



# **2025 Air Quality Annual Status Report (ASR)**

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

Date: June 2025

Information	Sunderland City Council Details
<b>Local Authority Officer</b>	Joanne Dodson
<b>Department</b>	Public Protection & Regulatory Services
<b>Address</b>	City Hall, Plater Way, Sunderland.
<b>Telephone</b>	0191 520 5555
<b>E-mail</b>	Public.health@sunderland.gov.uk
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## Local Responsibilities and Commitment

This ASR was prepared by the Environmental Health Department of Sunderland City Council with the support and agreement of the following officers and departments:

- Transportation development
- Public Health

If you have any comments on this ASR please send them to Joanne Dodson at:

Sunderland City Council, City Hall, Plater Way, Sunderland, SR1 3AD.

Public.health@sunderland.gov.uk

## Executive Summary: Air Quality in Our Area

We are pleased to be able to report that the Air Quality in Sunderland is good. Health based objectives known as the Air Quality Objectives are being met across the City and we have seen a general decline in the pollutants measured. We have not declared any Air Quality Management Areas in our City.

Sunderland City Council is committed to try to reduce levels further and to support initiatives that will improve air quality and well-being in Sunderland. We are continuing to monitor levels of air quality throughout the city; Appendix A of this report contains a summary of air quality data collected in 2024. Our real time monitoring data as well as data from other sites across the region can be accessed by going to [www.wecare4air.co.uk](http://www.wecare4air.co.uk).

We also look at new sources such as new roads or industrial sites to assess their potential impact on the City's air quality.

Investment in electric vehicle charging points and improving cycling and walking infrastructure across the City are priorities that can progress towards a reduction in air pollution. More initiatives can be found in Table 2.2.

Together with our partners in Transport and Public Health we aim to work together to try to improve air quality and there are ways that Sunderland's residents and businesses can get involved too.

Sunderland residents and businesses can get more information by visiting <http://gosmartergoactive.co.uk/>.

## Air Quality in Sunderland

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.

Air pollution particularly affects the most vulnerable in society, children, the elderly, and those with existing heart and lung conditions. Low-income communities are also

disproportionately impacted by poor air quality, exacerbating health and social inequalities.

Sunderland is one of five Local Authorities making up the conurbation of Tyne & Wear that covers an area of 540 km<sup>2</sup>, with a population of 1.14 million. The conurbation centres around two major rivers with a mixture of large urban and rural areas.

A substantial rail and road network covers the region, which includes a number of motorways and trunk roads, primary roads, principal roads and other classified and non-classified routes. A comprehensive network of bus services operates in Tyne & Wear, as well as a Metro light rail network. Both regional and national rail systems and freight also operate. Passenger ferries and freight shipping services operate from the Port of Tyne and cargo traffic enters and leaves the Port of Sunderland.

Sunderland has a substantial amount of industry mainly located within the Washington area of the City. There are currently 68 installations within Sunderland that hold an Environmental Permit (Part B) and are regulated by the local authority. Part B permits control activities which cause emissions to air.

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

**Table ES 1 - Description of Key Pollutants**

Pollutant	Description
Nitrogen Dioxide (NO <sub>2</sub> )	Nitrogen dioxide is a gas which is generally emitted from high-temperature combustion processes such as road transport or energy generation.
Sulphur Dioxide (SO <sub>2</sub> )	Sulphur dioxide (SO <sub>2</sub> ) is a corrosive gas which is predominantly produced from the combustion of coal or crude oil.
Particulate Matter (PM <sub>10</sub> and PM <sub>2.5</sub> )	<p>Particulate matter is everything in the air that is not a gas.</p> <p>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.</p> <p>PM<sub>10</sub> refers to particles under 10 micrometres. Fine particulate matter or PM<sub>2.5</sub> are particles under 2.5 micrometres.</p>

Pollutants come from a variety of man-made sources such as industry, combustion of fuels, traffic engines and building heating. Some can come from natural sources such as the North Sea which adds to particulate levels. Air Quality in Sunderland is most heavily influenced by traffic emissions. The pollutant of most concern to Sunderland is Nitrogen Dioxide (NO<sub>2</sub>) caused by road traffic.

Levels of pollution across Sunderland, indicated by the latest monitoring data, are falling and Sunderland has not had to declare an AQMA within its boundary

Sunderland City Council's Environmental Health Team is responsible for overseeing the air quality monitoring network and reporting the data to DEFRA. We work together with other Local Authorities in our region as Air Pollution crosses administrative boundaries. Improvements to the road network or fitting buses with pollution reducing technology will have positive benefits in more than one local authority region in our area. The GoSmarter project mentioned earlier operates across all the Tyne & Wear Authorities and Northumberland.

We also work closely with our partners in Transport, Public Health and Planning as well as partners outside the Local Authority such as the Environment Agency to improve air quality standards.

## 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<sup>1</sup> 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<sub>2.5</sub>), the pollutant of most harmful to human health. The Air Quality Strategy<sup>2</sup> provides more information on local authorities' responsibilities to work towards these new targets and reduce fine particulate matter in their areas.

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<sup>1</sup> Defra. Environmental Improvement Plan 2023, January 2023

<sup>2</sup> Defra. Air Quality Strategy – Framework for Local Authority Delivery, August 2023

The Road to Zero<sup>3</sup> 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 (AQMA's) are designated due to elevated concentrations heavily influenced by transport emissions.

## Conclusions and Priorities

We are pleased to report that no exceedances of the Air Quality Objectives were identified during the year 2024. Sunderland City Council does not currently have any AQMA's and because of our good air quality we conclude that we do not need to declare an AQMA for any pollutants.

Looking back over the last 5 years of data there has been a general decrease in NO<sub>2</sub> levels. The NO<sub>2</sub> results gathered during 2020 have demonstrated a fall in concentrations at every monitoring site compared to the year before, at both automatic and sites monitored by diffusion tube. This was not wholly unexpected and is likely to be attributed to reduced traffic on the region's roads caused by restrictions brought about by the COVID-19 Pandemic. There has also been a shift towards working from home and this may continue to reduce traffic levels and therefore pollution in the future. During 2021, as the restrictions were lifted there has been a corresponding small increase in NO<sub>2</sub> levels at our site in Trimdon Street and at the AURN site on Wessington Way. At our diffusion tube sites, all but one site showed an increase in concentrations in 2021 compared to 2020. During 2022 levels of NO<sub>2</sub> have fallen again. All 3 continuous monitoring sites showed a decrease in concentrations and similarly all diffusion tube sites apart from one had a decreased annual mean. This trend has continued in 2023 with 2 continuous monitoring sites recording equal levels of NO<sub>2</sub> as in 2022 and one recording a decrease. The diffusion tubes sites generally showed very small changes with 20 sites slightly lower and 15 higher. The data captured in 2024 revealed that all 3 continuous monitoring sites showed a decrease in NO<sub>2</sub> levels. At diffusion tube sites

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<sup>3</sup> DfT. The Road to Zero: Next steps towards cleaner road transport and delivering our Industrial Strategy, July 2018

there were again very small changes in concentration with 12 sites having increased levels and 22 having decreased. One site had no change.

Concentrations of NO<sub>2</sub> are lower overall than they were 5 years ago.

The annual average of Particulate Matter (PM<sub>10</sub>) has remained fairly constant over the past 5 years. Whilst levels at the Trimdon Street site have fluctuated, our urban background site in Silksworth has measured fairly constant levels of both PM<sub>10</sub> and PM<sub>2.5</sub>. Both sites have seen a decrease in levels of PM<sub>10</sub> in 2023 compared to 2022, measuring the lowest annual concentration in the last 5 years. During 2024, Trimdon Street levels have fallen slightly whilst those at Silksworth have risen but only by a very small amount.

Interestingly, the UK's official Air Quality Statistics from sites across the UK have also reported their lowest ever concentrations since records began. There has been an overall decrease in annual mean concentrations of PM<sub>10</sub> at urban background sites from 36.1 µg/m<sup>3</sup> in 1992 to 12.3 µg/m<sup>3</sup> in 2023, the lowest recorded.

Annual average concentrations of PM<sub>10</sub> at the roadside steadily declined from 36.7 µg/m<sup>3</sup> in 1997 to 17.2 µg/m<sup>3</sup> in 2015. Between 1997 and 2015 inclusive, the annual mean PM<sub>10</sub> concentration at roadside sites decreased by an average of 1.1 µg/m<sup>3</sup> each year. This reduction could be a consequence of the large reduction in emissions of PM<sub>10</sub> over the same period in the UK, particularly from road transport sources.

Concentrations of PM<sub>10</sub> at the roadside remained relatively stable between 2015 and 2019 before falling slightly in 2020 to 16.3 µg/m<sup>3</sup>. Since then concentrations have remained below pre-2020 levels, despite rising slightly in 2022. The mean concentration at the roadside in 2023 was 15.2 µg/m<sup>3</sup>, the lowest recorded.

## How to get Involved

Sunderland residents and businesses can get more information by visiting <http://gosmartergoactive.co.uk/>. Up to date Air Quality data can be accessed by visiting [Sunderland Trimdon Street - We Care 4 Air](#).

## Recent Projects that have a positive impact on Air Quality

### New 599 Bus Route

A new bus route is being launched to improve connectivity between Sunderland and South Tyneside, providing stronger links to major employment sites and local communities.

The 599 service will strengthen links with Sunderland Royal Hospital, the International Advanced Manufacturing Park (IAMP), the Nissan car plant, Sunderland city centre, and Jarrow and Hebburn town centres.

It is a joint project by Nexus and the new North East Combined Authority and is being funded by the Government as part of the region's Bus Service Improvement Plan (BSIP).

