the statistical analysis are contained within Table D.1.2 and Figure D.1.1.

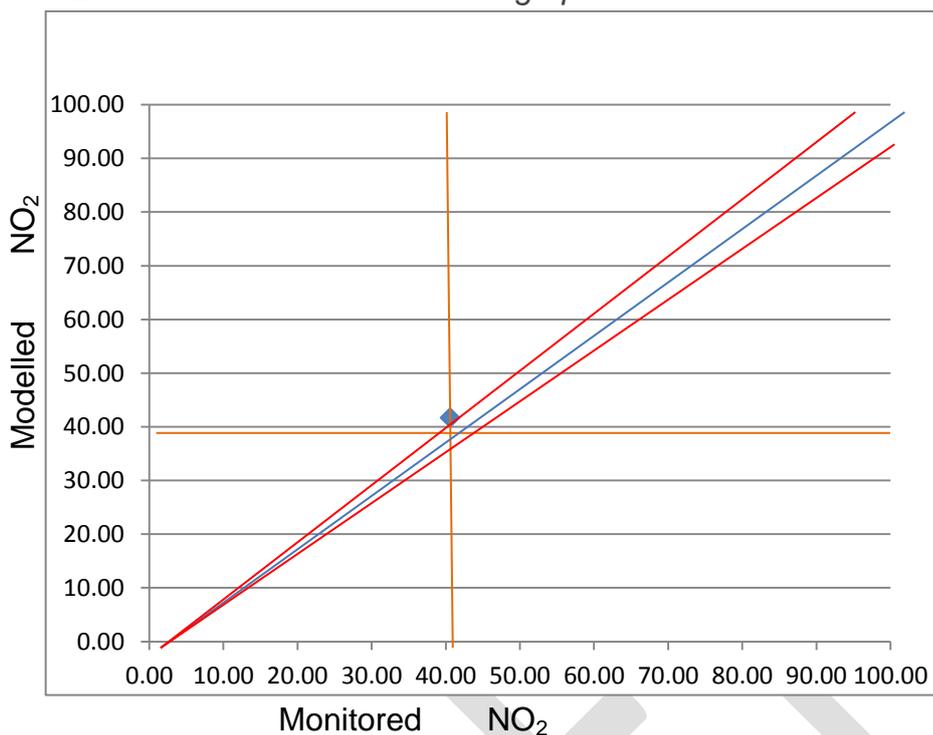
Table D.1.1 Results of Run at diffusion tube sites and statistical analysis of model

|            | Tube result<br>(µg/m <sup>3</sup> ) | Modelled increment<br>NO <sub>x</sub><br>(µg/m <sup>3</sup> ) | Calculated NO <sub>2</sub><br>from NO <sub>x</sub><br>(µg/m <sup>3</sup> ) | %<br>Difference | Correction<br>Factor |
|------------|-------------------------------------|---|--|-----------------|----------------------|
| Roadside 6 | <b>41.70</b>                        | 29.99   | 40.61  | -3              | 0.97                 |

Table D.1.2 Statistical analysis of the corrected data

| Ainley Top Run 2 - 2014 |             |
|-------------------------|-------------|
| RMSE                    | <b>1.09</b> |
| Fractional Bias         | <b>0.03</b> |

Figure D.1.1 NO<sub>2</sub> Monitored / Modelled scatter graph

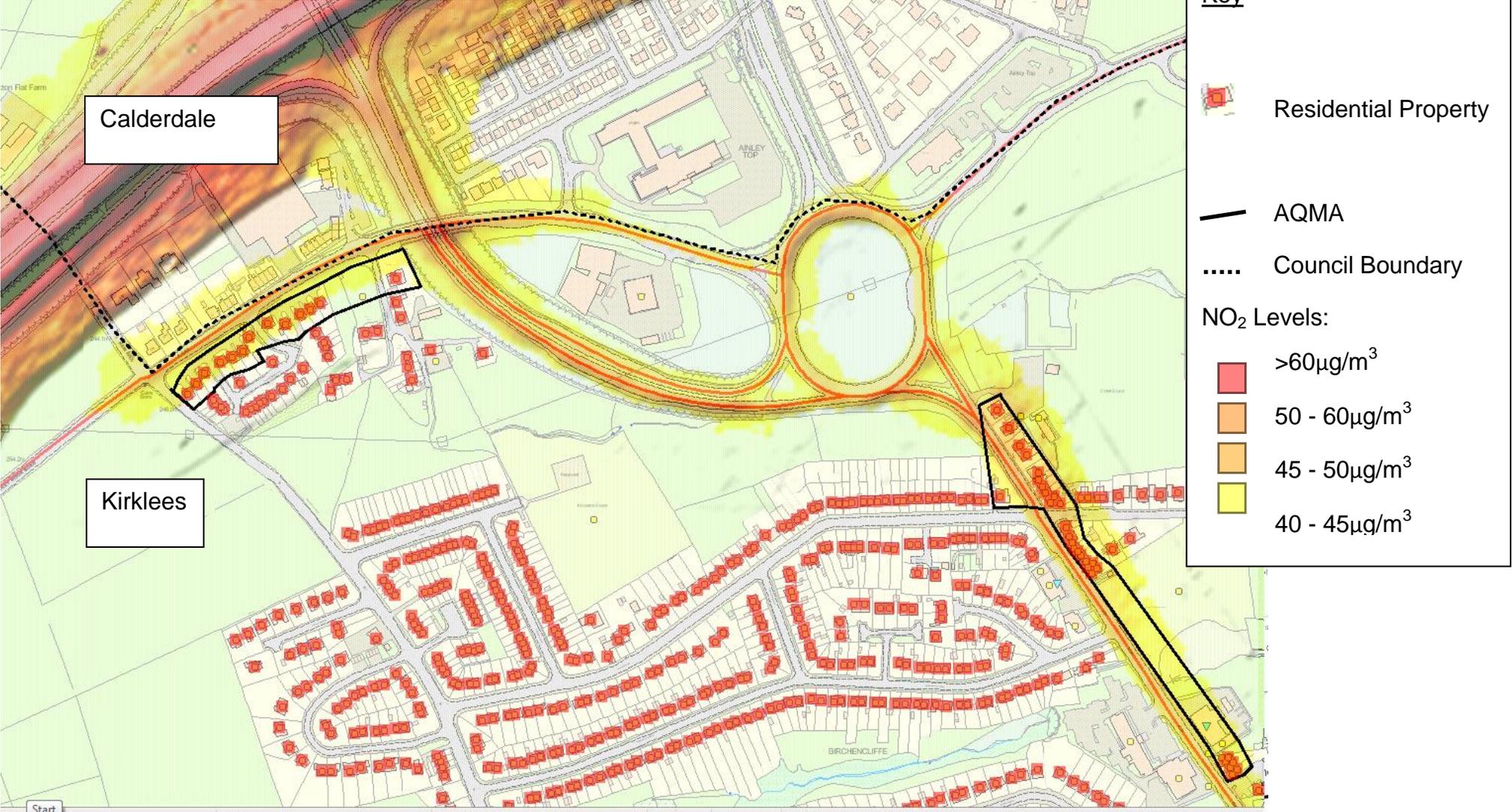


The statistical analysis carried out at the validation stage shows that the model accuracy is good and the fractional bias indicates that the model is only slightly underestimating

Figure D.1.1 graphs the correlation between the monitored and modelled data. It is clear to see that trend line is close to the mid-point and all points fall well within the +/- 5% region

Map D.1 was constructed using the correction factor of 0.97. The yellow and red areas indicate the areas of exceedance and how NO<sub>2</sub> diffuses around the Ainley Top Roundabout assessment area

Map D.1 Ainley Top AQMA



**D.2 Birkenshaw Detailed Assessment**

Kirklees Council has modelled the annual mean NO<sub>x</sub> for 2015 in the area of Birkenshaw. This modelling was conducted to determine the boundaries of the AQMA.

Kirklees Council has used Atmospheric Dispersion Modelling System for Urban areas (ADMS Urban) to create this model and validated it against the 2015 automatic monitoring data.

Meteorological Data for the model has been taken from Huddersfield Civic 3 Weather Station. The weather data for 2004 has been selected as the weather patterns in that year are representative of the usual weather conditions in the district.

The Traffic Figures have been obtained from the Department of Transport for 2015 count points in close proximity to the assessment areas.

Traffic counts and average speeds were entered into the Emission Factor Toolkit 2014

Background figures for the model have been taken from the *2015 based background maps* (DEFRA).

The topography and road layout was obtained from Kirklees Council GIS data and ordinance survey records.

Kirklees conducted a statistical procedure as set out in TG(09) to determine the model uncertainty and performance. Table D.2.1 indicates the results at diffusion tube sites and the results of the statistical analysis are contained within Table D.2.2 and Figure D.2.1.

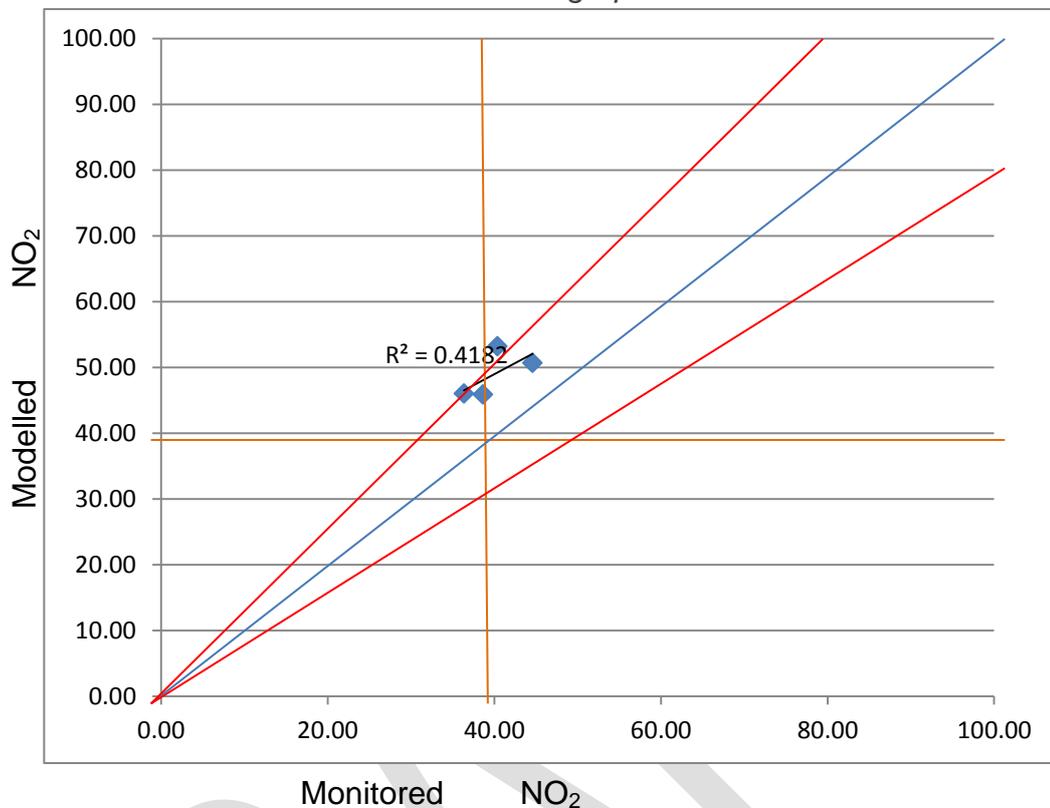
*Table D.2.1 Results of Run at diffusion tube sites and statistical analysis of model*

|                | Tube result (µg/m <sup>3</sup> ) | Modelled increment NO <sub>x</sub> (µg/m <sup>3</sup> ) | Calculated NO <sub>2</sub> from NO <sub>x</sub> (µg/m <sup>3</sup> ) | % Difference | Correction Factor |
|----------------|----------------------------------|---|--|--------------|-------------------|
| <b>RS4</b>     | 44.60                            | 70.09   | 50.71  | 14           | 0.88              |
| <b>Tube 13</b> | 40.38                            | 77.69   | 53.22  | 32           | 0.76              |
| <b>Tube 37</b> | 36.36                            | 56.64   | 46.04  | 27           | 0.79              |
| <b>Tube 38</b> | 38.66                            | 56.17   | 45.87  | 19           | 0.84              |

