2024 Air Quality Annual Status Report (ASR)

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

Date: January 2025

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Executive Summary: Air Quality in Our Area

Air quality continues to improve in Rossendale. Two air quality management areas where revoked in 2022 and the recently declared new area along a small section of Grane Road Haslingden is showing continued improvement in air quality. There were only two tubes in the area which breached the Air Quality Objective of 40µg/m^3 but with only slight exceedances. Tube 12 located on the façade of 250 Grane Road Haslingen recorded 42.1µg/m^3 and tube 19 located on the façade between 256-258 Grane Road Haslingden recorded 41.3µg/m^3. Looking at the trajectory from previous years the air quality is improving and levels will hopefully continue to decrease to below the air quality objective.

Air Quality in Rossendale Borough Council

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

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

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

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

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

Table ES 1 - Description of Key Pollutants

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

Rossendale Borough Council has lots of updated information on air quality on the council website see Air quality in Rossendale | Rossendale Borough Council

Climate Change work is gaining momentum and more information about what's going on in Rossendale including air quality improvements is found here What we are doing | Our Climate Action Plan | Rossendale Borough Council

There's a new electric pool car for staff business use.

Lancashire County Council also produces lot of information on air quality and health see

Air quality - Lancashire County Council and Air_Quality_and_Public_Health_report.pdf (healthierlsc.co.uk)

Lancashire's Levelling Up Fund Bid - Lancashire County Council

Consultation on Local Cycling and walking infrastructure plans including Rossendale Lancashire Cycling and Walking Infrastructure Plans - Lancashire County Council

LCWIP Engagement Stage 2 - Lancashire County Council - Citizen Space

Actions to Improve Air Quality

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

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

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

Conclusions and Priorities

The majority of diffusion tubes across the borough show compliance with the air quality objective exceedance. The two tubes with exceedances are reducing year on year see Figure A.1 which is positive. A priority for the Council will be the installation of more electric vehicle charging points to encourage continued uptake of electric vehicles. The number of diffusion tubes will also be reduced in 2024 as the majority of the borough is consistently showing NO_2 levels well below the air quality objective.

Local Engagement and How to get involved

Thinking about air pollution and climate change on a worldwide, or even country scale can be daunting because as individuals we can often feel insignificant. Yet if we all work to reduce the amount of fuel we use and the number of chemicals we use at home, we will

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

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

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

improve the quality of the air that we breathe and help the local and global problem. Other ways we can all contribute to improving air quality are as follows:

- Using public transport more
- Reducing car use and doing more car sharing for things like the school runs sorted informally or see https://liftshare.com/uk
- Changing to an electric or hybrid vehicle see https://www.gov.uk/government/organisations/office-for-zero-emission-vehicles
- Cycling and walking where possible
- Using less chemicals and more natural products in the home to reduce the toxic load on your internal air quality see https://www.nice.org.uk/guidance/ng149
- Not having garden bonfires and only burning smokeless fuel on domestic stoves as the whole of Rossendale is a smoke control area (except for a few outlying rural properties see https://www.rossendale.gov.uk/info/210197/environmental_protection/10622/report_pollution/4
- Working from home, if you can, to reduce vehicle movements

There is no local air quality action group to the knowledge of the writer however there is an active Clean Air Parents Network public Facebook group.

The Rossendale Climate Network was created which is a group of like-minded individuals, schools, groups, businesses and organisations who are interested practical action to tackle the climate emergency in Rossendale. Find them on the Facebook page. https://www.facebook.com/groups/rossendaleclimatenetwork. They would like to hear from anyone who is taking local action or has some information to share with others in the area. Client Earth are activist lawyers committed to securing a healthier planet. Their website is

ClientEarth | ClientEarth

Further information on air quality and air pollution forecasts can be found on the DEFRA website UK Air quality Information Resource following this link Home - Defra, UK

The Choked up Campaign is teenagers in London raising awareness of air pollution issues Living Street UK is a charity who want a nation where walking is the natural choice for everyday local journeys see Living Streets | Home Page | Living Streets

Local Responsibilities and Commitment

This ASR was prepared by Environmental Health, Public Protection Unit of Rossendale Borough Council with the support and agreement of the following officers and departments:

Susan Chadwick Public Protection Manager

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

If you have any comments on this ASR please send them to Lorna Robinson at:

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Table of Contents

Figures

Tables

1 Local Air Quality Management

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

The LAQM process places an obligation on all local authorities to regularly review and assess air quality in their areas, and to determine whether or not the air quality objectives are likely to be achieved. Where an exceedance is considered likely the local authority must declare an Air Quality Management Area (AQMA) and prepare an Air Quality Action Plan (AQAP) setting out the measures it intends to put in place in order to achieve and maintain the objectives and the dates by which each measure will be carried out. This Annual Status Report (ASR) is an annual requirement showing the strategies employed by Rossendale Borough Council to improve air quality and any progress that has been made.

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

2 Actions to Improve Air Quality

2.1 Air Quality Management Areas

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

A summary of the AQMA declared by Rossendale Borough Council can be found in Table 2.1. The table presents a description of the one AQMA that is currently designated within Rossendale Borough Council. Appendix D: Map(s) of Monitoring Locations and AQMAs provides maps of the AQMA and also the air quality monitoring locations in relation to the AQMA. The air quality objective pertinent to the current AQMA designation are as follows:

- NO_2 annual mean

Table 2.1 – Declared Air Quality Management Areas

AQMA Name	Date of Declaration	Pollutants and Air Quality Objectives	One Line Description	Is air quality in the AQMA influenced by roads controlled by Highways England?	Level of Exceedance: Declaration	Level of Exceedance: Current Year	Number of Years Compliant with Air Quality Objective	Name and Date of AQAP Publication	Web Link to AQAP
AQMA 3	22nd December 2022	NO_2 annual mean	An area encompassing thirteen residential properties between Gas Street and Holden Place numbered 240 to 268 Grane Road Haslingden BB4 4PB	NO	50.4 µg/m^3	41.6 µg/m^3	0	Work in progress	Not published yet

☐ **Rossendale Borough Council confirm the information on UK-Air regarding their AQMA is up to date**

☒ **Rossendale Borough Council confirm that all current AQAPs have been submitted to Defra**

2.2 Progress and Impact of Measures to address Air Quality in Rossendale Borough Council

Defra's appraisal of last year's ASR concluded that an AQAP for AQMA 3 is strongly encouraged and we are working on this and an Air Quality Action plan is being produced and will be hopefully be published next year. An extension has been requested as consultant involvement is needed for the source apportionment etc

Table 0.1 – Progress on Measures to Improve Air Quality

The Air Quality Action Plan is still being worked on and an extension has been requested.

2.3 $PM_{2.5}$ – Local Authority Approach to Reducing Emissions and/or Concentrations

As detailed in Policy Guidance LAQM.PG22 (Chapter 8) and the Air Quality Strategy[6], local authorities are expected to work towards reducing emissions and/or concentrations of fine particulate matter ($PM_{2.5}$)). There is clear evidence that $PM_{2.5}$ (particulate matter smaller 2.5 micrometres) has a significant impact on human health, including premature mortality, allergic reactions, and cardiovascular diseases.