The 599, operated by new local bus company Northstar, started running from July 2024. It will operate from Park Lane Interchange in Sunderland to Jarrow Bus station, Monday through to Saturday.

The new route follows a campaign by local community leaders and bus users for better links from Jarrow and Hebburn to major employment sites – the IAMP in particular - and the Sunderland Royal Hospital and city centre.

The 599 was officially launched at Faltec Europe Ltd, whose factory is located on the IAMP, where they make vehicle trims as part of the Nissan supply chain. Faltec's workforce will benefit from the new bus route along with other businesses based there.



North East Mayor, Kim McGuinness, said: “This is great news for North East passengers as the service will provide better connections to major employment centres.

“I am determined that all our communities should have reliable services because improving our public transport network is about creating access to opportunity.

“This new service will undoubtedly help local people access even more opportunities for jobs and training and is a welcome step in the right direction as part of my plan for better buses right across the North East.”

## Hetton Community Pool

### **Energy costs will be coming down at Hetton Community Pool and Wellness Centre with a £410,000 grant.**

During April 2024, Hetton Community Pool, Tennis and Wellness Centre received a £410,000 boost to help cut its energy costs.

The money is earmarked for solar panels and other energy saving devices that will generate solar power and heat the building, including warming its swimming pool water. The panels will also lower the building's carbon footprint and make savings on its energy bills.

Sunderland already has a low carbon framework and pledge that is driving down emissions to help make the city more carbon neutral.

Money for the Hetton energy saving project came from a national Sport England grant. The funding is targeted at easing the financial pressures that councils and leisure operators are facing because of recent rises in energy and general operating costs.

The City Council's Executive Director of Health, Housing and Communities, Gerry Taylor said: "It isn't just households that have seen their energy bills rise in recent years. So thanks to this grant from Sport England we're now beginning to map out and draw up more detail for our energy savings investments at Hetton pool and wellness centre.



"Installing solar panels and more LED lights will save on energy bills and cut carbon emissions. This in turn helps the environment by lowering our carbon footprint, helps with the longer-term plan for going carbon neutral, helps save money for leisure and sports centre users, and for all council-tax payers. The grant for the work is very much what could be called an 'invest to save' project.

"Subject to more specifications and details, and how we deliver this, centre users could see work beginning in coming months. We've set out how we are aiming to see

Sunderland and the Coalfield area move toward becoming carbon neutral, and as a healthy city we are continuing to update and make our leisure centres accessible to all residents."

Sunderland is one of 264 councils to receive the funding that can go towards solar panels, LED lights and pool covers as well as a variety of other improvements aimed at improving the energy efficiency of public facilities with pools.

The council's leisure service partner is Everyone Active and its Contract Manager Ian Bradgate said: "It is great news that these investments will reduce Hetton's carbon footprint going forward. Everyone Active is proud to work alongside the council in meeting its Net Zero ambitions as part of our own Net Zero Strategy."

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# 1 Local Air Quality Management

This report provides an overview of air quality in Sunderland City Council during 2024. 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 Sunderland City 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.

Sunderland City Council currently does not have any declared AQMAs. A local Air Quality Strategy is under development to prevent and reduce polluting activities.

#### Table 2.1 – Declared Air Quality Management Areas

**Sunderland does not currently have any AQMA's.**

## 2.2 Progress and Impact of Measures to address Air Quality in Sunderland

Defra's appraisal of last year's ASR concluded on the basis of the evidence provided by the local authority the conclusions reached in the report are accepted for all sources and pollutants. Other comments included that it would be great to see what the future priorities are for Sunderland in continuing to improve air quality in the coming years. Sunderland City Council are continuing to work towards producing an Air Quality Strategy and in the interim have produced a table of Air Quality Priorities to list the areas that we intend to focus on to improve Air Quality. A copy of this plan can be found in Appendix F.

Defra recommends that Directors of Public Health approve draft ASRs. Sign off is not a requirement, however collaboration and consultation with those who have responsibility for Public Health is expected to increase support for measures to improve air quality, with co-benefits for all.

Sunderland has taken forward a number of direct measures during the current reporting year of 2024 in pursuit of improving local air quality. Details of all measures completed, in progress or planned are set out in Table 2.2. 15 measures are included within Table 2.2, with the type of measure and the progress Sunderland have made during the reporting year of 2024 presented. Where there have been, or continue to be, barriers restricting the implementation of the measure, these are also presented within Table 2.2.

Although Sunderland City Council does not currently have an AQMA and therefore has not produced an AQAP, the measures listed in table 2.2 demonstrate some of the key projects that are currently ongoing and that should have a positive impact on Air Quality and reduce pollutant concentrations.

It is the intention of Sunderland City Council to produce and implement an Air Quality Strategy in the near future. A joint approach with relevant departments within the council will be adopted. It is hoped that by working together will ensure we can continue to meet the AQ Objectives and also look at long term strategies to reduce pollutants such as PM<sub>2.5</sub>

Sunderland City Council worked to implement these measures in partnership with the following stakeholders during 2023:

- University Of Sunderland

- Riverside residents
- City Hospitals
- Sunderland College
- Gentoo
- Nexus
- NECA (North East Combined Authority)

Table 2.2 – Progress on Measures to Improve Air Quality

Measure No.	Measure Title	Category	Classification	Year Measure Introduced in AQAP	Estimated / Actual Completion Date	Organisations Involved	Funding Source	Funding Status	Estimated Cost of Measure	Measure Status	Reduction in Pollutant / Emission from Measure	Key Performance Indicator	Progress to Date	Comments / Barriers to Implementation
1	EV Infrastructure Strategy for Sunderland	Policy Guidance and Development Control	Low Emissions Strategy	2022	2024	University of Sunderland, Sunderland College, City Hospitals, Gentoo	Local Authority	Funded		Implementation	Reduced vehicle emissions	Measured concentrations at AQ Sites	Project partner appointed, stakeholder engagement stage. 3-year EV Infrastructure Delivery Plan and Roadmap developed.	To be reviewed and updated 2025
2	Mobility Hub with EV car club located in Riverside Sunderland	Promoting Low Emission Transport	Public Vehicle Procurement - Prioritising uptake of low emission vehicles	2020	2022	Local Authority, Riverside residents	Local Authority	Funded		Implementation	Reduced vehicle emissions	Measured concentrations at AQ Sites	Procurement exercise currently ongoing (2024) to appoint a car club operator to manage existing 10 LA EV cars and add vehicles for public use.	Operational and staff EV taster sessions held to promote use. Implementation of wider pool car system to be procured subject to funding.
3	Local Cycling & Walking Infrastructure Plan	Promoting Travel Alternatives	Promotion of cycling, Promotion of walking	2012	2025	Local Authority	Local Authority	Funded	£50k - £100k	Planning	Reduced vehicle emissions	Measured concentrations at AQ Sites	Local cycling and Walking Infrastructure Plan is now adopted. Schemes are being developed and delivered. Working with AECOM on an area focused LCWIP for Washington.	Further LCWIP's to be developed for Washington and the Coalfields subject to funding
4	North East Local Transport Plan	Policy Guidance and Development Control	Low Emissions Strategy	2023	2035	North East Combined Authority (NECA) & Nexus	North East Combined Authority (NECA)	Funded		Implementation	Reduced vehicle emissions	City Plan	Adopted at regional and local authority level	Funding for Infrastructure Delivery Plan
5	Low Carbon Action Plan	Policy Guidance and Development Control	Low Emissions Strategy			Local Authority	Local Authority	Funded		Implementation	Reduced vehicle emissions	City Plan	Adopted and measures being implemented	
6	City Centre Movement Strategy	Transport Planning and Infrastructure	Public transport improvements- interchanges stations and services			Local Authority	Local Authority	Partially Funded		Planning	Reduced vehicle emissions	City Plan	Emerging strategy under development	
7	Walking & Cycling Infrastructure	Promoting Travel Alternatives	Promotion of cycling	2021		Local Authority	Local Authority	Partially Funded		Implementation	Reduced vehicle emissions	City Plan	Adopted and schemes being delivered with XXX to date	Scheme funding
8	Walking & Cycling Promotion	Promoting Travel Alternatives	Promotion of walking	2020		Local Authority	Local Authority	Partially Funded		Implementation	Reduced vehicle emissions	City Plan	Cycle to Work scheme, E-Bike scheme, Sustainable travel campaigns, Better Points App and other initiatives	2035