*Table D.2.2 Statistical analysis of the corrected data*

| <b>Birkenshaw Run - 2015</b> |              |
|------------------------------|--------------|
| <b>RMSE</b>                  | <b>7.05</b>  |
| <b>Fractional Bias</b>       | <b>-0.20</b> |

Figure D.2.1 NO<sub>2</sub> Monitored / Modelled scatter graph

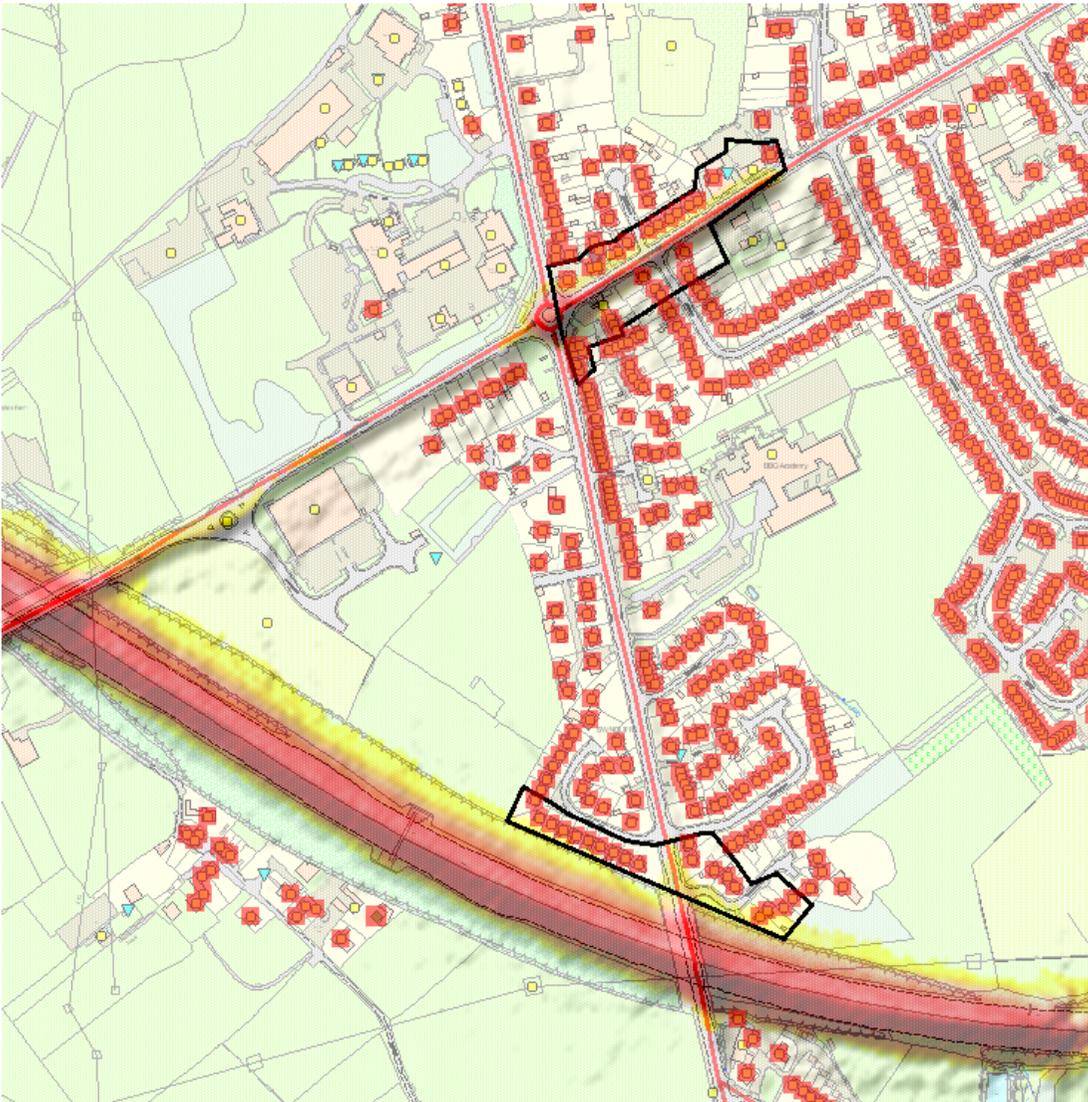


The statistical analysis carried out at the validation stage shows that the model accuracy is average and the fractional bias indicates that the model is over estimating

Figure D.2.1 graphs the correlation between the monitored and modelled data. It is clear to see that trend line falls within the +/- 20% region

Map D.2 was constructed using the correction factor of 0.88. The yellow and red areas indicate the areas of exceedance and how NO<sub>2</sub> diffuses around the Ainley Top Roundabout assessment area

Map D.2 Birkenshaw AQMA



**Key**

-  Residential Property
-  AQMA

**NO<sub>2</sub> Levels:**

-  >60µg/m<sup>3</sup>
-  50 - 60µg/m<sup>3</sup>
-  45 - 50µg/m<sup>3</sup>
-  40 - 45µg/m<sup>3</sup>

### D.3 Eastborough Detailed Assessment

Kirklees Council has modelled the annual mean NO<sub>x</sub> for 2015 in the area of Eastborough. This modelling was conducted to determine the boundaries of the AQMA.

Kirklees Council has used Atmospheric Dispersion Modelling System for Urban areas (ADMS Urban) to create this model and validated it against the 2015 automatic monitoring data.

Meteorological Data for the model has been taken from Huddersfield Civic 3 Weather Station. The weather data for 2004 has been selected as the weather patterns in that year are representative of the usual weather conditions in the district.

The Traffic Figures have been obtained from the Department of Transport for 2015 count points in close proximity to the assessment areas.

Traffic counts and average speeds were entered into the Emission Factor Toolkit 2014

Background figures for the model have been taken from the *2015 based background maps* (DEFRA).

The topography and road layout was obtained from Kirklees Council GIS data and ordinance survey records.

Kirklees conducted a statistical procedure as set out in TG(09) to determine the model uncertainty and performance. Table D.3.1 indicates the results at diffusion tube sites and the results of the statistical analysis are contained within Table D.3.2 and Figure D.3.1.

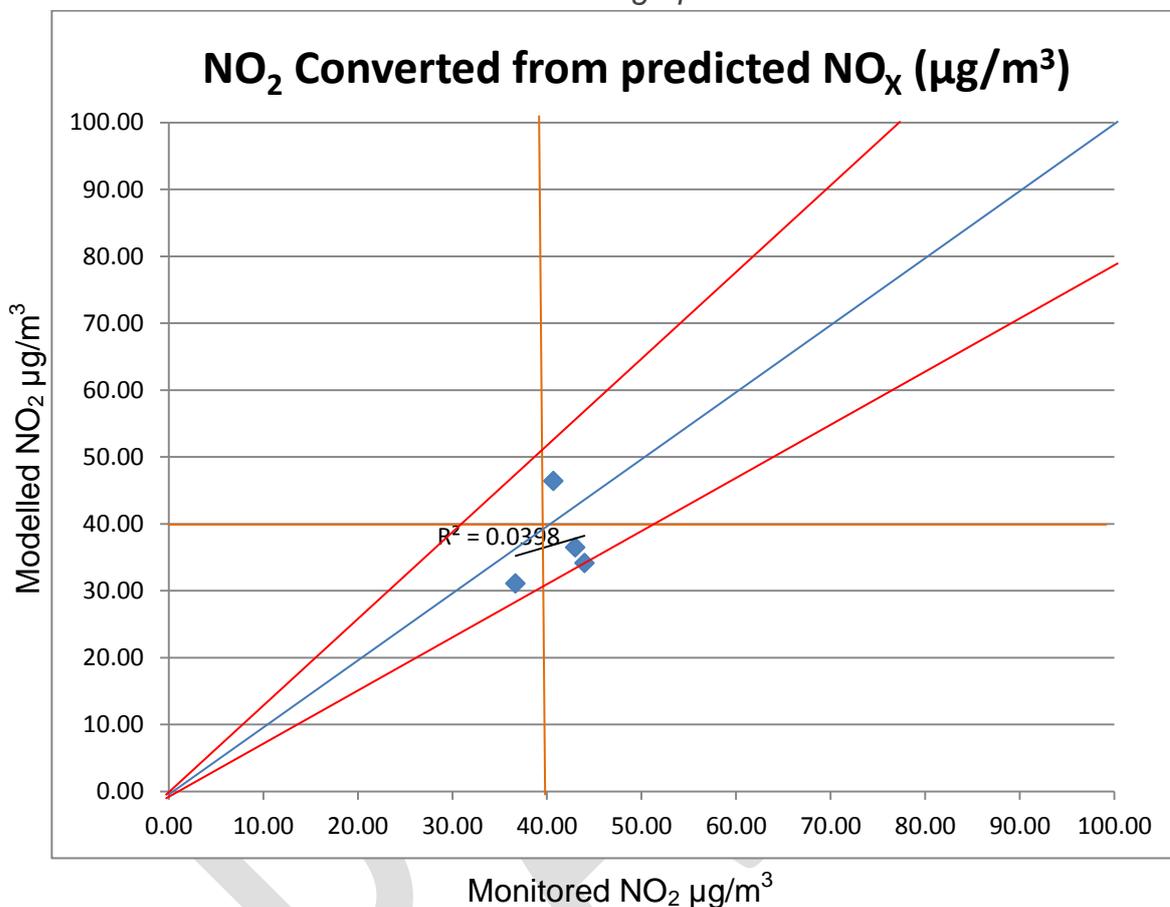
Table D.3.1 Results of Run at diffusion tube sites and statistical analysis of model

|                | Tube result (µg/m <sup>3</sup> ) | Modelled increment NO <sub>x</sub> (µg/m <sup>3</sup> ) | Calculated NO <sub>2</sub> from NO <sub>x</sub> (µg/m <sup>3</sup> ) | % Difference | Correction Factor |
|----------------|----------------------------------|---|--|--------------|-------------------|
| <b>Tube 20</b> | 40.68                            | 100.15  | 46.39  | 14           | 0.88              |
| <b>Tube 40</b> | 60.39                            | 86.89   | 41.48  | -31          | 1.46              |
| <b>Tube 42</b> | 42.99                            | 74.35   | 36.48  | -15          | 1.18              |
| <b>Tube 43</b> | 43.97                            | 68.74   | 34.12  | -22          | 1.29              |
| <b>Tube 44</b> | 36.68                            | 61.83   | 31.11  | -15          | 1.18              |