Using the Defra background mapping resource the maximum background annual mean $PM_{2.5}$ concentrations within the Local Authority was 7.4µg/m^3. This is a slight reduction from the year below as Rossendale in 2022 had a maximum background mean of 7.5 µg/m^3 and this is also lower than the North West maximum of 10.6µg/m^3

Rossendale Borough Council is taking the following measures to address $PM_{2.5}$:

Environmental Health have investigated over 80 complaints about open burning and smoky domestic chimneys, given advice and sent warning letters. Open burning is becoming more anti-social and we discourage it wherever possible. We've promoted National Clean Air Day and National Clean Air Night on social media.

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

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

This section sets out the monitoring undertaken within 2023 by Rossendale Borough Council and how it compares with the relevant air quality objectives. In addition, monitoring results are presented for a five-year period between 2019 and 2023 to allow monitoring trends to be identified and discussed.

3.1 Summary of Monitoring Undertaken

3.1.1 Automatic Monitoring Sites

Rossendale Borough Council undertook no automatic (continuous) monitoring during 2023.

3.1.2 Non-Automatic Monitoring Sites

Rossendale Borough Council undertook non- automatic (i.e. passive) monitoring of NO_2 at 20 sites during 2023. Table A. in Appendix A presents the details of the non-automatic sites.

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

3.2 Individual Pollutants

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

3.2.1 Nitrogen Dioxide (NO_2)

Table A. in Appendix A compares the ratified and adjusted monitored NO_2 annual mean concentrations for the past five years with the air quality objective of 40µg/m^3. Note that

the concentration data presented represents the concentration at the location of the monitoring site, following the application of bias adjustment and annualisation, as required (i.e. the values are exclusive of any consideration to fall-off with distance adjustment).

For diffusion tubes, the full 2023 dataset of monthly mean values is provided in Appendix B in Table B.1.

Diffusion tubes 1, 2, 3, 4, 5, 6, 8, 9, 14, 15, 16 and 17 show consistently low NO_2 levels well below the air quality objective. Tube 1 will be relocated to Plantation View Weir following a request from a resident to monitor the air quality. All the other tubes will be removed from 2024 onwards resulting in a cost saving for the Council.

3.2.2 Particulate Matter (PM_{10})

PM_{10} is not monitored in Rossendale

3.2.3 Particulate Matter ($PM_{2.5}$)

$PM_{2.5}$ is not covered by the LAQM regulations and no monitoring is carried out in Rossendale.

3.2.4 Sulphur Dioxide (SO_2)

No sulphur dioxide monitoring is carried out in Rossendale

Appendix A: Monitoring Results

Table A.1 – Details of Non-Automatic Monitoring Sites

Diffusion Tube ID	Site Name	Site Type	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Pollutants Monitored	In AQMA? Which AQMA?	Distance to Relevant Exposure (m) (1)	Distance to kerb of nearest road (m) (2)	Tube Co-located with a Continuous Analyser?	Tube Height (m)
DT1	Front of Casa Tapas Bacup Road Rawtenstall	Kerbside	381394	422756	NO_2	No	2.0	0.0	No	1.8
DT2	60 Hud Hey Road Haslingden	Kerbside	378495	424454	NO_2	No	2.0	0.0	No	1.8
DT3	349 Manchester Road Haslingden	Kerbside	379153	422234	NO_2	No	3.0	3.0	No	1.8
DT4	Jobcentre 83 Bacup Road Rawtenstall	Kerbside	381325	422740	NO_2	No	3.0	0.0	No	1.8
DT5	377 Manchester Road Haslingden	Kerbside	379209	422171	NO_2	No	0.0	3.0	No	1.8
DT6	359 Manchester Road Haslingden	Kerbside	379175	422213	NO_2	No	0.0	2.0	No	1.8
DT7	366-368 Manchester Road Haslingden	Kerbside	379193	422210	NO_2	No	0.0	2.0	No	1.8
DT8	5-7 Rawtenstall Road Haslingden	Kerbside	379197	422213	NO_2	No	0.0	2.0	No	1.8
DT9	363 Manchester Road Haslingden	Kerbside	379183	422200	NO_2	No	0.0	2.0	No	1.8
DT10	277 Grane Road Haslingden	Kerbside	377879	422502	NO_2	No	0.0	3.0	No	1.8

Diffusion Tube ID	Site Name	Site Type	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Pollutants Monitored	In AQMA? Which AQMA?	Distance to Relevant Exposure (m) (1)	Distance to kerb of nearest road (m) (2)	Tube Co-located with a Continuous Analyser?	Tube Height (m)
DT11	450 Bacup Road Waterfoot	Kerbside	382845	421978	NO_2	No	0.0	0.0	No	1.8
DT12	250 Grane Road Haslingden	Kerbside	377909	422488	NO_2	AQMA 3	0.0	1.0	No	1.8
DT13	30-32 Bacup Road Rawtenstall	Kerbside	381377	422756	NO_2	No	0.0	1.0	No	1.8
DT14	24-26 Bacup Road Rawtenstall	Kerbside	381358	422754	NO_2	No	0.0	1.0	No	1.8
DT15	22 Bacup Road Rawtenstall	Kerbside	381350	422754	NO_2	No	0.0	1.0	No	1.8
DT16	2A Bacup Road Rawtenstall	Kerbside	381161	422725	NO_2	No	0.0	6.0	No	1.8
DT17	1 Bacup Road Rawtenstall	Kerbside	381121	422725	NO_2	No	0.0	2.0	No	1.8
DT18	222 Grane Road Haslingden	Kerbside	378094	422560	NO_2	No	0.0	3.0	No	1.8
DT19	256-258 Grane Road Haslingden	Kerbside	377896	422488	NO_2	AQMA 3	0.0	1.0	No	1.8
DT20	264 Grane Road Haslingden	Kerbside	377899	422488	NO_2	AQMA 3	0.0	0.0	No	1.8

Notes:

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

(2) N/A if not applicable.

Table A.2 – Annual Mean NO_2 Monitoring Results: Non-Automatic Monitoring (µg/m^3)

Diffusion Tube ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) [1]	Valid Data Capture 2023 (%) [2]	2019	2020	2021	2022	2023
DT1	381394	422756	Kerbside	83.0	83.0	32.3	23.8	26.2	25.3	21
DT2	378495	424454	Kerbside	100.0	100.0	N/A	N/A	N/A	25.7	19.7
DT3	379153	422234	Kerbside	92.0	92.0	27.3	22.0	24.9	21.4	18.6
DT4	381325	422740	Kerbside	92.0	92.0	27.3	22.0	20.9	21.9	19.7
DT5	379209	422171	Kerbside	75.0	75.0	28.7	22.1	23.7	24.5	22.4
DT6	379175	422213	Kerbside	92.0	92.0	31.1	24.2	27.8	26.7	24.7
DT7	379193	422210	Kerbside	83.0	83.0	32.3	26.3	30.0	28.3	26.8
DT8	379197	422213	Kerbside	100.0	100.0	25.6	20.4	20.2	19.9	16.8
DT9	379183	422200	Kerbside	92.0	92.0	31.6	25.3	26.9	28.2	24.3
DT10	377879	422502	Kerbside	100.0	100.0	N/A	N/A	18.4	16.9	16.2
DT11	382845	421978	Kerbside	83.0	83.0	N/A	N/A	N/A	29.9	29.6
DT12	377909	422488	Kerbside	100.0	100.0	N/A	**44.9**	**50.4**	**46.7**	**42.1**
DT13	381377	422756	Kerbside	100.0	100.0	32.2	28.4	32.7	31.2	30.6
DT14	381358	422754	Kerbside	100.0	100.0	31.9	26.2	29.3	30.9	30.5
DT15	381350	422754	Kerbside	100.0	100.0	32.2	28.8	31.8	30.8	24.2
DT16	381161	422725	Kerbside	100.0	100.0	26.6	24.7	24.1	24.8	21.9
DT17	381121	422725	Kerbside	83.0	83.0	34.7	28.6	29.6	29.9	27.7
DT18	378094	422560	Kerbside	100.0	100.0	N/A	20.4	23.2	21.3	18.4
DT19	377896	422488	Kerbside	100.0	100.0	N/A	**41.6**	**46.9**	**42.2**	**41.3**
DT20	377899	422488	Kerbside	92.0	92.0	**46.6**	34.8	36.1	36.2	34.5