Measure No.	Measure Title	Category	Classification	Year Measure Introduced in AQAP	Estimated / Actual Completion Date	Organisations Involved	Funding Source	Funding Status	Estimated Cost of Measure	Measure Status	Reduction in Pollutant / Emission from Measure	Key Performance Indicator	Progress to Date	Comments / Barriers to Implementation
9	Electric Vehicle Infrastructure - Public	Promoting Low Emission Transport	Procuring alternative Refuelling infrastructure to promote Low Emission Vehicles, EV recharging, Gas fuel recharging	2020		Local Authority	Local Authority	Funded		Implementation	Reduced vehicle emissions	Measured concentrations at AQ Sites	Funding from OZEV to deliver charge-point schemes for Rapid, residential and destination locations (LUF/ORCS/Pilot LEVI & LEVI)	Procurement of operator
10	Electric Vehicle Infrastructure - Council Fleet	Promoting Low Emission Transport	Public Vehicle Procurement - Prioritising uptake of low emission vehicles	2020		Local Authority	Local Authority	Not Funded		Planning	Reduced vehicle emissions	Measured concentrations at AQ Sites	Workplace charging for fleet and solar PV/Battery storage schemes	Fleet replacement programme. Internal funding challenges
11	Electric Vehicles - Public	Promoting Low Emission Plant	Low Emission Fuels for stationary and mobile sources in Public Procurement	2022		Local Authority	Local Authority	Partially Funded		Implementation	Reduced vehicle emissions	Measured concentrations at AQ Sites	20 Electric buses now operational	Grant funding
12	Electric Vehicles - Council Fleet	Promoting Low Emission Transport	Procuring alternative Refuelling infrastructure to promote Low Emission Vehicles, EV recharging, Gas fuel recharging	2020		Local Authority	Local Authority	Not Funded		Planning	Reduced vehicle emissions	Measured concentrations at AQ Sites	E-vans for operational fleet use and E-RCV	Internal funding challenges
13	City Centre Heat Network	Promoting Low Emission Plant	Low Emission Fuels for stationary and mobile sources in Public Procurement	2021		Local Authority / City Centre stakeholders		Not Funded		Planning	Alternative fuel source options	City Plan	Delivery partner to be procured	
14	Street Lighting	Promoting Low Emission Plant	Other Policy	2021		Local Authority		Funded		Implementation	Reduce light pollution and energy savings	City Plan	LED lighting upgrades	
15	Sensor Network	Traffic Management	UTC, Congestion management, traffic reduction	2022		Local Authority		Funded		Implementation	Reduced vehicle emissions	Measured concentrations at AQ Sites	Cameras installed on key routes within and nearby the city centre to monitor all traffic movements	

## 2.3 PM<sub>2.5</sub> – Local Authority Approach to Reducing Emissions and/or Concentrations

As detailed in Policy Guidance LAQM.PG22 (Chapter 8) and the Air Quality Strategy<sup>4</sup>, local authorities are expected to work towards reducing emissions and/or concentrations of fine particulate matter (PM<sub>2.5</sub>). There is clear evidence that PM<sub>2.5</sub> (particulate matter smaller 2.5 micrometres) has a significant impact on human health, including premature mortality, allergic reactions, and cardiovascular diseases.

Levels of PM<sub>2.5</sub> in Sunderland (as measured by the Silksworth CM2 monitoring station) are generally low. Data for 2024, at 7µg/m<sup>3</sup> are well below the EU target of 25µg/m<sup>3</sup>.

Sunderland City Council is taking the following measures to address PM<sub>2.5</sub>:

### Limiting the domestic burning of wet wood

Officers within the Environmental Health and Trading Standards Teams have undertaken inspections of retailers who offer wood for sale for domestic burning. Retailers were asked about the Ready to Burn Scheme and given advice where necessary to ensure wood was stored under cover. We have also updated our public facing website to give advice to residents [Control on fuels - Sunderland City Council](#). Officers also respond to complaints about smoke from domestic properties and give advice to owners of log burners to ensure the correct fuel is being used.

### **Background on the impacts on health outcomes and rationale:**

The people of Sunderland have lower life expectancy at birth than the England average, with a gap of 2.6 years for males and 2.2 years for females for 2021-23. Data published recently shows that:

- 7.4% of the gap for males and 18.1% of the gap for females is due to deaths from respiratory diseases in 2020-2021.

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<sup>4</sup> Defra. Air Quality Strategy – Framework for Local Authority Delivery, August 2023

- 12.6% of the gap for males and 4.3% of the gap for females is due to deaths from circulatory diseases in 2020-2021.

21.8% of the gap for males and 21.5% of the gap for females is due to deaths from cancer. Evidence shows that long term exposure to poor air quality increases the risk of mortality from cardiovascular and respiratory diseases and also lung cancer.

Sunderland has higher than England average rates of death for these causes as follows:

- Premature (under 75 years) mortality rates from cardiovascular disease of 90.8 per 100,000 compared to 77.4 per 100,000 for England.
- Premature (under 75 years) mortality rates from respiratory disease of 43.8 per 100,000 compared to 33.7 per 100,000 for England.
- Premature (under 75 years) mortality rates from lung cancer of 35.2 per 100,000 compared to 25.3 per 100,000 for England.
- Data from the Public Health Outcomes Framework suggests that man-made small particulate air pollution (PM<sub>2.5</sub>) contributes to deaths in the City and the burden this create on our population is equivalent to 4.5% of all deaths at ages 30 years and over. This places Sunderland is the best performing quartile for this measure.

Actions already being taken by Sunderland City Council to reduce pollutants such as PM<sub>10</sub> and NO<sub>x</sub> as reported in Table 2.2 will also reduce levels of PM<sub>2.5</sub> emissions.

Sunderland City Council are also taking the following measures to address PM<sub>2.5</sub>. Examples can be categorised into Mobile Sources, Stationary Sources and Area Sources.

### **Mobile Sources**

Sunderland Council has previously secured funding for the retrofitting of diesel buses which will help to reduce primary and secondary sources of PM<sub>2.5</sub>. The ongoing improvement to EV Infrastructure within Sunderland will provide encouragement for residents to choose an electric vehicle when they are renewing their vehicle.

### **Stationary Sources**

Stationary sources of PM<sub>2.5</sub> can originate from industrial processes that use dusty raw materials and equipment such as electrostatic precipitators. The Environmental Health Team of Sunderland Council closely monitors dusty emissions from permitted processes

and respond to any complaints regarding dust emissions from demolition and/or construction sites. We also control dust through the planning process by assessing proposed industrial and potentially dusty activities and advising on appropriate control measures, for example, ensuring construction sites have an adequate Construction Environmental Management Plan in place.

### **Area Source Measures**

The whole of Sunderland City Council's boundary is a smoke control area and domestic coal is not permitted to be used as fuel.

The Environmental Health Team thoroughly investigates complaints of dark smoke or the use of unapproved appliances to minimise the emissions of PM<sub>2.5</sub> from these sources and promotes the Department for Environment Food & Rural Affairs practical guide for the use of open fires and wood burning stoves in the City.

To improve our understanding of PM<sub>2.5</sub> levels we have recently procured an upgrade of the analysers at our Trimdon Stret Site (CM1) within the city centre. This will include a particulate analyser that can measure both PM<sub>10</sub> and PM<sub>2.5</sub> whereas previously only PM<sub>10</sub> was measured. In addition, the smart sensor network that is currently being installed at locations across the city will also measure PM<sub>2.5</sub> and provide a valuable source of data to identify any hotspots and trends.

Further discussions between our partners in Public Health and Transport are required to improve our understanding. Sunderland City Council will continue to work towards reducing emissions and concentrations of PM<sub>2.5</sub> in their area as practicable.

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

This section sets out the monitoring undertaken within 2024 by Sunderland City Council and how it compares with the relevant air quality objectives. In addition, monitoring results are presented for a five-year period between 2020 and 2024 to allow monitoring trends to be identified and discussed.

### 3.1 Summary of Monitoring Undertaken

#### 3.1.1 Automatic Monitoring Sites

Sunderland undertook automatic (continuous) monitoring at 3 sites during 2024 Table A.1 in Appendix A shows the details of the automatic monitoring sites. NB. Local authorities do not have to report annually on the following pollutants: 1,3 butadiene, benzene, carbon monoxide and lead, unless local circumstances indicate there is a problem. The [www.wecare4air.co.uk](http://www.wecare4air.co.uk) page presents automatic monitoring results for Sunderland, with automatic monitoring results also available through the UK-Air website .

Trimdon Street Site (CM1) has been in place for approximately 20 years and was located on the busy 5 arm junction within the city centre to monitor traffic emissions. Silksworth site (CM2) was located in a quieter area of Sunderland to provide an urban background station that would monitor background concentrations in Sunderland and has also been adopted into the AURN network. Wessington Way (CM3) was located as part of the AURN programme and monitors emissions from the busy A1231 dual carriage way. In November 2024 the site had a PM<sub>2.5</sub> monitor installed, and the 2025 data will be reported within next year's ASR.

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

#### 3.1.2 Non-Automatic Monitoring Sites

Sunderland undertook non- automatic (i.e. passive) monitoring of NO<sub>2</sub> at 47 sites during 2024. Table A.2 in Appendix A presents the details of the non-automatic sites. This is an

increase of 12 sites compared with last year. The sites for diffusion tube monitoring are primarily chosen for their proximity to busy congested roads. Some have been in the same location for many years and are therefore able to give long running data trends. Other sites are short term and may have been placed as a response to new or future development in the area or due to officer observations or comments from the public. Sites are reviewed annually, and Sunderland have decided to increase the number of diffusion tube monitoring sites. The new sites have been placed in areas where new development is about to start e.g. new housing developments, or at newly completed developments or where we have had public comments about a particular road being congested or being perceived as having poor air quality.

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<sub>2</sub>)

Table A.3 and Table A.4 in Appendix A compare the ratified and adjusted monitored NO<sub>2</sub> annual mean concentrations for the past five years with the air quality objective of 40µg/m<sup>3</sup>. 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 2024 dataset of monthly mean values is provided in Appendix B. Note that the concentration data presented in Table B.1 includes distance corrected values, only where relevant.