Table D.3.2 Statistical analysis of the corrected data

| Eastborough Run - 2015 |      |
|------------------------|------|
| RMSE                   | 8.95 |
| Fractional Bias        | 0.17 |

Figure D.3.1 NO<sub>2</sub> Monitored / Modelled scatter graph

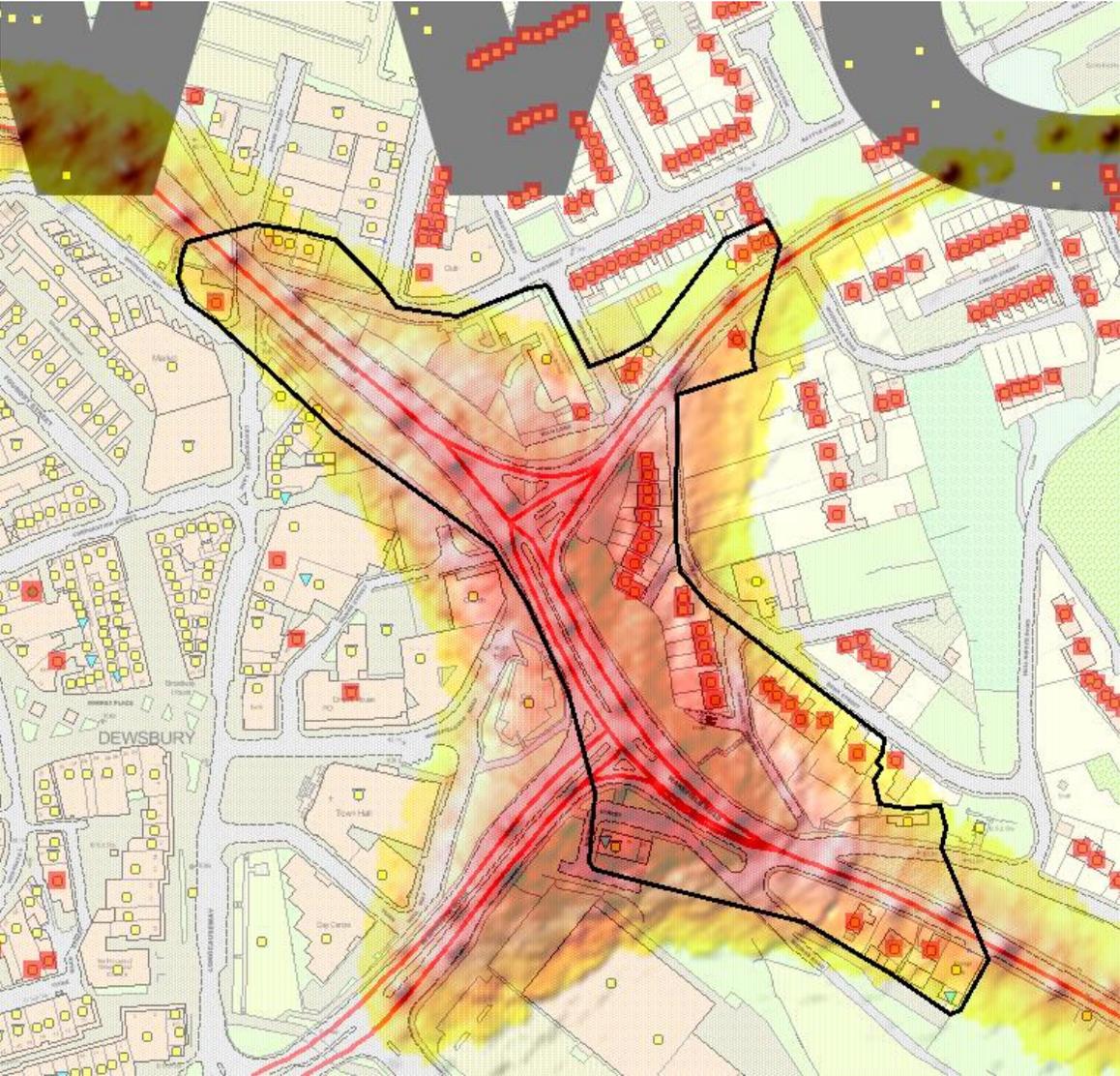


The statistical analysis carried out at the validation stage shows that the model accuracy is average and the fractional bias indicates that the model in the most part is underestimating.

Figure D.3.1 graphs the correlation between the monitored and modelled data. It is clear to see that trend line is close to the mid-point and all points fall within the +/- 20% region

Map D.3 was constructed using the correction factor of 1.22. The yellow and red areas indicate the areas of exceedance and how NO<sub>2</sub> diffuses around the Eastborough assessment area

Map D.3 Eastborough AQMA



**Key**

- Residential Property
- AQMA

**NO<sub>2</sub> Levels:**

- >60µg/m<sup>3</sup>
- 50 - 60µg/m<sup>3</sup>
- 45 - 50µg/m<sup>3</sup>
- 40 - 45µg/m<sup>3</sup>

### D.4 Edgerton Detailed Assessment

Kirklees Council has modelled the annual mean NO<sub>x</sub> for 2015 in the area of Edgerton. This modelling was conducted to determine the boundaries of the AQMA.

Kirklees Council has used Atmospheric Dispersion Modelling System for Urban areas (ADMS Urban) to create this model and validated it against the 2015 automatic monitoring data.

Meteorological Data for the model has been taken from Huddersfield Civic 3 Weather Station. The weather data for 2004 has been selected as the weather patterns in that year are representative of the usual weather conditions in the district.

The Traffic Figures have been obtained from the Department of Transport for 2015 count points in close proximity to the assessment areas.

Traffic counts and average speeds were entered into the Emission Factor Toolkit 2014

Background figures for the model have been taken from the 2015 based background maps (DEFRA).

The topography and road layout was obtained from Kirklees Council GIS data and ordinance survey records.

Kirklees conducted a statistical procedure as set out in TG(09) to determine the model uncertainty and performance. Table D.4.1 indicates the results at diffusion tube sites and the results of the statistical analysis are contained within Table D.4.2 and Figure D4.1.

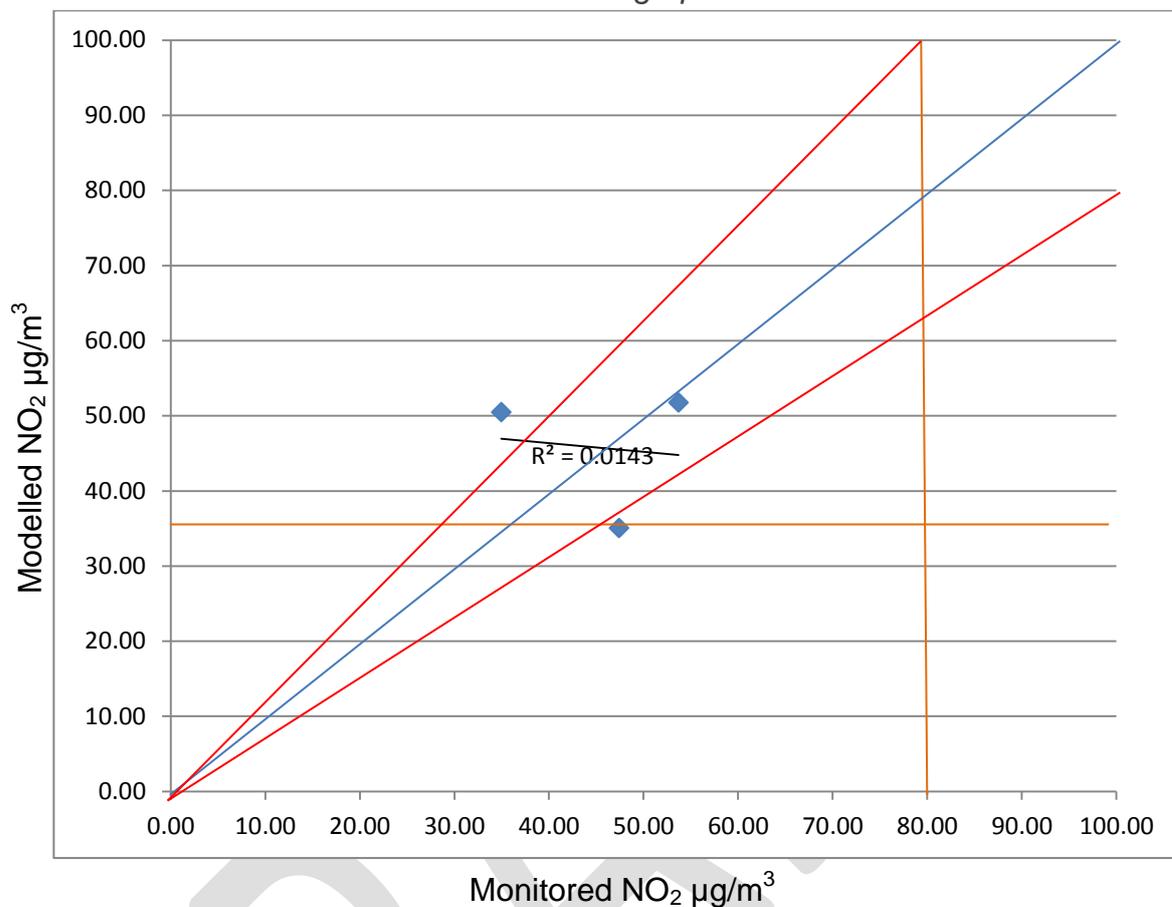
Table D.4.1 Results of Run at diffusion tube sites and statistical analysis of model

|                | Tube result (µg/m <sup>3</sup> ) | Modelled increment NO <sub>x</sub> (µg/m <sup>3</sup> ) | Calculated NO <sub>2</sub> from NO <sub>x</sub> (µg/m <sup>3</sup> ) | % Difference | Correction Factor |
|----------------|----------------------------------|---|--|--------------|-------------------|
| <b>Tube 3</b>  | 53.70                            | 73.10   | 51.72  | -4           | 1.04              |
| <b>Tube 31</b> | 34.96                            | 69.30   | 50.45  | 44           | 0.69              |
| <b>Tube 32</b> | 47.42                            | 28.39   | 35.04  | -26          | 1.35              |