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

☒ **Diffusion tube data has been bias adjusted**

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

Notes:

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

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

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

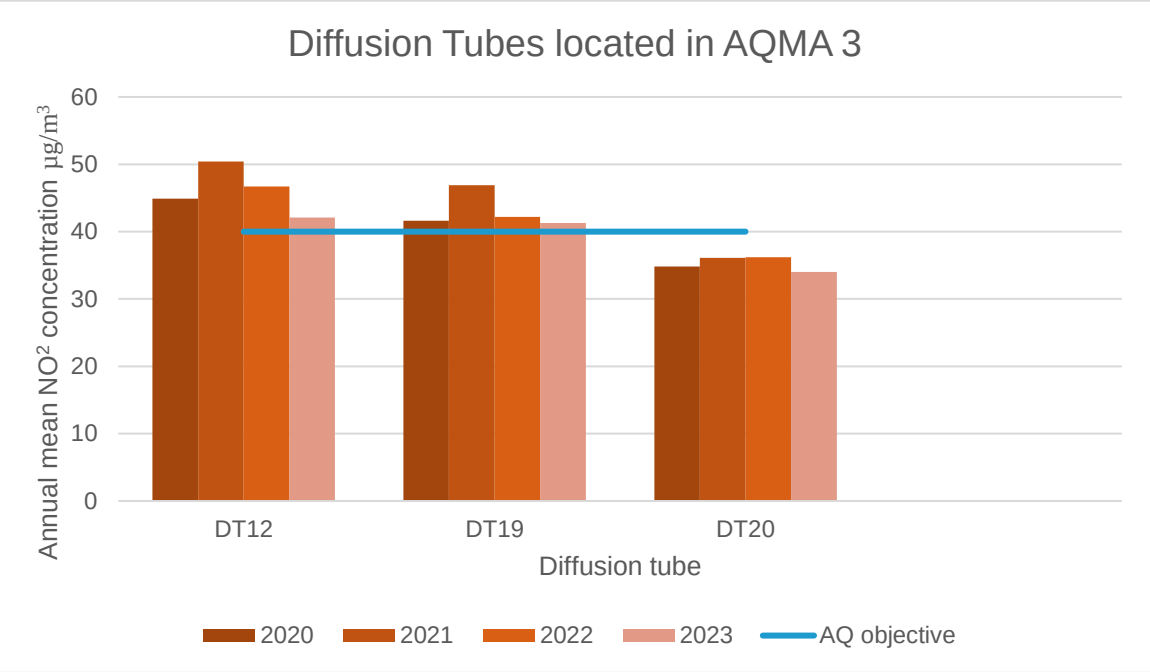
Means for diffusion tubes have been corrected for bias. All means have been "annualised" as per LAQM.TG22 if valid data capture for the full calendar year is less than 75%. See Appendix C for details.

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

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

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

Figure A.1 – Trends in Annual Mean NO_2 Concentrations



There are only four years of comparable data for the diffusion tubes in AQMA 3 as it's a relatively new area of concern and the graph shows that NO_2 concentrations are reducing.

All the other tubes across the borough where within the range of 16.6 µg/m³ to 34 µg/m³

Appendix B: Full Monthly Diffusion Tube Results for 2023

Table B.1 – NO_2 2023 Diffusion Tube Results ($\mu g/m^3$)

DT ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean: Raw Data	Annual Mean: Annualised and Bias Adjusted 0.78	Annual Mean: Distance Corrected to Nearest Exposure	Comment
DT1	381394	422756	42.4	11.8	33.3	31.7	30.2	N/A	25.9	N/A	34.2	36.6	25.2	24.8	27	21	N/A	
DT2	378495	424454	33	30.2	30.3	30.9	29.6	24.9	16.8	28.2	37.3	29.6	30.6	20.6	25.6	19.7	N/A	
DT3	379153	422234	33.3	25.2	28.4	28.2	27.7	22.6	21.5	24.1	N/A	28.9	28	24.2	23.9	18.6	N/A	
DT4	381325	422740	35.7	14.9	27.1	26.8	20.9	N/A	17.9	21.3	28	31	31	23.5	25.3	19.7	N/A	
DT5	379209	422171	36.1	N/A	30.4	27.8	33.7	24.7	17.5	26.6	32.3	33.3	N/A	24.9	28.7	22.4	N/A	
DT6	379175	422213	41.5	35.9	33.6	31.6	29.1	27.3	25.6	27.3	N/A	35.4	32.8	29.4	31.7	24.7	N/A	
DT7	379193	422210	39.7	37.5	37.1	33.4	32	32.4	N/A	25.4	29.1	39.3	37.4	N/A	34.3	26.8	N/A	
DT8	379197	422213	32.5	21.4	26	22.6	21	18.4	16.9	17.7	22.2	25.5	28.8	22.8	21.6	16.8	N/A	
DT9	379183	422200	42.4	32.8	33.4	30.1	29.9	28.2	27.4	27.4	N/A	35.8	33.7	22.6	31.2	24.3	N/A	
DT10	377879	422502	25.3	23.6	22	19.3	21.1	17.9	12.8	17	21	26.2	26.6	16.6	20.8	16.2	N/A	
DT11	382845	421978	64.4	26.7	38.7	38.7	36.6	27.6	N/A	N/A	35.6	33	53.6	25.9	38	29.6	N/A	
DT12	377909	422488	65.6	33.3	56.6	64.7	60.7	63.1	45.7	60.1	56.3	60.2	40.5	41.8	54	**42.1**	N/A	
DT13	381377	422756	43	N/A	38.3	36.1	40.8	42.3	26.2	34.9	36.4	38	53.8	37	38.8	30.5	N/A	
DT14	381358	422754	51.3	43.3	39.7	40	42.4	38.4	26.1	36.4	35.7	41.8	42.7	31.6	39.1	30.5	N/A	
DT15	381350	422754	21.5	45.5	37.7	39.7	40.9	38.8	18	31.3	39.6	43.3	45.4	27.8	31	24.2	N/A	
DT16	381161	422725	40.3	41.6	29	25.1	23.3	19.7	21	24.7	30.7	32.1	27.4	21.1	28	21.9	N/A	
DT17	381121	422725	48.5	28.8	38.3	32.2	N/A	N/A	27.3	28.5	39.8	42.9	41.1	27.4	35.5	27.7	N/A	
DT18	378094	422560	26.7	9.9	27.3	25.7	24.6	28.3	15.8	21.5	29.7	31.4	26.6	17.2	23.6	18.4	N/A	
DT19	377896	422488	57.7	42	52	60	54.3	54.8	43.3	47	61	61.5	55.9	46.3	52.9	**41.3**	N/A	
DT20	377899	422488	46.7	16.7	50.2	47.9	49.1	38.3	N/A	41.7	50.8	55.1	47	42.7	44.2	34.5	N/A	

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

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

☐ **Local bias adjustment factor used**

☒ **National bias adjustment factor used**

☐ **Where applicable, data has been distance corrected for relevant exposure in the final column**

☐ **Rossendale Borough Council confirm that all 2023 diffusion tube data has been uploaded to the Diffusion Tube Data Entry System**

Notes:

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

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

See Appendix C for details on bias adjustment and annualisation.