Diffusion Tube Sites (123 to 142)

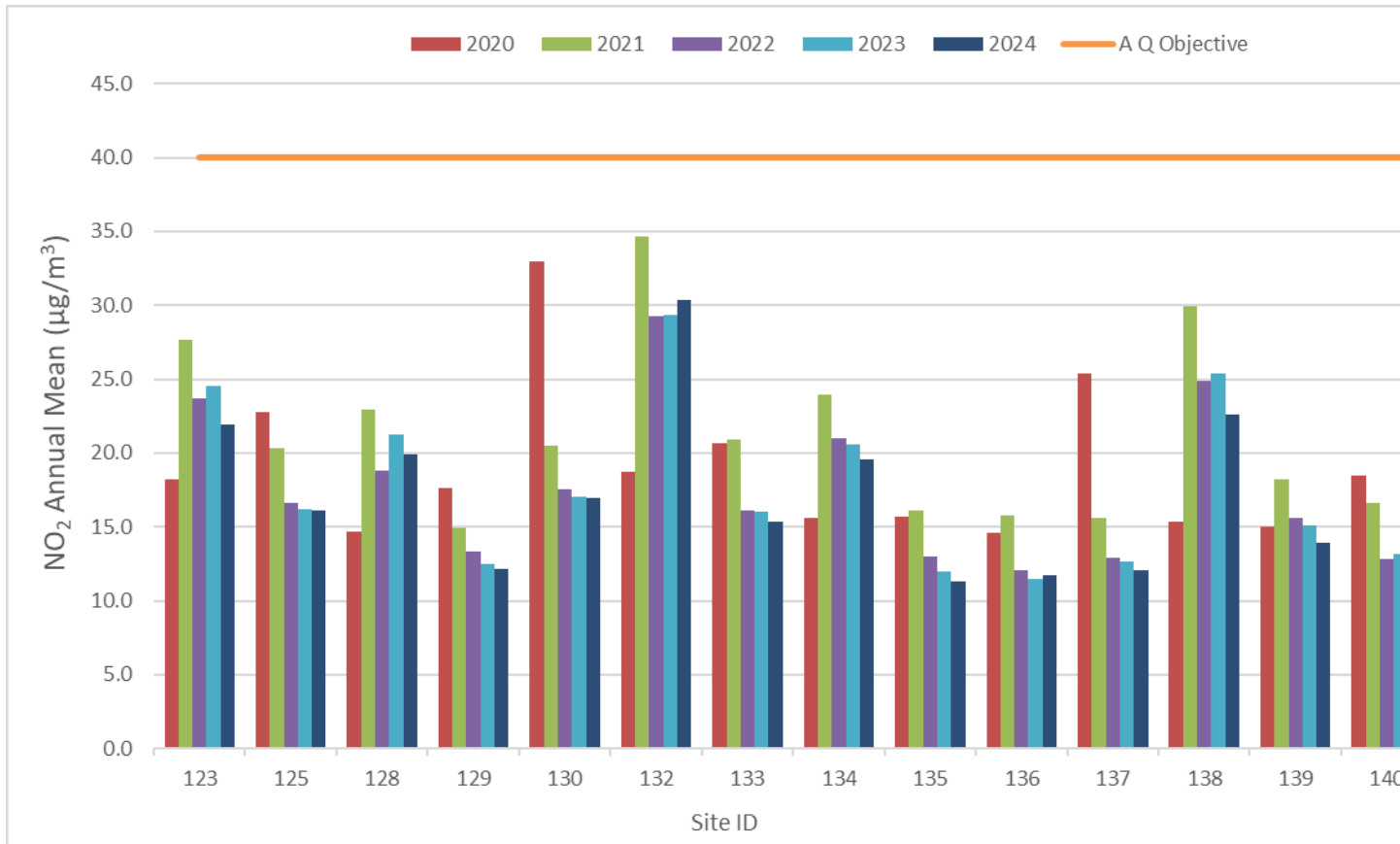


Table A.5 in Appendix A compares the ratified continuous monitored NO<sub>2</sub> hourly mean concentrations for the past five years with the air quality objective of 200µg/m<sup>3</sup>, not to be exceeded more than 18 times per year.

There were no exceedances of the annual or 1-hour air quality objectives for NO<sub>2</sub> at all of the monitoring locations.

The annual mean at CM1, CM2 and CM3 did not increase in 2024 compared to the year before. All three of the continuous monitoring sites recorded decreased levels of NO<sub>2</sub> as compared with 2023. The diffusion tubes sites generally showed very small changes with 22 sites measuring levels of NO<sub>2</sub> that were slightly lower and 12 higher. One site remained the same. Figures A.2 and A.3 show the diffusion tube data for 2020 to 2024.

### 3.2.2 Particulate Matter (PM<sub>10</sub>)

Table A.6 in Appendix A: Monitoring Results compares the ratified and adjusted monitored PM<sub>10</sub> annual mean concentrations for the past five years with the air quality objective of 40µg/m<sup>3</sup>.

Table A.7 in Appendix A compares the ratified continuous monitored PM<sub>10</sub> daily mean concentrations for the past five years with the air quality objective of 50µg/m<sup>3</sup>, not to be exceeded more than 35 times per year.

However, it must be noted that the data from CM1 was collected using a TEOM. In previous years the data has been corrected using the VCM (Volatile Correction Model) but the removal of a nearby FDMS (Filter Dynamics Measurement System) analyser has meant that there is no longer an analyser in range and the correction model cannot be used. After seeking advice from the LAQM helpdesk, the data was corrected using a factor of 1.3 but it cannot be relied heavily upon to make conclusions. The TEOM has now been replaced by a SWAM and the data in next year's report will be more reliable. When compared with the last 5 years data the annual concentration is lower than it has been previously, see Fig A.

Relying on the data from CM2, there were no exceedances of the annual or daily air quality objective for PM<sub>10</sub> in Sunderland for the year 2022. Annual concentrations of PM<sub>10</sub> decreased at CM1 and increased slightly at CM2 when compared to the previous year's levels. The number of 24-hour means >50µg/m<sup>3</sup> was 0 days at CM1 and 0 days for CM2. This was the same as the previous year.

### 3.2.3 Particulate Matter (PM<sub>2.5</sub>)

Table A.8 in Appendix A presents the ratified and adjusted monitored PM<sub>2.5</sub> annual mean concentrations for the past five years.

Concentrations of PM<sub>2.5</sub> were measured at CM2. This is an affiliate AURN site and as such the data has been correctly ratified and is available from the [Data Archive - Defra, UK](#). There were no exceedances of the PM<sub>2.5</sub> objective at the monitoring location. Levels in 2024 increased slightly, from 6 µg/m<sup>3</sup> measured in 2023, to 7 µg/m<sup>3</sup>.

## Appendix A: Monitoring Results

**Table A.1 – Details of Automatic Monitoring Sites**

Site ID	Site Name	Site Type	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Pollutants Monitored	In AQMA?	Which AQMA? <sup>(1)</sup>	Monitoring Technique	Distance to Relevant Exposure (m) <sup>(2)</sup>	Distance to kerb of nearest road (m) <sup>(1)</sup>	Inlet Height (m)
CM 1	Trimdon Street	Kerbside	438928	557151	NO2 PM10	No		Chemiluminescent, SWAM	3.0	0.5	2.0
CM 2	Silksworth	Urban Background	438116	554462	NO2 PM10 PM2.5	No		Chemiluminescent, FIDAS	230.0	0.5	2.0
CM 3	Wessington Way	Roadside	438020	558348	NO2	No		Chemiluminescent	15.0	1.5	1.8

**Notes:**

(1) N/A if not applicable

(2) 0m if the monitoring site is at a location of exposure (e.g. installed on the façade of a residential property).

**Table A.2 – Details of Non-Automatic Monitoring Sites**

Diffusion Tube ID	Site Name	Site Type	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Pollutants Monitored	In AQMA? Which AQMA?	Distance to Relevant Exposure (m) <sup>(1)</sup>	Distance to kerb of nearest road (m) <sup>(2)</sup>	Tube Co-located with a Continuous Analyser?	Tube Height (m)
38	17 Parkside South, East Herrington	Roadside	435714	552473	NO2	No	0.0	18.0	No	2.0
53	166 Chester Road, Millfield	Roadside	438568	556566	NO2	No	0.0	4.0	No	2.0
55	25 Eden Vale, Thornholme	Roadside	438690	556135	NO2	No	0.0	3.0	No	2.0
56	101 Southwick Road, Southwick	Roadside	439101	558292	NO2	No	0.0	2.0	No	2.0
57	5/6 Northbridge Street, Monkwearmouth	Kerbside	439664	557829	NO2	No	0.0	2.0	No	2.0
58	6 Beatrice Terrace, Shiney Row	Kerbside	432634	552616	NO2	No	0.0	3.0	No	2.0
86	2 Alice Street, Thornholme	Roadside	439466	556484	NO2	No	0.0	4.0	No	2.0
88	Hind's Street, Central	Kerbside	439160	556995	NO2	No	165.0	0.0	No	4.0
94	Chaplins PH, Mary St. City Centre	Kerbside	439374	556660	NO2	No	2.0	2.0	No	4.0
100	Air Quality Trailer, Trimdon Street	Roadside	438927	557151	NO2	No	2.0	5.0	No	4.0

Diffusion Tube ID	Site Name	Site Type	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Pollutants Monitored	In AQMA? Which AQMA?	Distance to Relevant Exposure (m) <sup>(1)</sup>	Distance to kerb of nearest road (m) <sup>(2)</sup>	Tube Co-located with a Continuous Analyser?	Tube Height (m)
101, 105, 106	Puma Centre, Silksworth Lane	Urban Background	438116	554462	NO2	No	130.0	3.0	Yes	2.0
109	23 Newcastle Road, Bowling Alley	Roadside	439648	558120	NO2	No	0.0	3.0	No	2.0
111	237 Queen Alexandra Rd, Barnes roundabout	Roadside	438453	555507	NO2	No	0.0	9.0	No	2.0
113	Durham Road Prospect Junction	Urban Centre	437446	554989	NO2	No	20.0	4.0	No	2.0
117	3, Holmeside (Baker's Oven)	Roadside	439495	556795	NO2	No	97.0	4.0	No	2.0
118	27 Bridge Street	Roadside	439696	557205	NO2	No	0.0	2.0	No	2.0
119	4 Athenaeum Street	Roadside	439792	556921	NO2	No	88.0	2.0	No	4.0
120	Gillespie's	Roadside	439806	557063	NO2	No	100.0	5.0	No	4.0
121	16 Windsor Terrace, Grangetown	Roadside	440702	554722	NO2	No	0.0	2.0	No	4.0
123	263 Chester Road	Roadside	437943	556341	NO2	No	10.0	4.0	No	4.0
125	45 Station Road	Roadside	435417	547025	NO2	No	0.0	2.0	No	4.0