Table D.4.2 Statistical analysis of the corrected data

| Edgerton Run - 2015 |       |
|---------------------|-------|
| RMSE                | 8.14  |
| Fractional Bias     | -0.01 |

Figure D4.1 NO2 Monitored / Modelled scatter graph

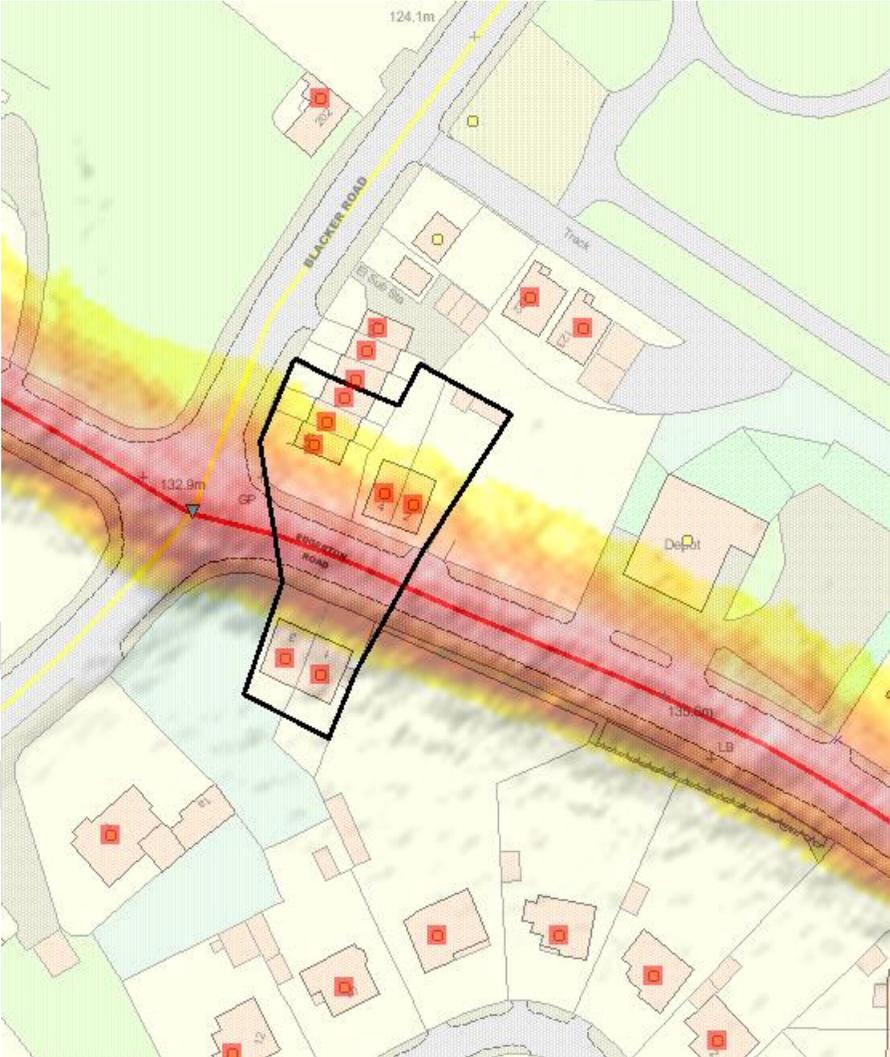


The statistical analysis carried out at the validation stage shows that the model accuracy is average and the fractional bias indicates that the model is overestimating.

Figure D.4.1 graphs the correlation between the monitored and modelled data. It is clear to see that trend line is close to the mid-point and all points fall within the +/- 20% region

Map D.4 was constructed without a correction factor. The yellow and red areas indicate the areas of exceedance and how NO<sub>2</sub> diffuses around the Edgerton assessment area

Map D.4 Edgerton AQMA



**Key**

- Residential Property
- AQMA

**NO<sub>2</sub> Levels:**

- >60µg/m<sup>3</sup>
- 50 - 60µg/m<sup>3</sup>
- 45 - 50µg/m<sup>3</sup>
- 40 - 45µg/m<sup>3</sup>

**D.5 Heckmondwike Detailed Assessment**

Kirklees Council has modelled the annual mean NO<sub>x</sub> for 2015 in the area of Heckmondwike. This modelling was conducted to determine the boundaries of the AQMA.

Kirklees Council has used Atmospheric Dispersion Modelling System for Urban areas (ADMS Urban) to create this model and validated it against the 2015 automatic monitoring data.

Meteorological Data for the model has been taken from Huddersfield Civic 3 Weather Station. The weather data for 2004 has been selected as the weather patterns in that year are representative of the usual weather conditions in the district.

The Traffic Figures have been obtained from the Department of Transport for 2015 count points in close proximity to the assessment areas.

Traffic counts and average speeds were entered into the Emission Factor Toolkit 2014

Background figures for the model have been taken from the 2015 based background maps (DEFRA).

The topography and road layout was obtained from Kirklees Council GIS data and ordinance survey records.

Kirklees conducted a statistical procedure as set out in TG(09) to determine the model uncertainty and performance. Table D.5.1 indicates the results at diffusion tube sites and the results of the statistical analysis are contained within Table D.5.2 and Figure D.5.1.

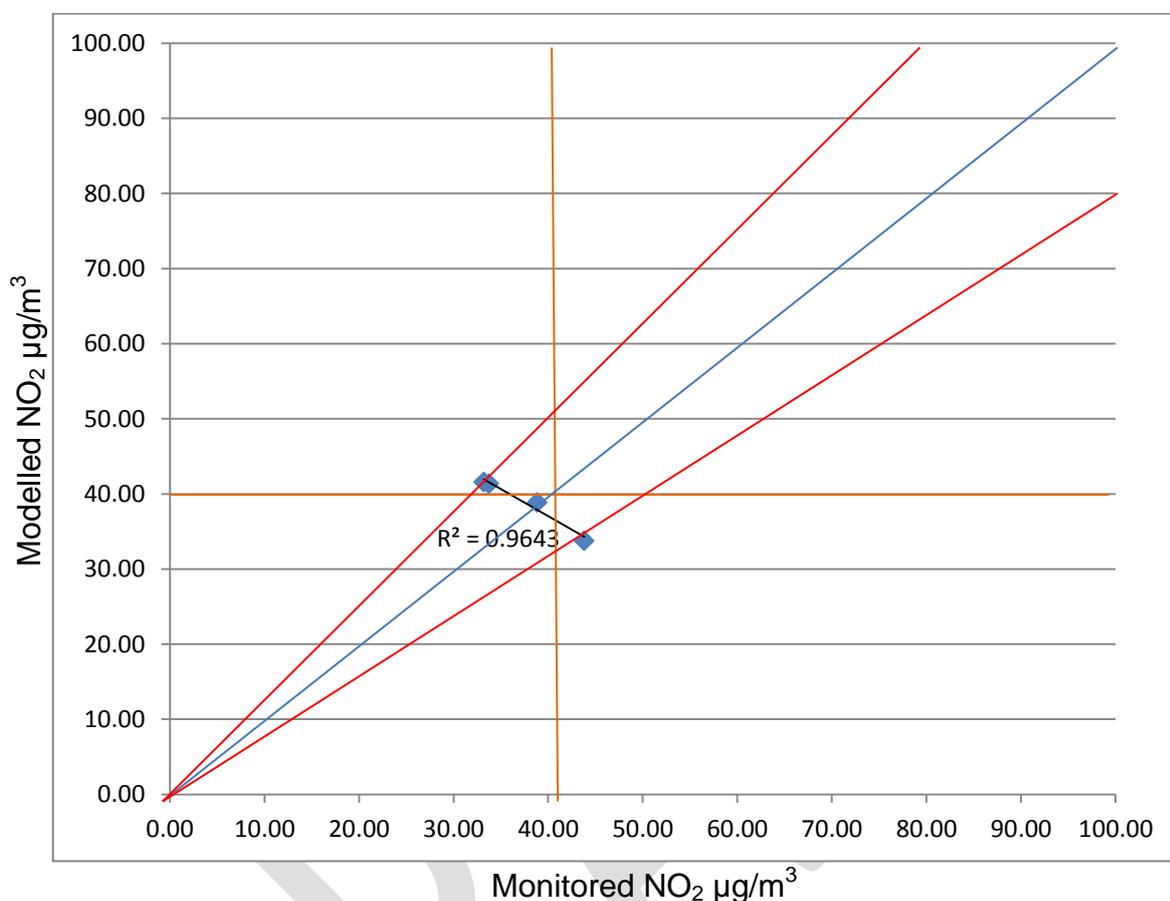
*Table D.5.1 Results of Run at diffusion tube sites and statistical analysis of model*

|                | Tube result (µg/m <sup>3</sup> ) | Modelled increment NO <sub>x</sub> (µg/m <sup>3</sup> ) | Calculated NO <sub>2</sub> from NO <sub>x</sub> (µg/m <sup>3</sup> ) | % Difference | Correction Factor |
|----------------|----------------------------------|---|--|--------------|-------------------|
| <b>Tube 33</b> | 33.75                            | 44.12   | 41.38  | 23           | 0.82              |
| <b>Tube 34</b> | 33.21                            | 44.64   | 41.58  | 25           | 0.80              |
| <b>Tube 35</b> | 38.86                            | 37.67   | 38.85  | 0            | 1.00              |
| <b>Tube 48</b> | 43.82                            | 25.33   | 33.74  | -23          | 1.30              |

*Table D.5.2 Statistical analysis of the corrected data*

| <b>Heckmondwike Run - 2015</b> |       |
|--------------------------------|-------|
| <b>RMSE</b>                    | 5.73  |
| <b>Fractional Bias</b>         | -0.04 |