Appendix C: Supporting Technical Information / Air Quality Monitoring Data QA/QC

New or Changed Sources Identified Within Rossendale Borough Council During 2023

Rossendale Borough Council has not identified any new sources relating to air quality within the reporting year of 2023.

Additional Air Quality Works Undertaken by Rossendale Borough Council During 2023

Rossendale Borough Council has not completed any additional works within the reporting year of 2023.

QA/QC of Diffusion Tube Monitoring

The monitoring has been completed in adherence with the 2023 Diffusion Tube Monitoring Calendar.

The supplier used for the provision and analysis of the diffusion tubes continued to be SOCOTEC, Didcot,

The samples have been analysed in accordance with SOCOTEC's standard operating procedure ANU/SOP/1015. This method meets the guidelines set out in DEFRA's 'Diffusion Tubes For Ambient NO2 Monitoring: Practical Guidance.'

The tubes were prepared by spiking acetone:triethanolamine (50:50) onto the grids prior to the tubes being assembled. The tubes were desorbed with distilled water and the extract analysed using a segmented flow autoanalyser with ultraviolet detection. All samples were received in good condition, unless otherwise stated in the comments field of results table. Please note:

i) As set out in the practical guidance, the results were initially calculated assuming an ambient temperature of 11^{o}C, the reported values **have** been adjusted to 20^{o}C to allow for direct comparison with EU limits.

(ii) The reported results have not been bias adjusted.

This analysis of diffusion tube samples to determine the amount of nitrogen dioxide present on the tube is within the scope of our UKAS schedule. Any further calculations and assessments requiring exposure details and conditions fall outside the scope of our accreditation. In the AIR PT intercomparison scheme for comparing spiked Nitrogen Dioxide diffusion tubes, SOCOTEC currently holds the highest rank of a **Satisfactory** laboratory.

Diffusion Tube Annualisation

All diffusion tube monitoring locations within Rossendale Borough Council recorded data capture of ≥75% therefore it was not required to annualise any monitoring data.

Diffusion Tube Bias Adjustment Factors

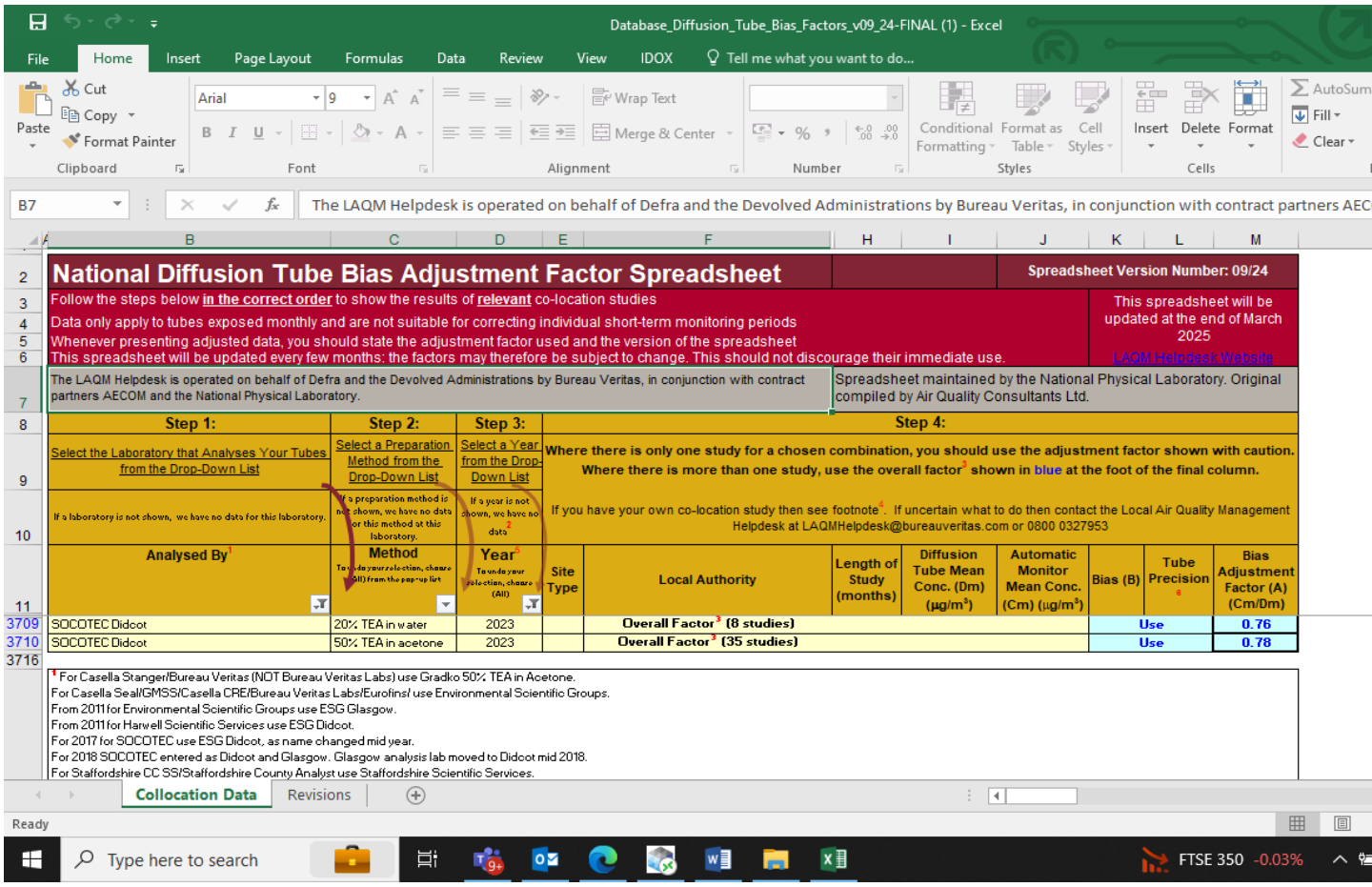
The diffusion tube data presented within the 2023 ASR have been corrected for bias using an adjustment factor. Bias represents the overall tendency of the diffusion tubes to under or over-read relative to the reference chemiluminescence analyser. LAQM.TG22 provides guidance with regard to the application of a bias adjustment factor to correct diffusion tube monitoring. Triplicate co-location studies can be used to determine a local bias factor based on the comparison of diffusion tube results with data taken from NO_x/NO_2 continuous analysers. Alternatively, the national database of diffusion tube co-location surveys provides bias factors for the relevant laboratory and preparation method.

Rossendale Borough Council have applied a national bias adjustment factor of 0.78 to the 2023 monitoring data. A summary of bias adjustment factors used by Rossendale Borough Council over the past five years is presented in Table C..