Diffusion Tube ID	Site Name	Site Type	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Pollutants Monitored	In AQMA? Which AQMA?	Distance to Relevant Exposure (m) <sup>(1)</sup>	Distance to kerb of nearest road (m) <sup>(2)</sup>	Tube Co-located with a Continuous Analyser?	Tube Height (m)
128	Echo Building (lamp post)	Roadside	439707	557312	NO2	No	20.0	2.0	No	4.0
129	West Sunnyside (lamp post)	Roadside	439938	557089	NO2	No	2.0	1.0	No	2.0
130	St Mary's Car Park Matlock Street lamp post	Roadside	439538	557292	NO2	No	177.0	3.0	No	2.0
132	Dunn House North Bridge Street	Roadside	439661	557901	NO2	No	0.5	3.0	No	4.0
133	Northern Way	Roadside	438123	558344	NO2	No	0.0	3.0	No	4.0
134	Southwick Rd/Thompson Rd	Roadside	438563	558517	NO2	No	0.0	2.0	No	4.0
135	Merle Terrace	Roadside	437561	557538	NO2	No	0.0	4.0	No	4.0
136	1, Morningside	Roadside	428269	553809	NO2	No	0.0	9.0	No	4.0
137	9 Esthwaite	Roadside	429935	556631	NO2	No	0.0	26.0	No	4.0
138	Galleries Service Yard	Roadside	429984	556576	NO2	No	56.0	1.0	No	4.0
139	Rear of 79 Spout Lane	Roadside	430899	556961	NO2	No	8.0	0.0	No	4.0
140	3 Musgrove Terrace	Roadside	430877	556851	NO2	No	3.0	0.0	No	4.0

Diffusion Tube ID	Site Name	Site Type	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Pollutants Monitored	In AQMA? Which AQMA?	Distance to Relevant Exposure (m) <sup>(1)</sup>	Distance to kerb of nearest road (m) <sup>(2)</sup>	Tube Co-located with a Continuous Analyser?	Tube Height (m)
141	Jcnctn Dairy Lane & Front St	Roadside	432542	549640	NO2	No	9.0	3.0	No	4.0
142	3 Whitehall Terrace	Roadside	437224	556714	NO2	No	0.0	4.0	No	4.0
143	1 Thompson Road	Kerbside	439198	559258	NO2	No	11.0	1.0	No	4.0
144	Benedictine Way, N Hylton Rd.	Roadside	437447	558873	NO2	No	6.0	2.0	No	4.0
145	Market Crescent, New Herrington	Urban Background	433387	552809	NO2	No	21.0	0.0	No	4.0
146	New Herrington Ind. Est. R'bout	Kerbside	433589	552808	NO2	No	14.0	1.0	No	4.0
147	20 Chapel Row, Philadelphia	Urban Background	433345	552237	NO2	No	4.0	1.0	No	4.0
148	47 North View Terrace	Roadside	432746	549730	NO2	No	2.0	1.0	No	4.0
149	Rear 19 Broadstairs Ct., Grindon	Urban Centre	436638	555625	NO2	No	6.0	2.0	No	4.0
150	Highclere Drive	Suburban	439650	552718	NO2	No	15.0	2.0	No	4.0
151	Riverview Appts, High St East	Roadside	440339	557317	NO2	No	6.0	1.5	No	4.0
152	Post Office, Sea Road	Urban Centre	439910	559673	NO2	No	0.0	5.0	No	4.0

**Notes:**

- (1) 0m if the monitoring site is at a location of exposure (e.g. installed on the façade of a residential property).
- (2) N/A if not applicable.

**Table A.3 – Annual Mean NO<sub>2</sub> Monitoring Results: Automatic Monitoring (µg/m<sup>3</sup>)**

Site ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) <sup>(1)</sup>	Valid Data Capture 2024 (%) <sup>(2)</sup>	2020	2021	2022	2023	2024
CM1	438928	557151	Kerbside	63.0	63.0	25	26.1	24.6	24.6	19.8
CM2	438116	554462	Urban Background	n/a	99	12	<b>no data</b>	11	11	10.0
CM3	438020	558348	Roadside	n/a	97.0	13	17	15	13	12.0

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

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

Where exceedances of the NO<sub>2</sub> annual mean objective occur at locations not representative of relevant exposure, the fall-off with distance concentration has been calculated and reported concentration provided in brackets for 2024.

#### Notes:

The annual mean concentrations are presented as µg/m<sup>3</sup>.

Exceedances of the NO<sub>2</sub> annual mean objective of 40µg/m<sup>3</sup> are shown in **bold**.

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

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

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

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

**Table A.4 – Annual Mean NO<sub>2</sub> Monitoring Results: Non-Automatic Monitoring (µg/m<sup>3</sup>)**

Diffusion Tube ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) <sup>(1)</sup>	Valid Data Capture 2024 (%) <sup>(2)</sup>	2020	2021	2022	2023	2024
38	435714	552473	Roadside	N/A	92.5	28.9	26.9	24.6	23.6	22.7
53	438568	556566	Roadside	N/A	92.5	15.1	21.1	18.8	18.7	18.9
55	438690	556135	Roadside	N/A	100.0	21.3	24.0	19.5	19.4	20.7
56	439101	558292	Roadside	N/A	100.0	18.5	22.2	18.1	16.9	16.6
57	439664	557829	Kerbside	N/A	100.0	22.2	31.6	22.6	28.8	24.8
58	432634	552616	Kerbside	N/A	92.5	19.8	25.4	19.8	18.7	18.5
86	439466	556484	Roadside	N/A	100.0	13.7	18.1	16.2	16.4	15.9
88	439160	556995	Kerbside	N/A	100.0	20.3	24.2	20.7	21.8	22.5
94	439374	556660	Kerbside	N/A	90.6	22.0	26.9	22.2	24.3	25.6
100	438927	557151	Roadside	N/A	83.0	25.3		20.4	21.2	21.3

Diffusion Tube ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) <sup>(1)</sup>	Valid Data Capture 2024 (%) <sup>(2)</sup>	2020	2021	2022	2023	2024
101, 105, 106	438116	554462	Urban Background	N/A	100.0	20.8	13.8	10.8	10.4	10.3
109	439648	558120	Roadside	N/A	58.5	13.2	20.4	16.1	18.4	14.2
111	438453	555507	Roadside	N/A	100.0	22.0	15.6	11.9	12.1	12.8
113	437446	554989	Urban Centre	N/A	100.0	20.0	25.5	19.4	17.7	17.9
117	439495	556795	Urban Centre	N/A	92.5	24.5	22.8	23.0	19.4	18.5
118	439696	557205	Roadside	N/A	90.6	17.8	26.8	22.6	21.5	21.9
119	439792	556921	Urban Centre	N/A	90.6	17.4	19.6	17.5	17.1	17.2
120	439806	557063	Urban Centre	N/A	92.5	16.7	20.1	17.0	18.0	16.8
121	440702	554722	Roadside	N/A	75.0	21.2	16.7	14.0	14.7	17.3
123	437943	556341	Roadside	N/A	83.0	18.2	27.7	23.7	24.6	22.0
125	435417	547025	Roadside	N/A	100.0	22.8	20.3	16.6	16.2	16.1
128	439707	557312	Roadside	N/A	100.0	14.7	23.0	18.8	21.2	19.9

Diffusion Tube ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) <sup>(1)</sup>	Valid Data Capture 2024 (%) <sup>(2)</sup>	2020	2021	2022	2023	2024
129	439938	557089	Urban Centre	N/A	100.0	17.6	14.9	13.4	12.5	12.2
130	439538	557292	Urban Centre	N/A	83.0	33.0	20.5	17.5	17.0	16.9
132	439661	557901	Roadside	N/A	90.6	18.7	34.7	29.3	29.4	30.4
133	438123	558344	Roadside	N/A	100.0	20.7	20.9	16.1	16.0	15.3
134	438563	558517	Roadside	N/A	100.0	15.6	23.9	21.0	20.6	19.6
135	437561	557538	Roadside	N/A	92.5	15.7	16.1	13.0	12.0	11.3
136	428269	553809	Urban Background	N/A	100.0	14.6	15.7	12.1	11.5	11.8
137	429935	556631	Urban Background	N/A	100.0	25.4	15.6	12.9	12.7	12.0
138	429984	556576	Roadside	N/A	100.0	15.4	29.9	24.9	25.4	22.6
139	430899	556961	Urban Background	N/A	84.9	15.0	18.2	15.6	15.1	13.9
140	430877	556851	Urban Background	N/A	90.6	18.5	16.6	12.9	13.1	13.1
141	432542	549640	Roadside	N/A	100.0	20.4	18.6	14.3	13.8	13.6

Diffusion Tube ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) <sup>(1)</sup>	Valid Data Capture 2024 (%) <sup>(2)</sup>	2020	2021	2022	2023	2024
142	437224	556714	Roadside	N/A	83.0		24.7	21.8	22.1	20.6
143	439198	559258	Kerbside	91.0	84.9					17.7
144	437447	558873	Roadside	54.5	50.9					12.9
145	433387	552809	Urban Background	91.0	84.9					8.4
146	433589	552808	Kerbside	91.0	83.0					15.1
147	433345	552237	Urban Background	81.8	75.0					12.4
148	432746	549730	Roadside	91.0	84.9					17.5
149	436638	555625	Urban Centre	100.0	92.5					11.8
150	439650	552718	Suburban	91.0	83.0					6.0
151	440339	557317	Roadside	72.7	67.9					12.2
152	439910	559673	Urban Centre	100.0	34.0					14.3

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  $\mu\text{g}/\text{m}^3$ .