Figure D5.1 NO2 Monitored / Modelled scatter graph

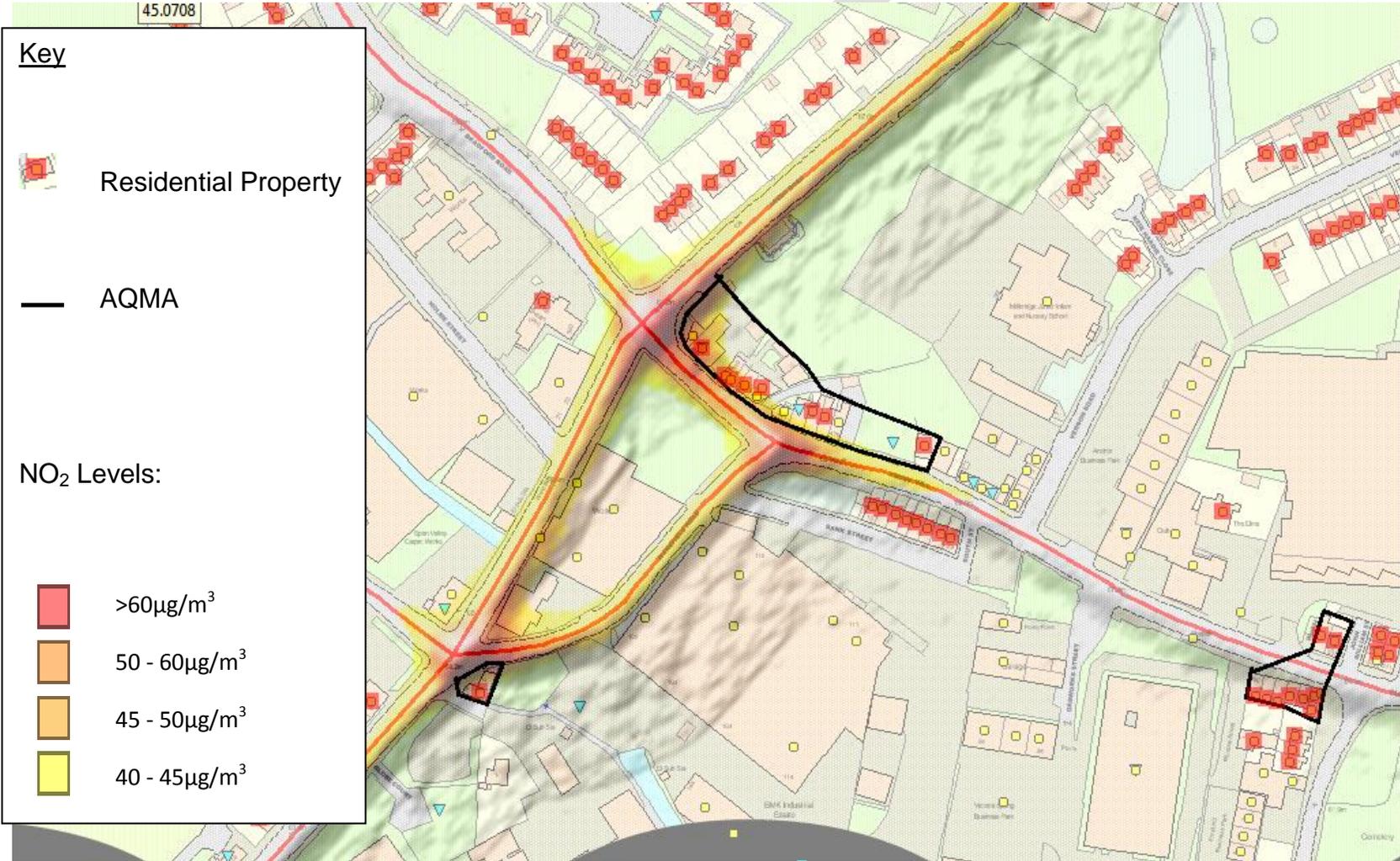


The statistical analysis carried out at the validation stage shows that the model accuracy is average and the fractional bias indicates that the model average distribution of results is similar to the monitoring results.

Figure D.5.1 graphs the correlation between the monitored and modelled data. It is clear to see that trend line is close to the mid-point and all points fall within the +/- 20% region

Map D.5 was constructed using the correction factor of 0.98. The yellow and red areas indicate the areas of exceedance and how NO<sub>2</sub> diffuses around the Heckmondwike assessment area

Map D.5 Heckmondwike AQMA



**D.6 Huddersfield Town Centre Detailed Assessment**

Kirklees Council has modelled the annual mean NO<sub>x</sub> for 2015 in the area of Heckmondwike. This modelling was conducted to determine the boundaries of the AQMA.

Kirklees Council has used Atmospheric Dispersion Modelling System for Urban areas (ADMS Urban) to create this model and validated it against the 2015 automatic monitoring data.

Meteorological Data for the model has been taken from Huddersfield Civic 3 Weather Station. The weather data for 2004 has been selected as the weather patterns in that year are representative of the usual weather conditions in the district.

The Traffic Figures have been obtained from the Department of Transport for 2015 count points in close proximity to the assessment areas.

Traffic counts and average speeds were entered into the Emission Factor Toolkit 2014

Background figures for the model have been taken from the 2015 based background maps (DEFRA).

The topography and road layout was obtained from Kirklees Council GIS data and ordinance survey records.

Kirklees conducted a statistical procedure as set out in TG(09) to determine the model uncertainty and performance. Table D.6.1 indicates the results at diffusion tube sites and the results of the statistical analysis are contained within Table D.6.2 and Figure D.6.1.

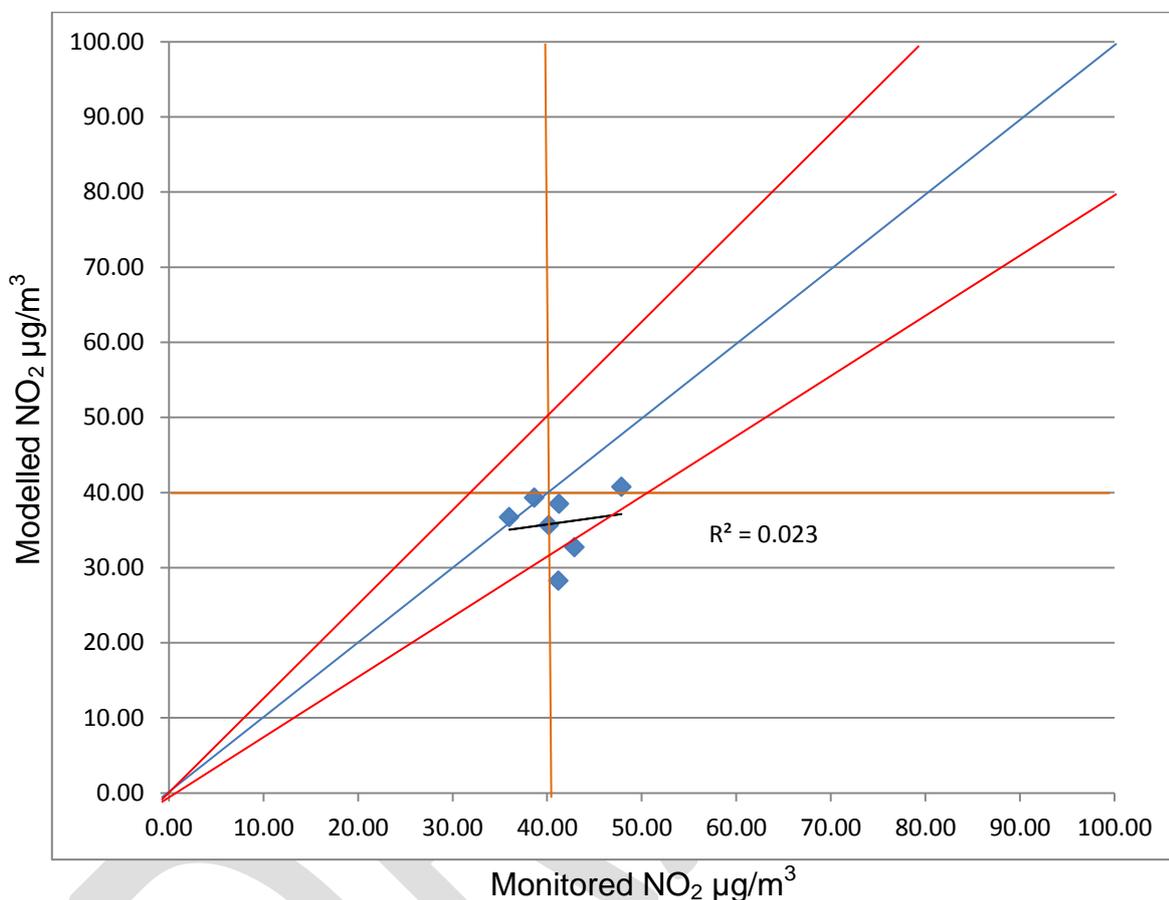
*Table D.6.1 Results of Run at diffusion tube sites and statistical analysis of model*

|                   | Tube result (µg/m <sup>3</sup> ) | Modelled increment NO <sub>x</sub> (µg/m <sup>3</sup> ) | Calculated NO <sub>2</sub> from NO <sub>x</sub> (µg/m <sup>3</sup> ) | % Difference | Correction Factor |
|-------------------|----------------------------------|---|--|--------------|-------------------|
| <b>Roadside 3</b> | 36.00                            | 32.31   | 36.68  | 2            | 0.98              |
| <b>Tube 16</b>    | 41.19                            | 12.92   | 28.22  | -31          | 1.46              |
| <b>Tube 17</b>    | 41.25                            | 36.70   | 38.46  | -7           | 1.07              |
| <b>Tube 20</b>    | 40.17                            | 29.79   | 35.63  | -11          | 1.13              |
| <b>Tube 33</b>    | 47.85                            | 42.46   | 40.74  | -15          | 1.17              |
| <b>Tube 13</b>    | 38.64                            | 38.74   | 39.28  | 2            | 0.98              |
| <b>Tube 54</b>    | 42.90                            | 22.85   | 32.67  | -24          | 1.31              |

*Table D.6.2 Statistical analysis of the corrected data*

| <b>Town Centre Run - 2015</b> |      |
|-------------------------------|------|
| <b>RMSE</b>                   | 7.10 |
| <b>Fractional Bias</b>        | 0.13 |