Table C.1 – Bias Adjustment Factor

Monitoring Year	Local or National	If National, Version of National Spreadsheet	Adjustment Factor
2023	National	09/24	0.78
2022	National	03/23	0.76
2021	National	03/22	0.78
2020	National	03/21	0.77
2019	National	03/20	0.75

A local bias adjustment factor was not used



Database_Diffusion_Tube_Bias_Factors_v09_24-FINAL (1) - Excel

National Diffusion Tube Bias Adjustment Factor Spreadsheet — Spreadsheet Version Number: 09/24

Follow the steps below in the correct order to show the results of relevant co-location studies

Data only apply to tubes exposed monthly and are not suitable for correcting individual short-term monitoring periods

Whenever presenting adjusted data, you should state the adjustment factor used and the version of the spreadsheet

This spreadsheet will be updated every few months: the factors may therefore be subject to change. This should not discourage their immediate use.

This spreadsheet will be updated at the end of March 2025

LAQM Helpdesk Website

The LAQM Helpdesk is operated on behalf of Defra and the Devolved Administrations by Bureau Veritas, in conjunction with contract partners AECOM and the National Physical Laboratory.

Spreadsheet maintained by the National Physical Laboratory. Original compiled by Air Quality Consultants Ltd.

Step 1:	Step 2:	Step 3:	Step 4:
Select the Laboratory that Analyses Your Tubes from the Drop-Down List	Select a Preparation Method from the Drop-Down List	Select a Year from the Drop-Down List	Where there is only one study for a chosen combination, you should use the adjustment factor shown with caution. Where there is more than one study, use the overall factor[2] shown in blue at the foot of the final column.
If a laboratory is not shown, we have no data for this laboratory.	If a preparation method is not shown, we have no data for this method at this laboratory.	If a year is not shown, we have no data[2]	If you have your own co-location study then see footnote[4]. If uncertain what to do then contact the Local Air Quality Management Helpdesk at LAQMHelpdesk@bureauveritas.com or 0800 0327953

Analysed By[1]	Method (To update your selection, choose (All) from the pop-up list)	Year[2] (To update your selection, choose (All))	Site Type	Local Authority	Length of Study (months)	Diffusion Tube Mean Conc. (Dm) (µg/m³)	Automatic Monitor Mean Conc. (Cm) (µg/m³)	Bias (B)	Tube Precision[4]	Bias Adjustment Factor (A) (Cm/Dm)
SOCOTEC Didcot	20% TEA in water	2023		Overall Factor[3] (8 studies)				Use		0.76
SOCOTEC Didcot	50% TEA in acetone	2023		Overall Factor[3] (35 studies)				Use		0.78

[1] For Casella Stanger/Bureau Veritas (NOT Bureau Veritas Labs) use Gradko 50% TEA in Acetone.
For Casella Seal/GMSS/Casella CRE/Bureau Veritas Labs/Eurofins/ use Environmental Scientific Groups.
From 2011 for Environmental Scientific Groups use ESG Glasgow.
From 2011 for Harwell Scientific Services use ESG Didcot.
For 2017 for SOCOTEC use ESG Didcot, as name changed mid year.
For 2018 SOCOTEC entered as Didcot and Glasgow. Glasgow analysis lab moved to Didcot mid 2018.
For Staffordshire CC SS/Staffordshire County Analyst use Staffordshire Scientific Services.

Collocation Data | Revisions

Ready

Type here to search

FTSE 350 -0.03%

NO_2 Fall-off with Distance from the Road

Wherever possible, monitoring locations are representative of exposure and no fall-off with distance calculations are necessary.

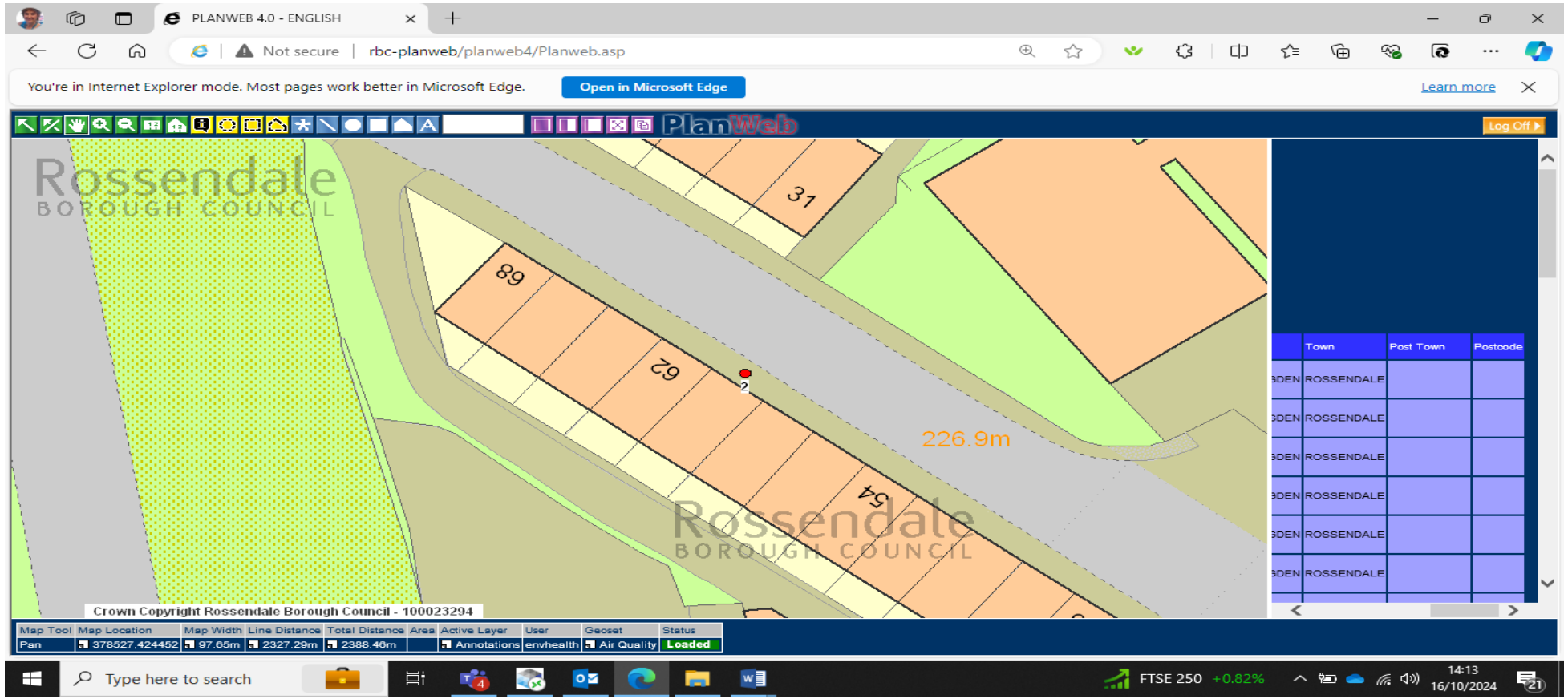
Table C.1 – Non-Automatic NO_2 Fall off With Distance Calculations (concentrations presented in µg/m³)

No diffusion tube NO_2 monitoring locations within Rossendale Borough Council required distance correction during 2023. The two diffusion tubes with exceedances, DT12 and DT19, are both located on the façade of the residential properties so are representative of exposure so distance correction calculations are not needed.