Exceedances of the  $\text{NO}_2$  annual mean objective of  $40\mu\text{g}/\text{m}^3$  are shown in **bold**.

$\text{NO}_2$  annual means exceeding  $60\mu\text{g}/\text{m}^3$ , indicating a potential exceedance of the  $\text{NO}_2$  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.

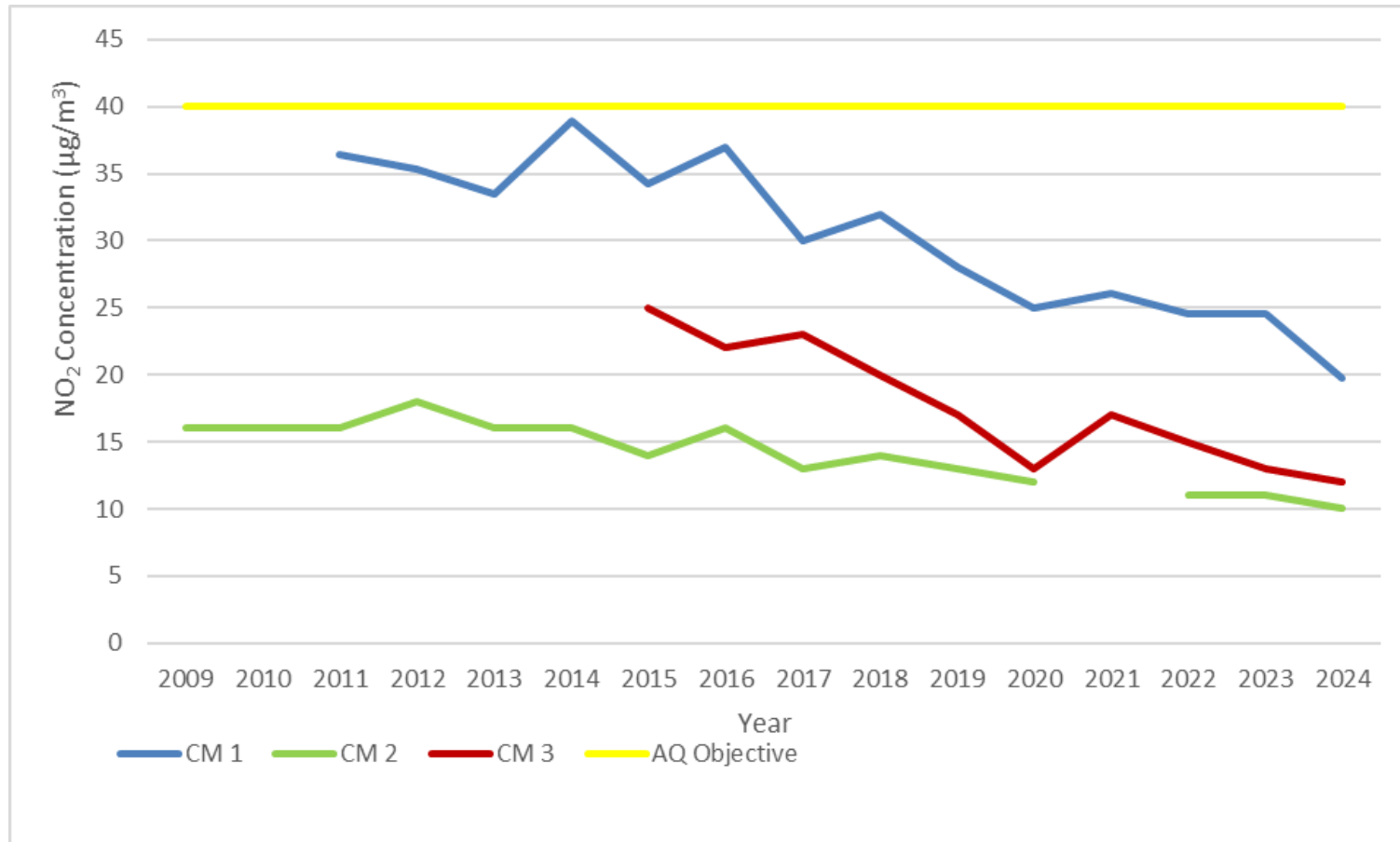
Concentrations are those at the location of monitoring and not those following any fall-off with distance adjustment.

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

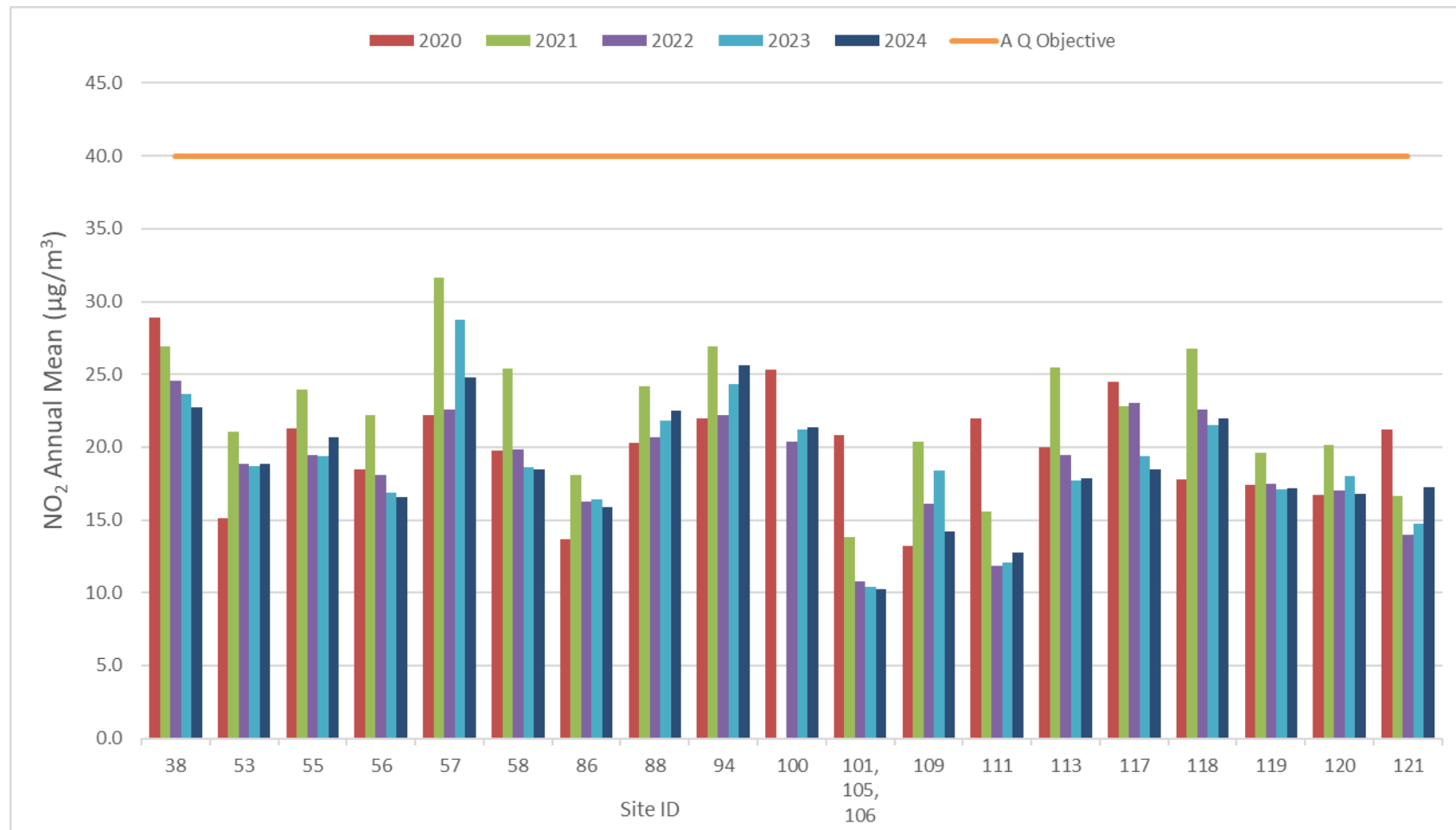
(2) Data capture for the full calendar year (e.g. if monitoring was carried out for 6 months, the maximum data capture for the full calendar year is 50%).