Figure D.6.1 NO<sub>2</sub> Monitored / Modelled scatter graph

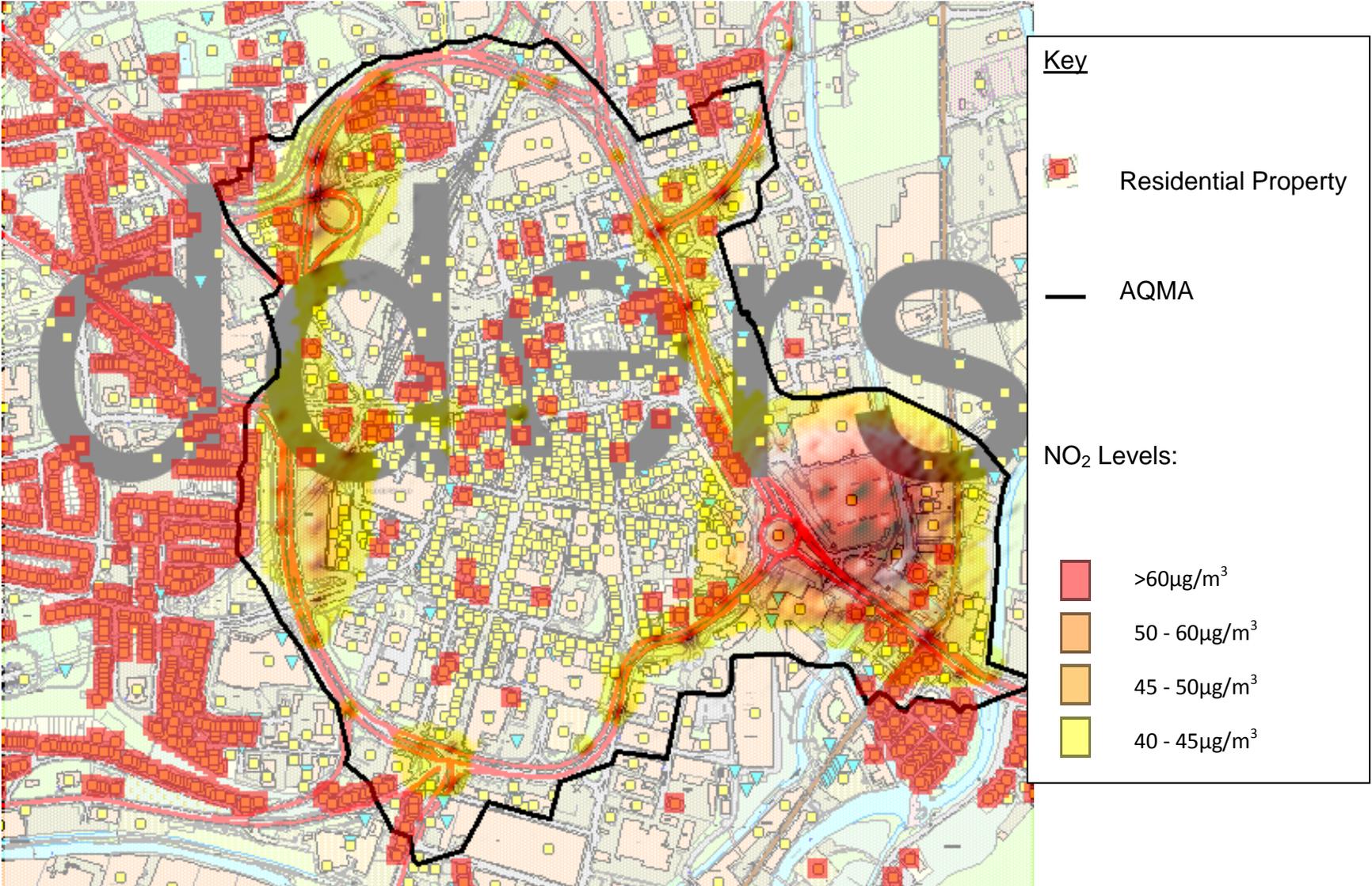


The statistical analysis carried out at the validation stage shows that the model accuracy is average and the fractional bias indicates that the model average distribution of results is similar to the monitoring results.

Figure D.6.1 graphs the correlation between the monitored and modelled data. It is clear to see that trend line is close to the mid-point and all points fall within the +/- 20% region

Map D.6 was constructed using the correction factor of 0.95. The yellow and red areas indicate the areas of exceedance and how NO<sub>2</sub> diffuses around the Huddersfield Town Centre assessment area

Map D.6 Huddersfield Town Centre AQMA



**D.7 Outlane Detailed Assessment**

Kirklees Council has modelled the annual mean NO<sub>x</sub> for 2015 in the area of Outlane. This modelling was conducted to determine the boundaries of the AQMA.

Kirklees Council has used Atmospheric Dispersion Modelling System for Urban areas (ADMS Urban) to create this model and validated it against the 2015 automatic monitoring data.

Meteorological Data for the model has been taken from Huddersfield Civic 3 Weather Station. The weather data for 2004 has been selected as the weather patterns in that year are representative of the usual weather conditions in the district.

The Traffic Figures have been obtained from the Department of Transport for 2015 count points in close proximity to the assessment areas.

Traffic counts and average speeds were entered into the Emission Factor Toolkit 2014

Background figures for the model have been taken from the *2015 based background maps* (DEFRA).

The topography and road layout was obtained from Kirklees Council GIS data and ordinance survey records.

Kirklees conducted a statistical procedure as set out in TG(09) to determine the model uncertainty and performance. Table D.7.1 indicates the results at diffusion tube sites and the results of the statistical analysis are contained within Table D.7.2 and Figure D.7.1.

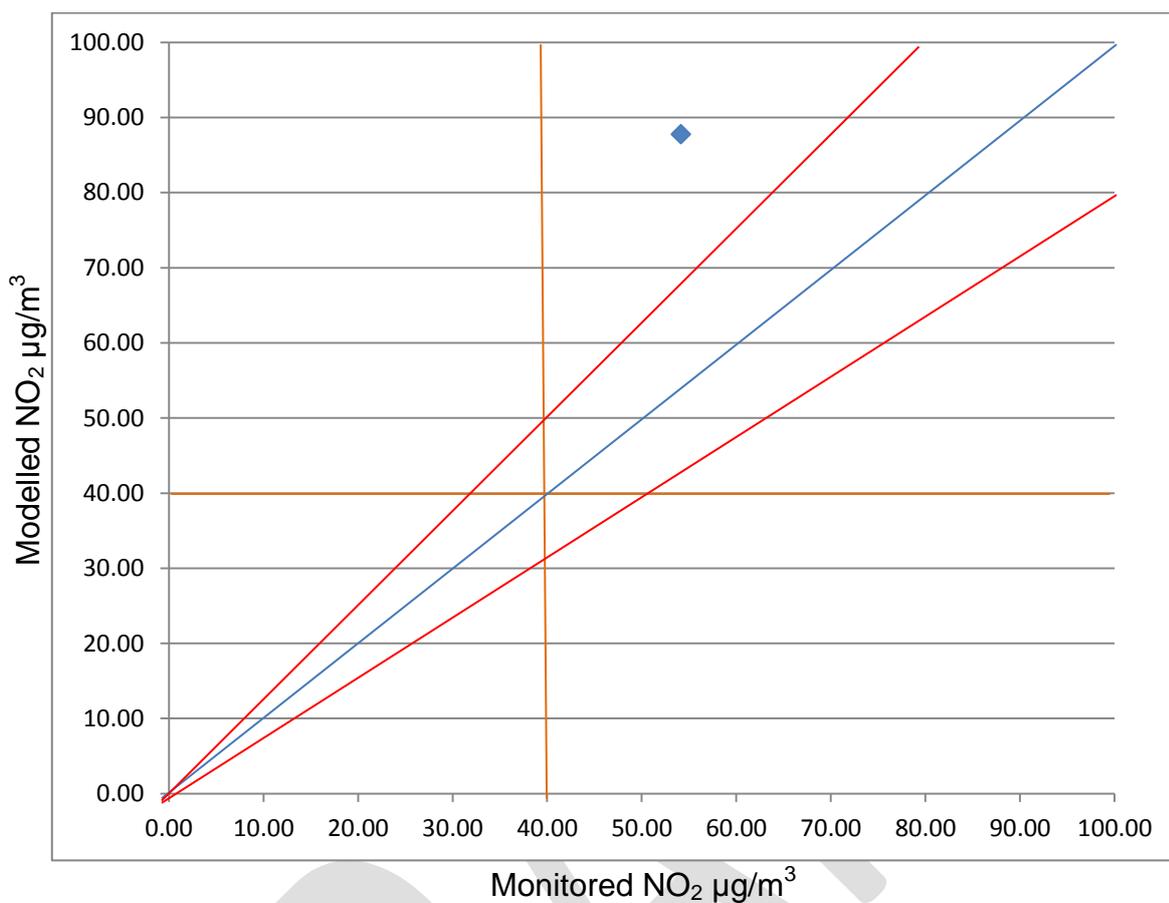
*Table D.7.1 Results of Run at diffusion tube sites and statistical analysis of model*

|                | Tube result (µg/m <sup>3</sup> ) | Modelled increment NO <sub>x</sub> (µg/m <sup>3</sup> ) | Calculated NO <sub>2</sub> from NO <sub>x</sub> (µg/m <sup>3</sup> ) | % Difference | Correction Factor |
|----------------|----------------------------------|---|--|--------------|-------------------|
| <b>Tube 47</b> | 54.16                            | 226.83  | 87.75  | 62           | 0.62              |

*Table D.7.2 Statistical analysis of the corrected data*

| <b>Outlane Run - 2015</b> |       |
|---------------------------|-------|
| <b>RMSE</b>               | 16.80 |
| <b>Fractional Bias</b>    | -0.47 |

Figure D.7.1 NO<sub>2</sub> Monitored / Modelled scatter graph

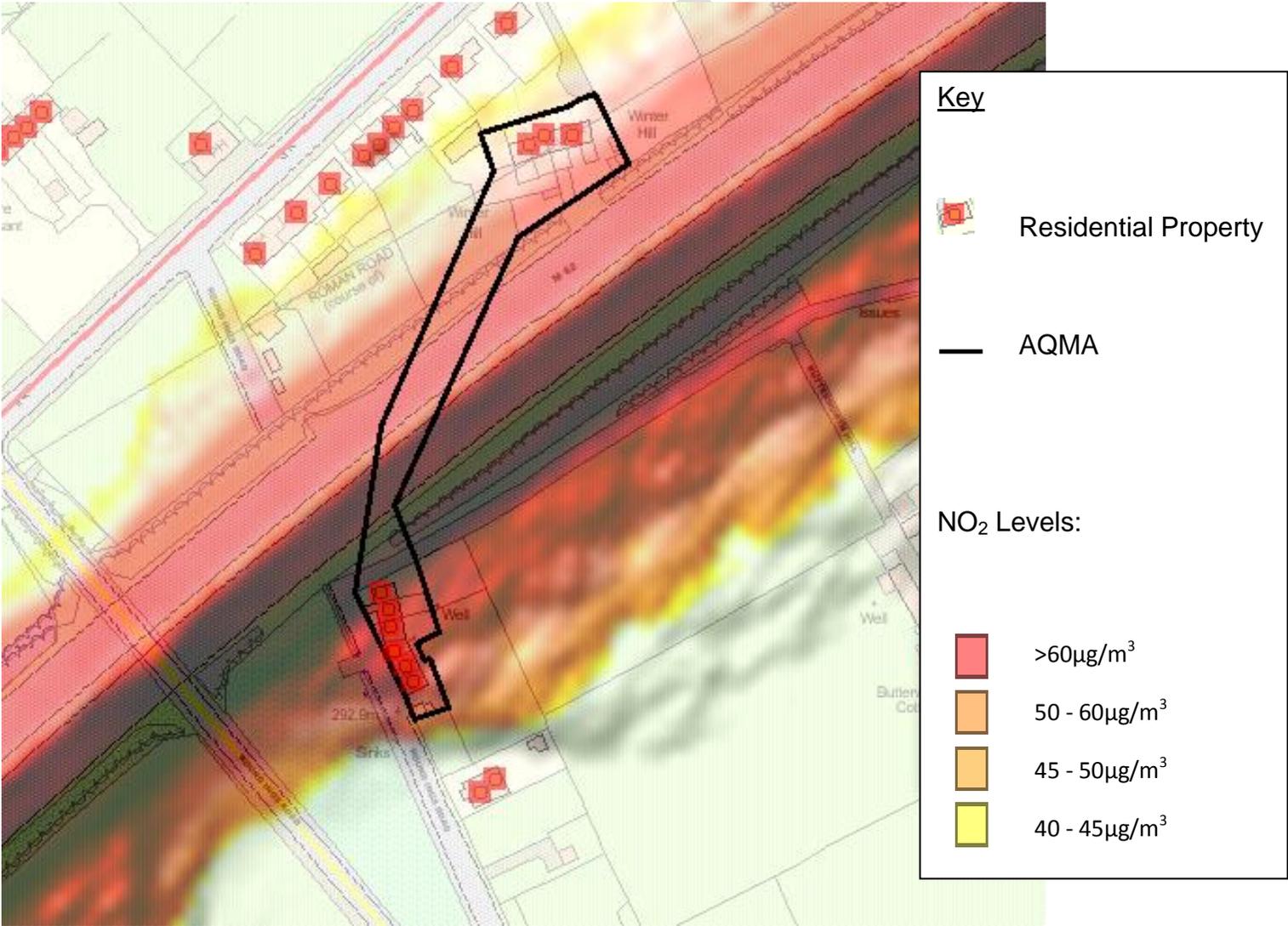


The statistical analysis carried out at the validation stage shows that the model is over predicting.