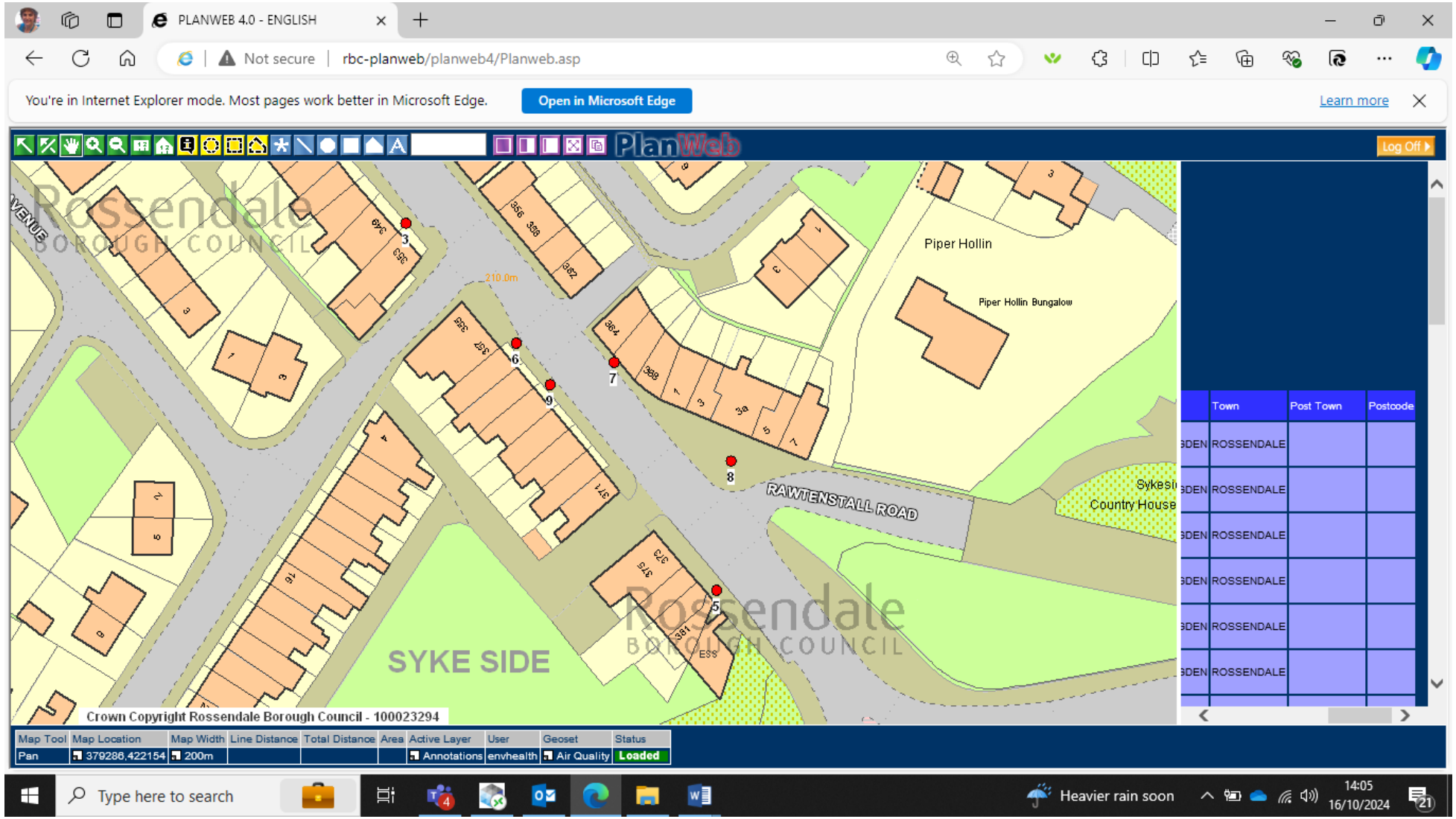
Appendix D: Map(s) of Monitoring Locations and AQMAs