**Figure A.1 – Trends in Annual Mean NO<sub>2</sub> Concentrations**

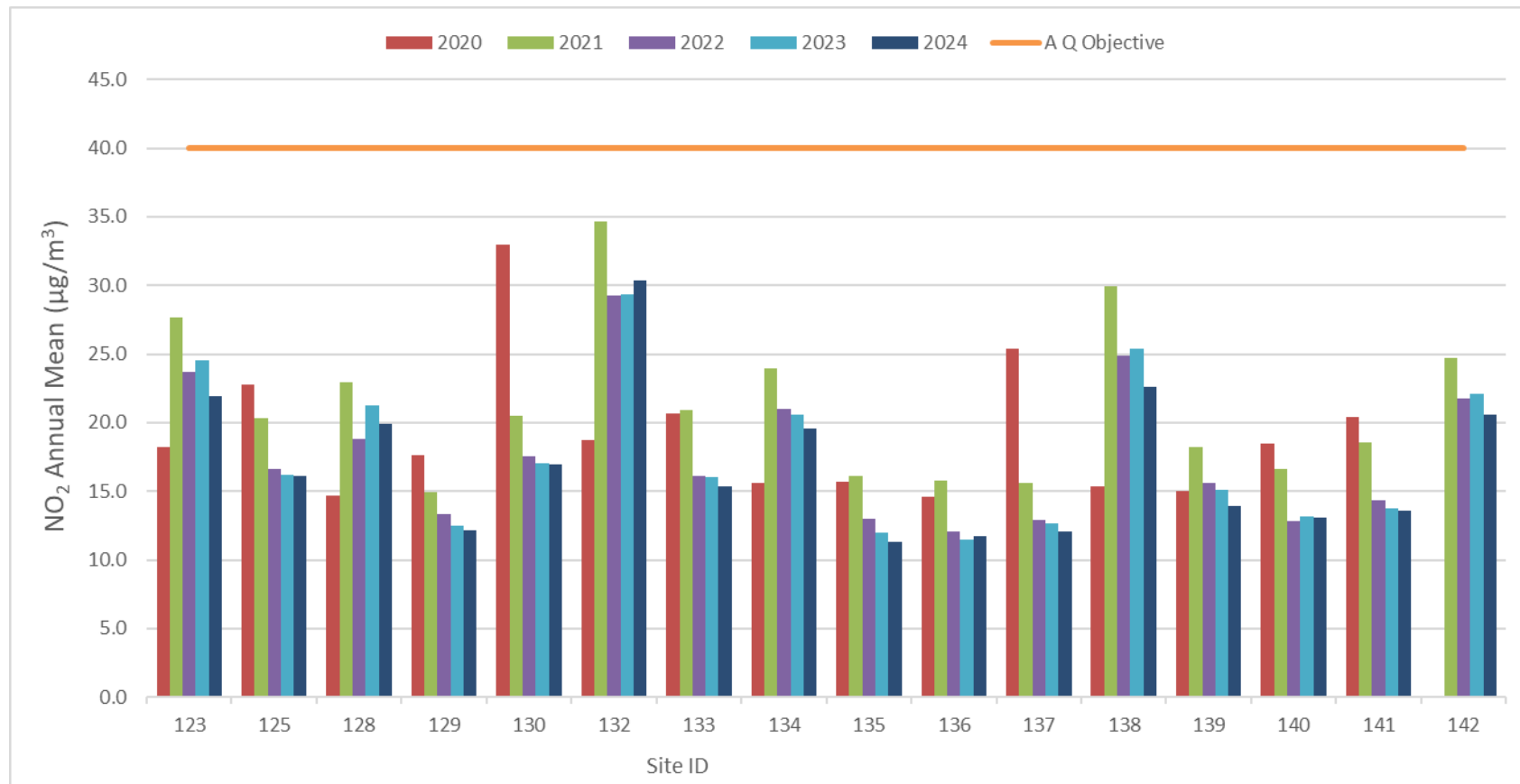
Automatic Sites



Diffusion Tube Sites (38 to 121)



Diffusion Tube Sites (123 to 142)



**Table A.5 – 1-Hour Mean NO<sub>2</sub> Monitoring Results, Number of 1-Hour Means > 200µg/m<sup>3</sup>**

Site ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) <sup>(1)</sup>	Valid Data Capture 2024 (%) <sup>(2)</sup>	2020	2021	2022	2023	2024
CM1	438928	557151	Kerbside	63.0	63.0	0	0	0	0	0(91)
CM2	438116	554462	Urban Background	n/a	99.0	0	0	0	0	0
CM3	438020	558348	Roadside	n/a	97.0	0	0	0	0	0

**Notes:**

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

Exceedances of the NO<sub>2</sub> 1-hour mean objective (200µg/m<sup>3</sup> not to be exceeded more than 18 times/year) are shown in **bold**.

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

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

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

**Table A.6 – Annual Mean PM<sub>10</sub> Monitoring Results (µg/m<sup>3</sup>)**

Site ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) <sup>(1)</sup>	Valid Data Capture 2024 (%) <sup>(2)</sup>	2020	2021	2022	2023	2024
CM1	438928	557151	Kerbside	61.4	61.4	18	20.1	21.5	14.7	13.8
CM2	438116	554462	Urban Background		100	11	11	13	10	11.0

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

**Notes:**

The annual mean concentrations are presented as µg/m<sup>3</sup>.

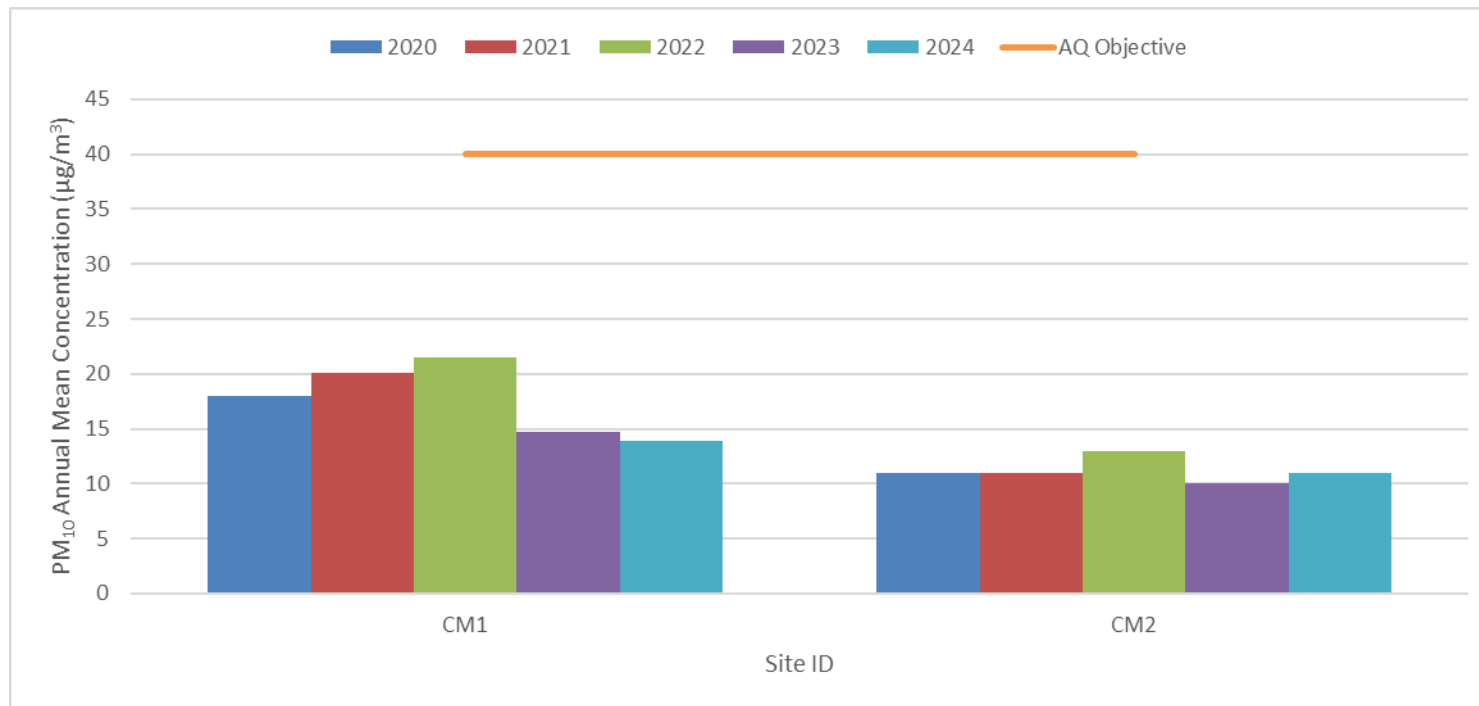
Exceedances of the PM<sub>10</sub> annual mean objective of 40µg/m<sup>3</sup> are shown in **bold**.

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

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

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

**Figure A.2 – Trends in Annual Mean PM<sub>10</sub> Concentrations**



**Table A.7 – 24-Hour Mean PM<sub>10</sub> Monitoring Results, Number of PM<sub>10</sub> 24-Hour Means > 50µg/m<sup>3</sup>**

Site ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) <sup>(1)</sup>	Valid Data Capture 2024 (%) <sup>(2)</sup>	2020	2021	2022	2023	2024
CM1	438928	557151	Kerbside	61.4	61.4	4	2	3	0	0 (25)
CM2	438116	554462	Urban Background	n/a	100	0	0	0	0	0

**Notes:**

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

Exceedances of the PM<sub>10</sub> 24-hour mean objective (50µg/m<sup>3</sup> not to be exceeded more than 35 times/year) are shown in **bold**.