Figure D.7.1 graphs the correlation between the monitored and modelled data.

Map D.7 was constructed using the correction factor of 0.62. The yellow and red areas indicate the areas of exceedance and how NO<sub>2</sub> diffuses around the Huddersfield Town Centre assessment area

Map D.7 Outlane AQMA



**D.8 AQMA1 Detailed Assessment**

Kirklees Council has modelled the annual mean NO<sub>x</sub> for 2015 in the area of Outlane. This modelling was conducted to determine the boundaries of the AQMA.

Kirklees Council has used Atmospheric Dispersion Modelling System for Urban areas (ADMS Urban) to create this model and validated it against the 2015 automatic monitoring data.

Meteorological Data for the model has been taken from Huddersfield Civic 3 Weather Station. The weather data for 2004 has been selected as the weather patterns in that year are representative of the usual weather conditions in the district.

The Traffic Figures have been obtained from the Department of Transport for 2015 count points in close proximity to the assessment areas. Traffic counts and average speeds were entered into the Emission Factor Toolkit 2014

Background figures for the model have been taken from the 2015 based background maps (DEFRA).

The topography and road layout was obtained from Kirklees Council GIS data and ordinance survey records.

Kirklees conducted a statistical procedure as set out in TG(09) to determine the model uncertainty and performance. Table D.8.1 indicates the results at diffusion tube sites and the results of the statistical analysis are contained within Table D.8.2 and Figure D.8.1.

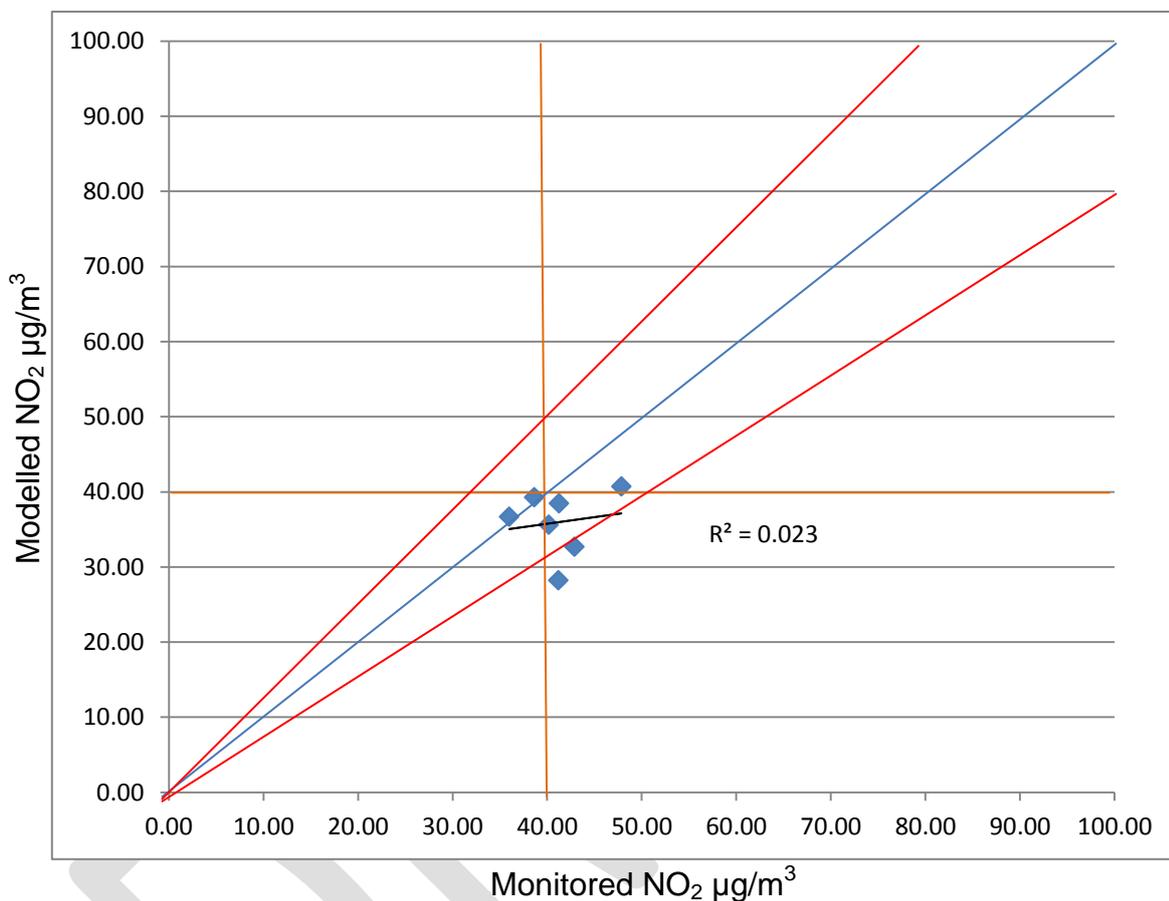
*Table D.8.1 Results of Run at diffusion tube sites and statistical analysis of model*

|                   | Tube result (µg/m <sup>3</sup> ) | Modelled increment NO <sub>x</sub> (µg/m <sup>3</sup> ) | Calculated NO <sub>2</sub> from NO <sub>x</sub> (µg/m <sup>3</sup> ) | % Difference | Correction Factor |
|-------------------|----------------------------------|---|--|--------------|-------------------|
| <b>Roadside 3</b> | 36.00                            | 32.31   | 36.68  | 2            | 0.98              |
| <b>Tube 16</b>    | 41.19                            | 12.92   | 28.22  | -31          | 1.46              |
| <b>Tube 17</b>    | 41.25                            | 36.70   | 38.46  | -7           | 1.07              |
| <b>Tube 20</b>    | 40.17                            | 29.79   | 35.63  | -11          | 1.13              |
| <b>Tube 33</b>    | 47.85                            | 42.46   | 40.74  | -15          | 1.17              |
| <b>Tube 13</b>    | 38.64                            | 38.74   | 39.28  | 2            | 0.98              |
| <b>Tube 54</b>    | 42.90                            | 22.85   | 32.67  | -24          | 1.31              |

*Table D.8.2 Statistical analysis of the corrected data*

| <b>AQMA 1 Run - 2015</b> |      |
|--------------------------|------|
| <b>RMSE</b>              | 7.10 |
| <b>Fractional Bias</b>   | 0.13 |

Figure D.8.1 NO<sub>2</sub> Monitored / Modelled scatter graph

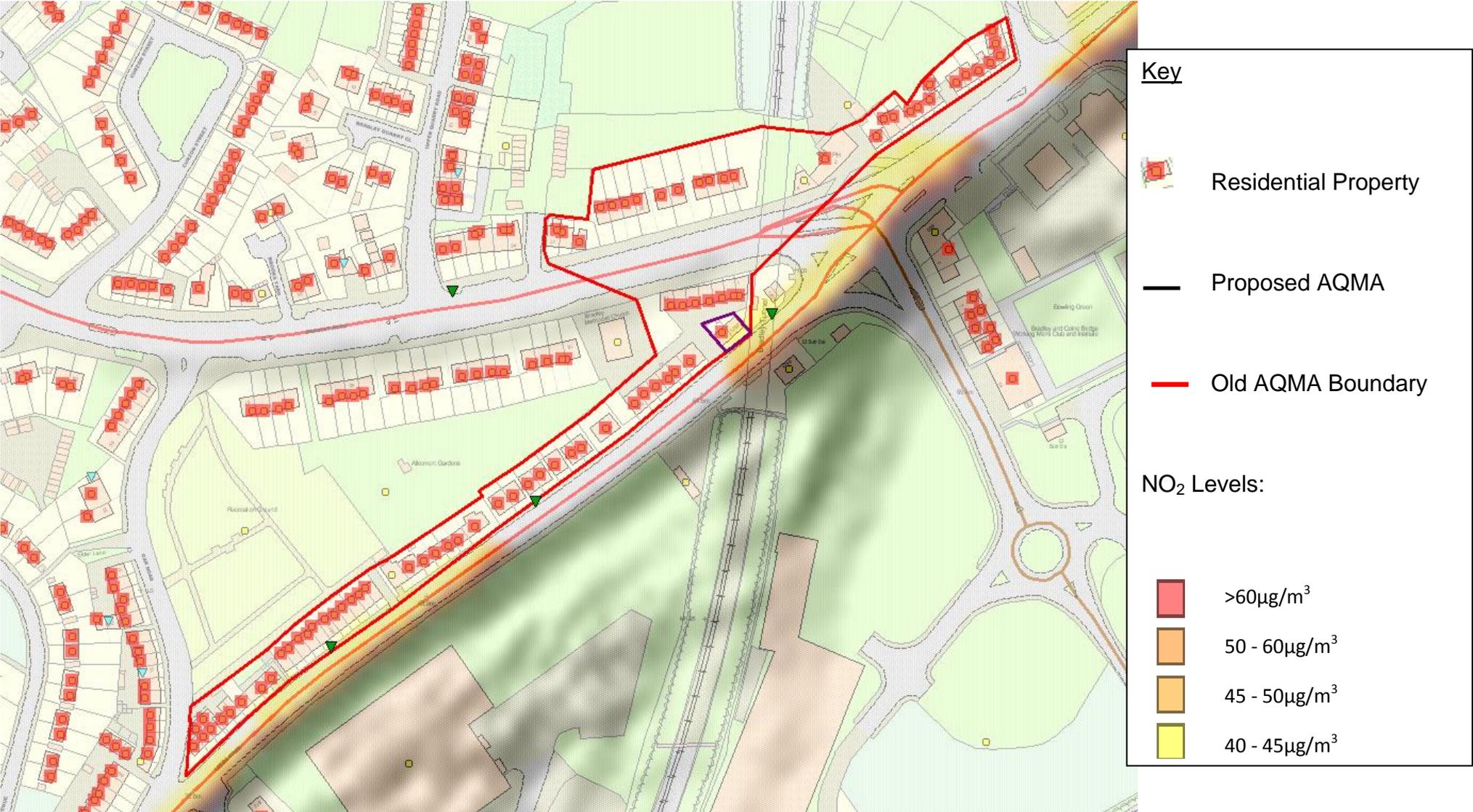


The statistical analysis carried out at the validation stage shows that the model accuracy is good and the fractional bias indicates that the model average distribution of results is similar to the monitoring results.