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

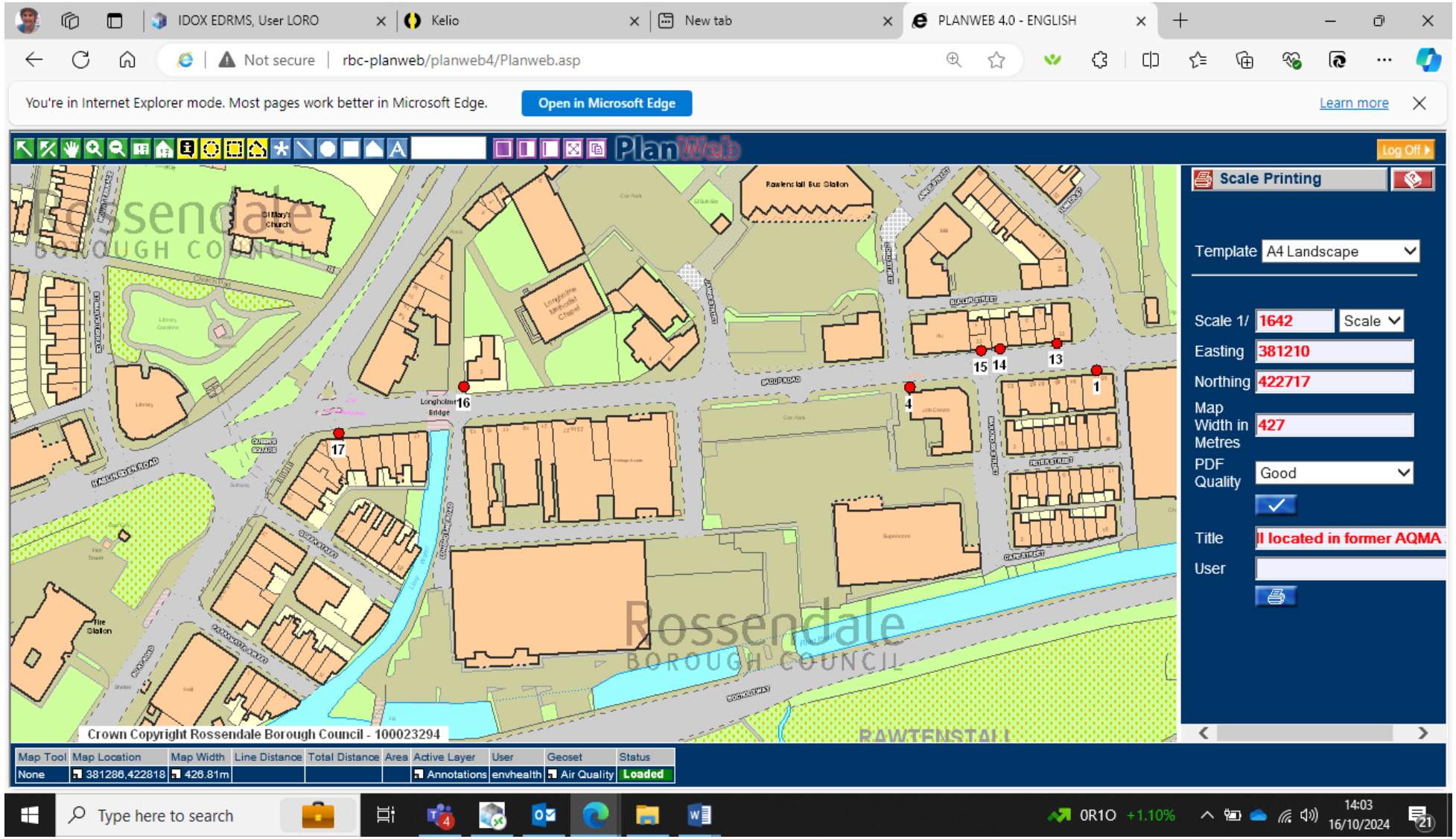
Tube 2 60 Hud Hey Road Haslingden



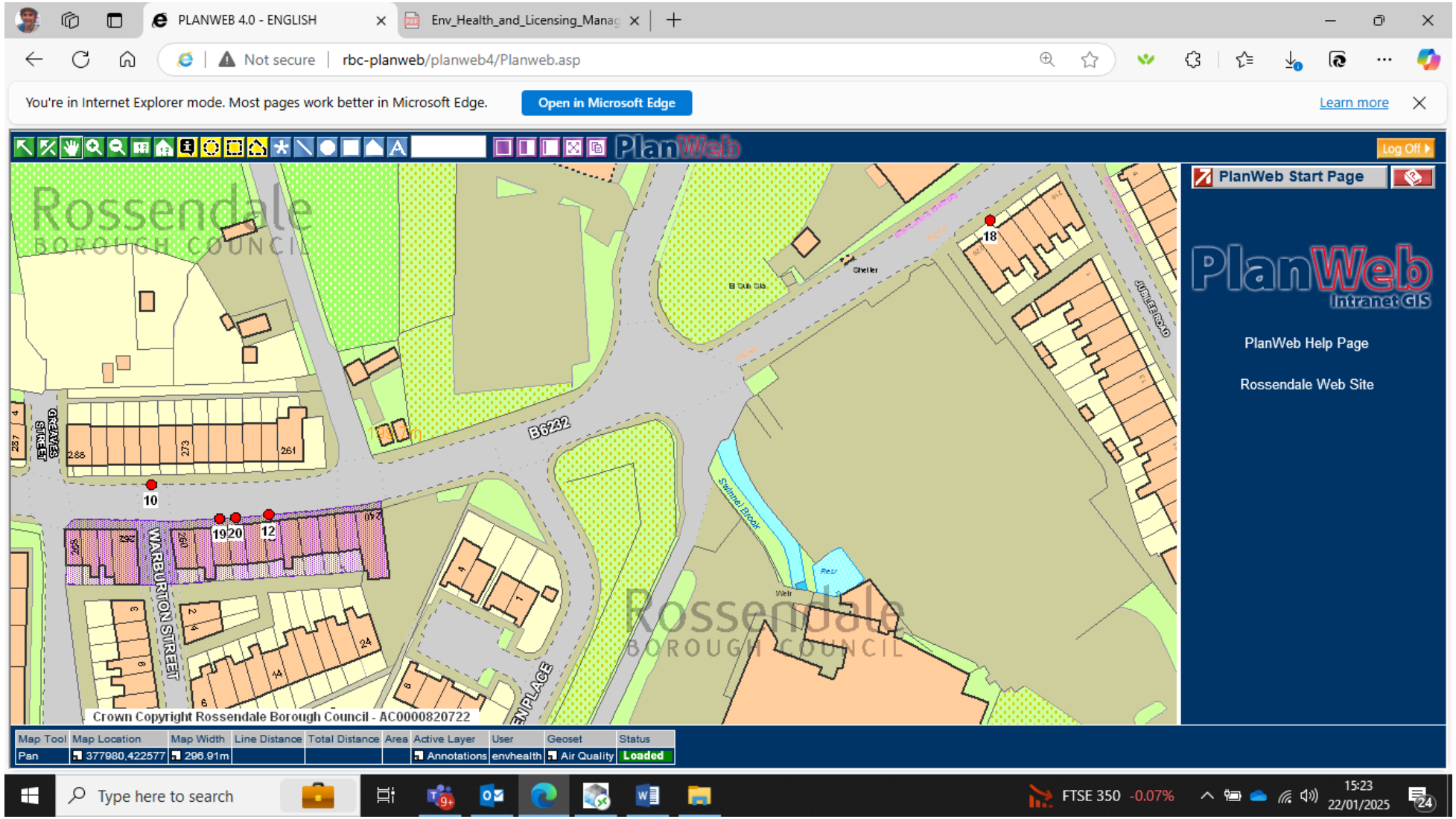
Tubes DT3,DT5,DT6,DT7,DT8 and DT9 on Manchester Road Haslingden located in the former AQMA 1



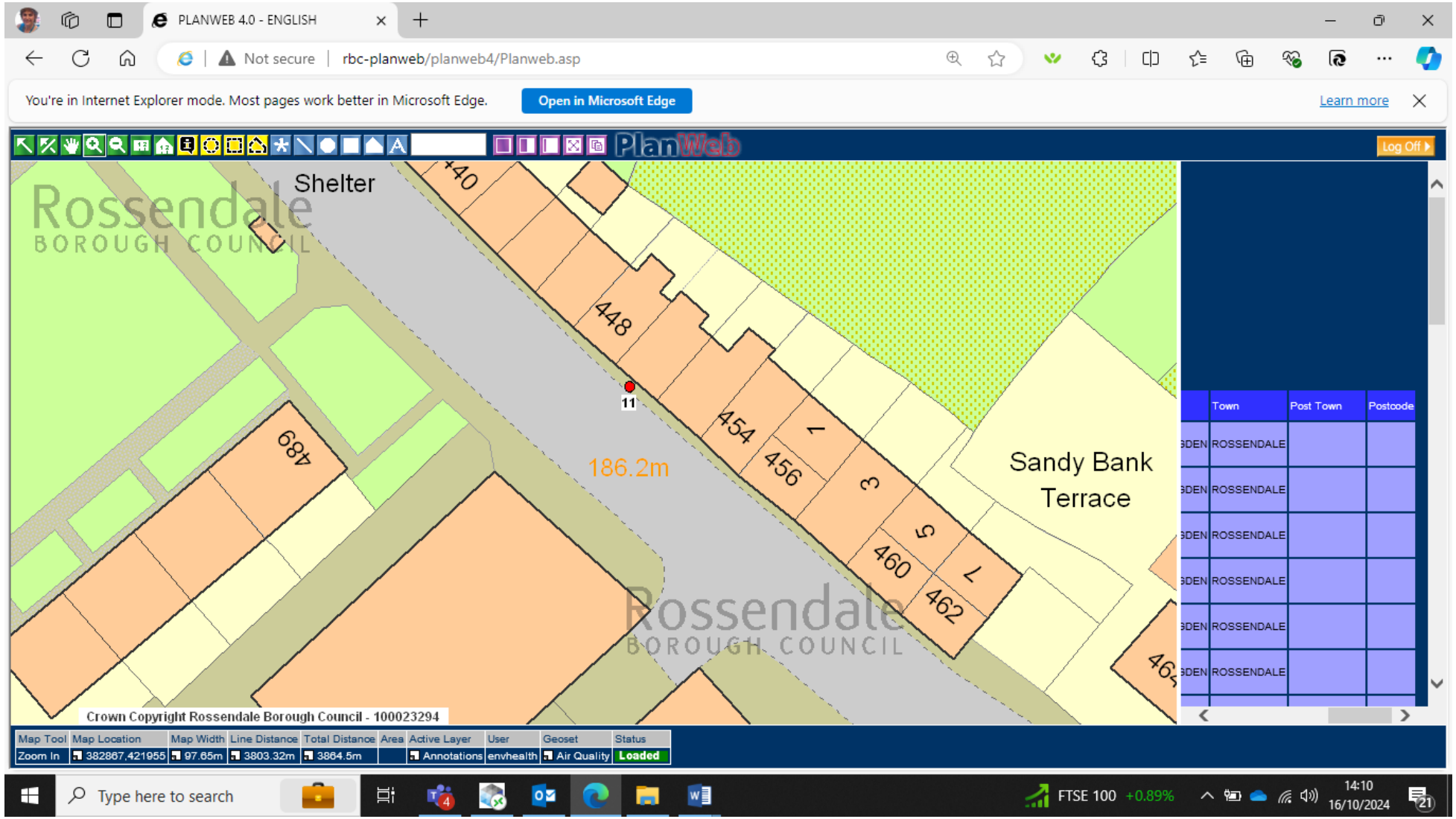
Diffusion Tubes DT1,DT4,DT13,DT14,DT15,DT16 and DT17 on Bacup Road Rawtenstall located in the former AQMA 2