Figure D.8.1 graphs the correlation between the monitored and modelled data. It is clear to see that trend line is close to the mid-point and all points fall within the +/- 20% region

Map D.8 was constructed using the correction factor of 0.98. The Red line denotes the previous AQMA and the purple line indicates the new AQMA proposal in accordance with recent modelling study.

Map D.7 AQMA 1 Review





**D.9 Thornton Lodge**

Kirklees Council has modelled the annual mean NOx for 2017 in the along Lindley Moor Road. This modelling was conducted to determine the boundaries of the AQMA.

Kirklees Council has used Atmospheric Dispersion Modelling System for Urban areas (ADMS Urban) to create this model and validated it against the 2017 automatic monitoring data.

Meteorological Data for the model has been taken from Leeds / Bradford Airport Met Office Weather Station. The weather data for 2015 has been selected as the weather patterns in that year are representative of the usual weather conditions in the district.

The Traffic Figures have been obtained from the Department of Transport count points in close proximity to the assessment areas and expanded in accordance with national guidance for increase vehicle number.

Traffic counts and average speeds were entered into ADMS (Urban), which uses Emissions Factor Toolkit V8.0

Background figures for the model have been taken from the 2017 based background maps (DEFRA).

The topography and road layout was obtained from Kirklees Council GIS data and ordinance survey records.

Kirklees conducted a statistical procedure as set out in TG(09) to determine the model uncertainty and performance. Table D.9.1 indicates the results at diffusion tube sites and the results of the statistical analysis are contained within Table D.9.2 and Figure D.9.1.

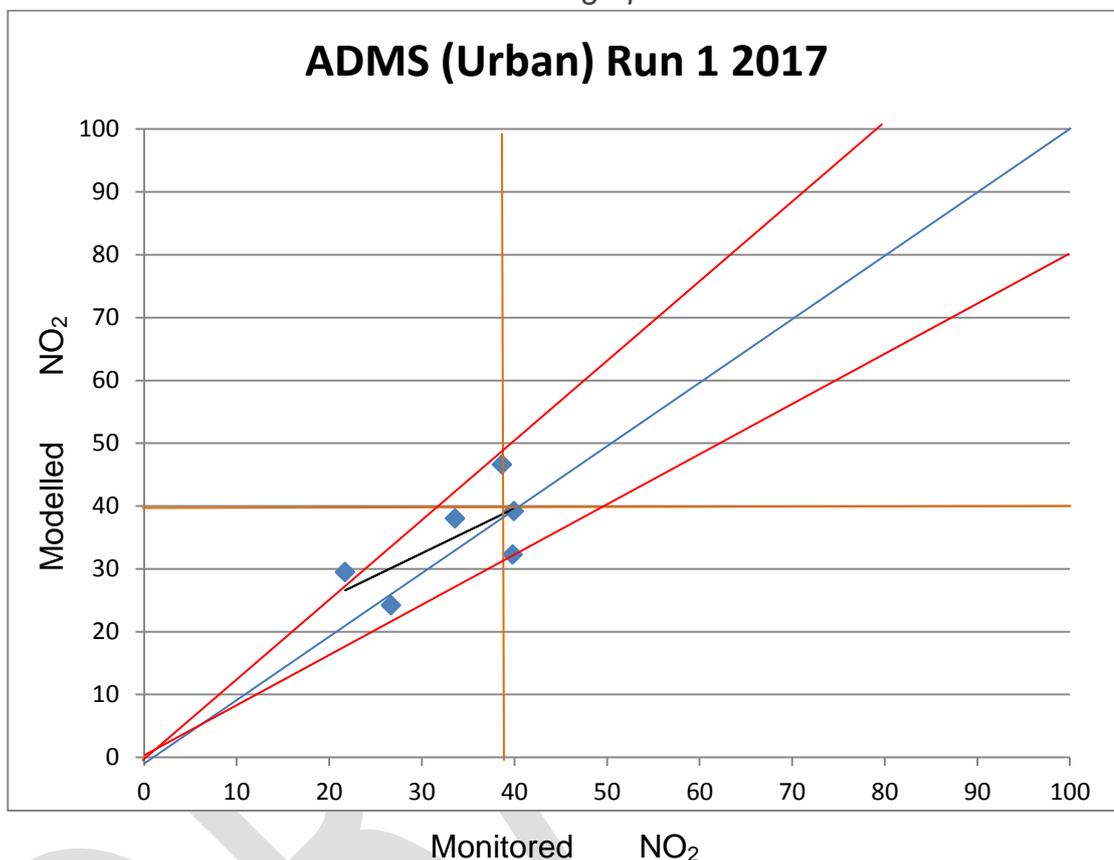
*Table D.9.1 Results of Run at diffusion tube sites and statistical analysis of model*

|         | <b>Monitoring results (NO<sub>2</sub> µg/m<sup>3</sup>)</b> | <b>Model Road increment NO<sub>x</sub> Prediction (µg/m<sup>3</sup>)</b> | <b>NO<sub>2</sub> Converted from predicted NO<sub>x</sub> (µg/m<sup>3</sup>)</b> | <b>% Difference of Converted NO<sub>2</sub></b> | <b>Correction Factor</b> |
|---------|---|--|--|---|--------------------------|
| Tube 49 | <b>38</b>   | <b>118.00358</b>   | <b>61.08</b>   | 61  | 0.62                     |
| Tube 50 | 39.19   | <b>161.33688</b>   | <b>72.66</b>   | 85  | 0.54                     |
| Tube 75 | 29.44   | <b>51.54768</b>  | <b>39.49</b>   | 34  | 0.75                     |
| Tube 76 | 32.25   | <b>160.39198</b>   | <b>72.42</b>   | 125   | 0.45                     |
| Tube 77 | <b>46.58</b>  | <b>152.08848</b>   | <b>70.29</b>   | 51  | 0.66                     |
| Tube 78 | 24.15   | 77.00  | 48.54  | 101   | 0.50                     |

*Table D.9.2 Statistical analysis of the corrected data*

|                        |              |
|------------------------|--------------|
| <b>RMSE</b>            | <b>29.74</b> |
| <b>Fractional Bias</b> | <b>-0.67</b> |

Figure D.9.1 NO<sub>2</sub> Monitored / Modelled scatter graph

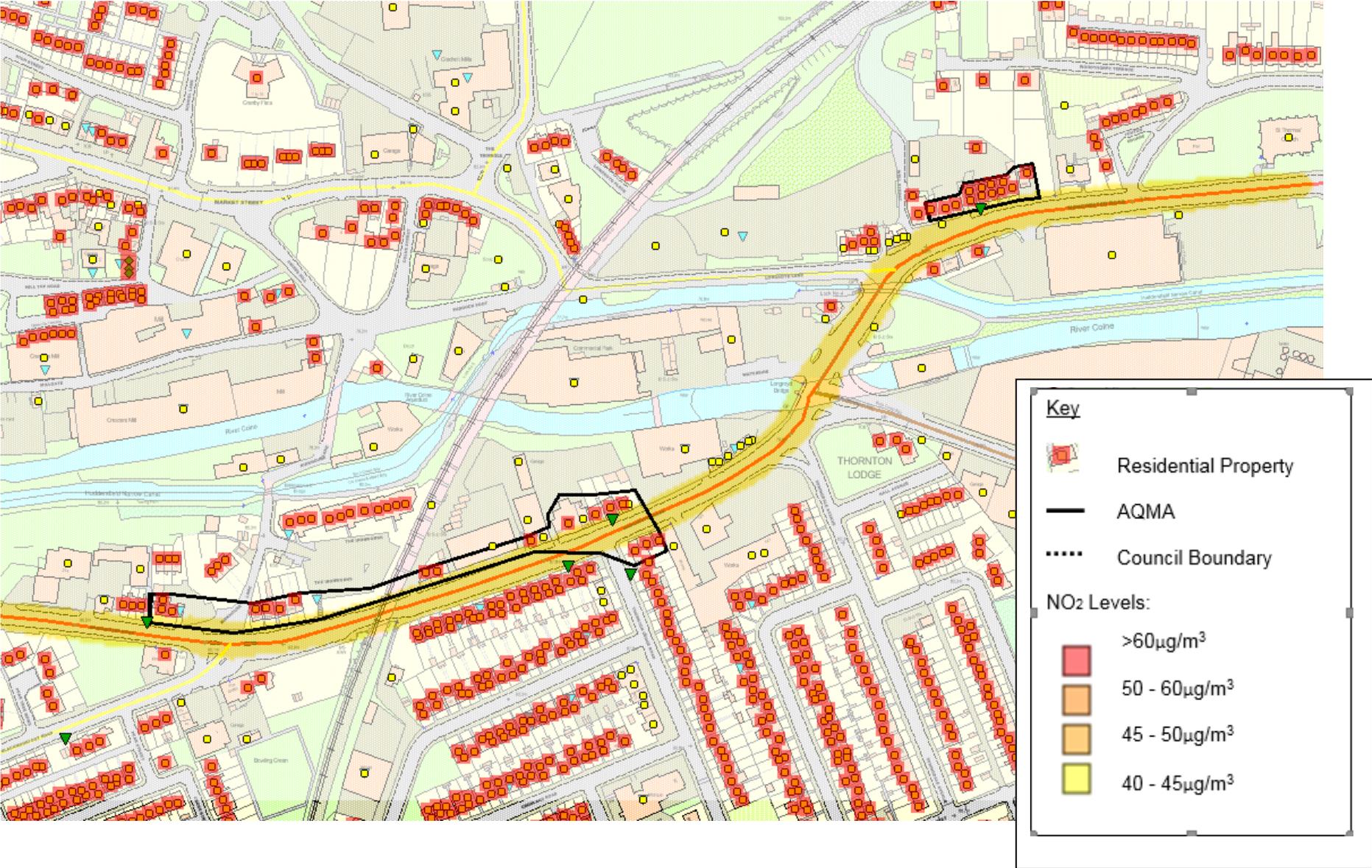


While statistical analysis carried out at the validation stage shows that the model is over estimating.

Figure D.9.1 graphs the correlation between the monitored and modelled data after correction factor of 0.55 has been applied. It is clear to see that trend line is close to the mid-point and all points fall well within the +/- 20% region

Map D.9 was constructed using the correction factor. The yellow and red areas indicate the areas of exceedance and how NO<sub>2</sub> diffuses around the Thornton Lodge assessment area

Map D.9 Thornton Lodge Assessment (AQMA 10)



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