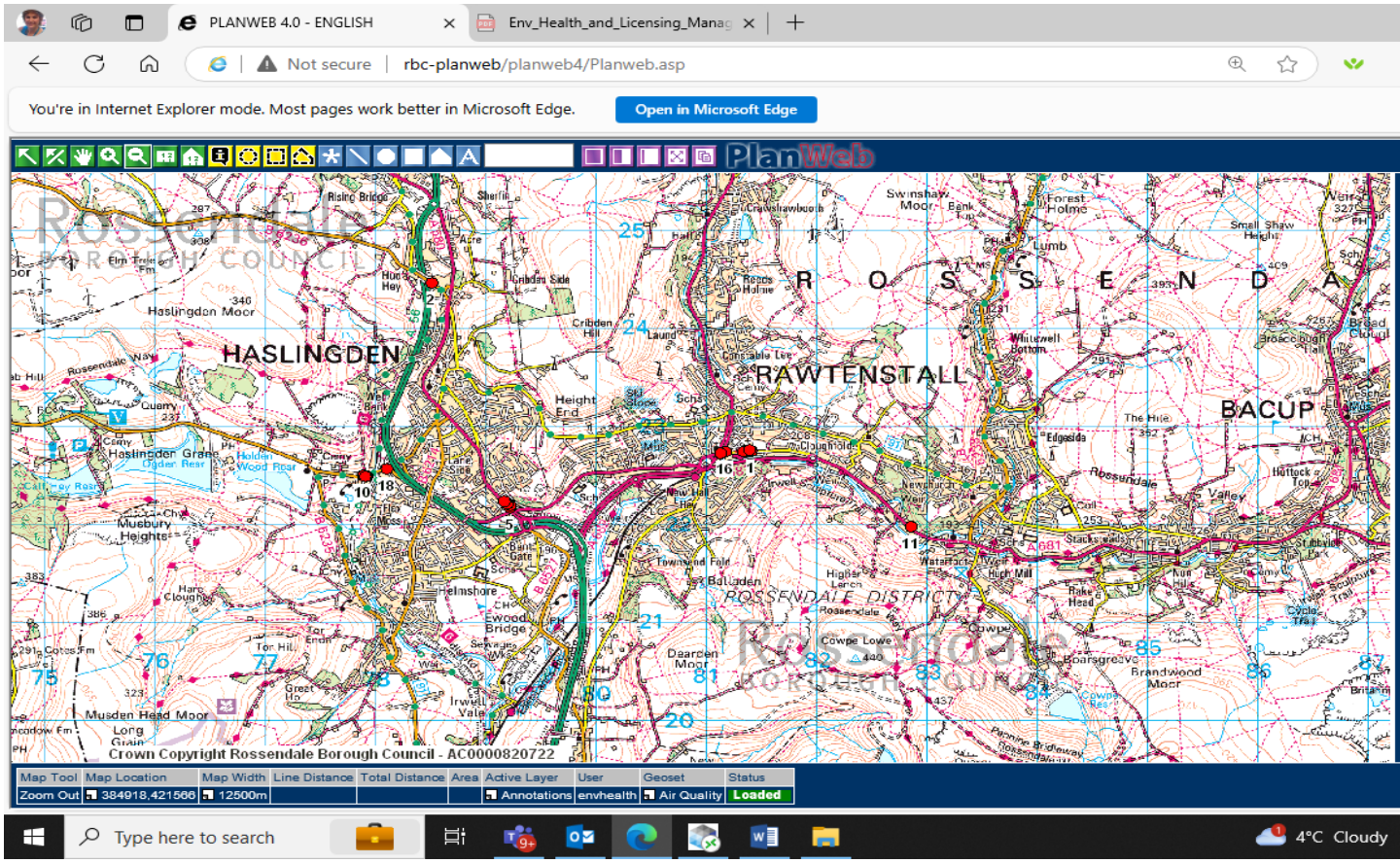
Diffusion Tubes DT12, DT19 and DT20 (AQMA 3) and DT18 and DT10 (on the opposite side of the road) on Grane Road Haslingden



Diffusion tube 11 located on Bacup Road, Waterfoot



Overview map of the whole borough with all diffusion tubes (red dots)



Appendix E: Summary of Air Quality Objectives in England

Table E.1 – Air Quality Objectives in England[7]

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

Pollutant	Air Quality Objective: Concentration	Air Quality Objective: Measured as
Sulphur Dioxide (SO_2)	125µg/m^3, not to be exceeded more than 3 times a year	24-hour mean
Sulphur Dioxide (SO_2)	266µg/m^3, not to be exceeded more than 35 times a year	15-minute mean

Glossary of Terms

Abbreviation	Description
AQAP	Air Quality Action Plan - A detailed description of measures, outcomes, achievement dates and implementation methods, showing how the local authority intends to achieve air quality limit values'
AQMA	Air Quality Management Area – An area where air pollutant concentrations exceed / are likely to exceed the relevant air quality objectives. AQMAs are declared for specific pollutants and objectives
ASR	Annual Status Report
Defra	Department for Environment, Food and Rural Affairs
DMRB	Design Manual for Roads and Bridges – Air quality screening tool produced by National Highways
EU	European Union
FDMS	Filter Dynamics Measurement System
LAQM	Local Air Quality Management
NO_2	Nitrogen Dioxide
NO_x	Nitrogen Oxides
PM_{10}	Airborne particulate matter with an aerodynamic diameter of 10µm or less
$PM_{2.5}$	Airborne particulate matter with an aerodynamic diameter of 2.5µm or less
QA/QC	Quality Assurance and Quality Control
SO_2	Sulphur Dioxide

References

- Local Air Quality Management Technical Guidance LAQM.TG22. August 2022. Published by Defra in partnership with the Scottish Government, Welsh Assembly Government and Department of the Environment Northern Ireland.
- Local Air Quality Management Policy Guidance LAQM.PG22. August 2022. Published by Defra in partnership with the Scottish Government, Welsh Assembly Government and Department of the Environment Northern Ireland.
- Chemical hazards and poisons report: Issue 28. June 2022. Published by UK Health Security Agency
- Air Quality Strategy – Framework for Local Authority Delivery. August 2023. Published by Defra.