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

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

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

**Table A.8 – Annual Mean PM<sub>2.5</sub> Monitoring Results (µg/m<sup>3</sup>)**

Site ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) <sup>(1)</sup>	Valid Data Capture 2024 (%) <sup>(2)</sup>	2020	2021	2022	2023	2024
CM2	438116	554462	Urban Background	n/a	100	6	6	8	6	7.0

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

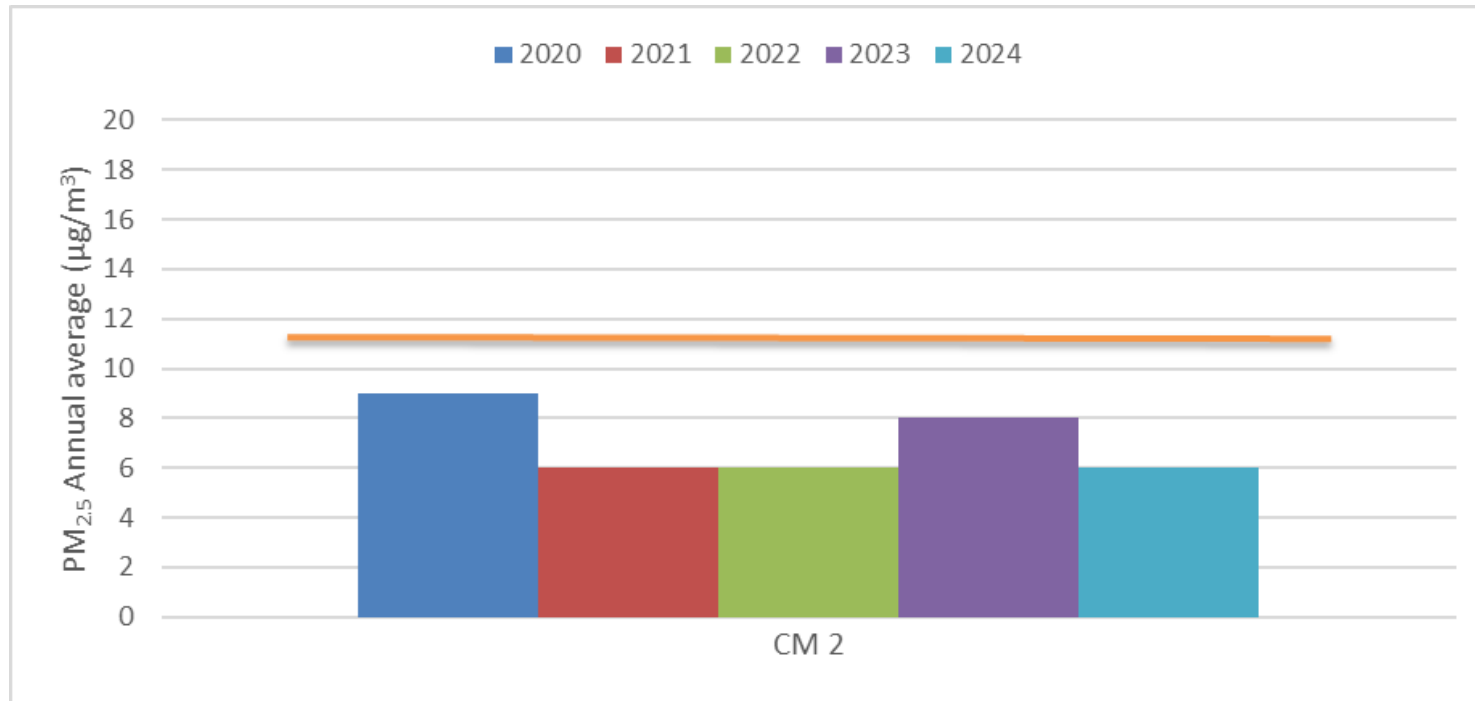
**Notes:**

The annual mean concentrations are presented as µg/m<sup>3</sup>.

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

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

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

**Figure A.3 – Trends in Annual Mean PM<sub>2.5</sub> Concentrations**

## Appendix B: Full Monthly Diffusion Tube Results for 2024

Table B.1 – NO<sub>2</sub> 2024 Diffusion Tube Results (µg/m<sup>3</sup>)

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 <0.75>	Annual Mean: Distance Corrected to Nearest Exposure	Comment
38	435714	552473	33.4	34.5	31.9	28.2	27.5	26.8		26.4	24.5	30.5	40.4	28.2	30.2	22.7		
53	438568	556566	29.1	26.2	25.9	25.0	25.4		19.9	17.3	29.3	18.2	31.1	28.6	25.1	18.9		
55	438690	556135	31.3	27.0	27.7	26.1	25.8	23.8	26.4	22.8	27.8	27.9	34.7	28.8	27.5	20.7		
56	439101	558292	23.6	25.0	23.9	16.8	20.7	18.8	21.0	18.8	16.6	29.2	28.3	21.6	22.0	16.6		
57	439664	557829	32.8	31.8	36.9	32.6	35.9	30.5	32.1	26.2	39.6	36.7	33.4	27.3	33.0	24.8		
58	432634	552616		29.5	24.8	20.3	22.0	24.0	22.0	18.3	20.2	29.1	35.0	25.0	24.6	18.5		
86	439466	556484	25.4	22.6	23.4	20.4	21.2	16.7	16.7	11.8	25.1	19.5	27.0	23.3	21.1	15.9		
88	439160	556995	29.1	41.7	32.4	27.7	33.7	26.9	27.0	20.7	32.2	34.8	27.5	25.5	29.9	22.5		
94	439374	556660	32.9	36.0	36.7	32.3	34.9	31.9	34.5	27.4	34.3	35.4	38.6		34.1	25.6		
100	438927	557151			29.3	23.5	25.3	28.3	24.1	25.7	25.4	36.7	33.4	32.2	28.4	21.3		
101	438116	554462	17.3	17.7	15.7	12.0	10.4		12.0	9.5	13.0	15.9	19.2	11.4	-	-		Triplicate Site with 101, 105 and 106 - Annual data provided for 106 only
105	438116	554462	17.0	16.4	15.2	10.6	13.2	9.1	12.3	9.8	12.8	17.0	20.9	14.0	-	-		Triplicate Site with 101, 105 and 106 - Annual data provided for 106 only
106	438116	554462	16.6	17.1	14.3	11.9	13.8		10.7	7.1	13.6	15.9	17.6	13.2	13.7	10.3		Triplicate Site with 101, 105 and 106 - Annual data provided for 106 only
109	439648	558120				20.5	21.2	16.7	17.8	15.4			13.1	15.2	17.1	14.2		
111	438453	555507	18.8	16.8	17.1	16.8	15.9	21.2	14.0	9.7	18.3	16.3	22.3	16.9	17.0	12.8		
113	437446	554989	27.5	25.2	22.6	21.9	22.6	12.4	21.5	17.5	25.1	24.6	36.5	27.7	23.8	17.9		
117	439495	556795	26.0	26.3	25.6	22.6	23.9	21.4	26.5	21.1	24.3	29.1		23.7	24.6	18.5		
118	439696	557205	30.5	31.9	27.4	26.7	28.1	30.3	29.5	missin g	23.8	35.6	28.4	28.8	29.2	21.9		
119	439792	556921	24.3	26.4	22.7	19.5	20.9	19.1	20.3	18.9	19.2	30.9	28.8		22.8	17.2		
120	439806	557063		25.5	13.9	22.8	21.5	19.4	21.6	18.0	18.8	29.3	31.0	23.6	22.3	16.8		
121	440702	554722		22.3	19.8	21.2	22.1	17.0	20.2	missin g	39.7		24.1	20.3	23.0	17.3		
123	437943	556341	28.8	30.2	32.6	27.8	29.8	27.5	29.2	missin g		32.1	28.4	25.7	29.2	22.0		
125	435417	547025	22.6	20.3	22.6	23.0	23.0	16.1	19.9	12.0	26.6	22.1	31.2	17.1	21.4	16.1		
128	439707	557312	40.4	31.4	22.7	22.3	19.4	22.0	18.5	23.5	16.9	30.7	36.3	34.2	26.5	19.9		

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 <(0.75)>	Annual Mean: Distance Corrected to Nearest Exposure	Comment
129	439938	557089	20.0	20.7	15.6	13.6	12.6	12.2	11.7	12.0	12.9	22.6	22.4	18.6	16.2	12.2		
130	439538	557292	24.3	26.4	26.8	missin g	20.0	17.8	17.1	16.5	19.6	29.8	27.0		22.5	16.9		
132	439661	557901	42.6	41.0	35.4	34.3	34.9	39.9	34.1	41.5	35.9	44.1	60.6		40.4	30.4		
133	438123	558344	21.8	22.5	22.8	18.7	21.2	15.1	19.0	13.5	19.8	24.5	26.5	19.7	20.4	15.3		
134	438563	558517	26.2	29.8	29.1	20.7	25.1	23.6	27.1	21.9	21.4	28.5	33.0	26.5	26.1	19.6		
135	437561	557538		18.4	16.6	12.2	13.4	11.2	13.2	10.1	12.2	20.0	21.7	16.8	15.1	11.3		
136	428269	553809	22.2	18.1	14.5	13.9	12.8	12.3	12.7	9.7	14.1	14.7	26.4	16.8	15.7	11.8		
137	429935	556631	17.3	21.7	19.7	13.1	13.1	11.1	13.5	12.6	11.0	22.0	23.5	13.5	16.0	12.0		
138	429984	556576	29.2	35.1	34.2	28.9	30.2	30.3	33.4	24.1	34.9	30.7	28.7	21.5	30.1	22.6		
139	430899	556961	20.7	23.1	20.8	14.1	13.8			13.1	13.5	20.8	27.2	18.0	18.5	13.9		
140	430877	556851	20.3	18.0	18.7	17.7		11.2	14.8	8.7	17.5	18.6	29.9	15.7	17.4	13.1		
141	432542	549640	21.3	18.7	18.4	15.7	16.2	14.4	17.0	12.5	16.9	20.8	27.7	16.9	18.0	13.6		
142	437224	556714	27.7	29.5	32.4	23.0	25.4	24.1	25.4	missin g		31.8	29.2	25.0	27.3	20.6		
143	439198	559258		24.3	23.7	22.4	20.7		15.2	18.6	26.0	26.3	41.8	17.2	23.6	17.7		
144	437447	558873			17.5	no grid	13.9	13.0		13.1	12.1			18.8	14.7	12.9		
145	433387	552809		14.3	12.4	missin g	8.9	7.3	8.9	7.3	7.8	17.1	16.9	11.2	11.2	8.4		
146	433589	552808		22.1	20.2	18.7	19.2	17.5	18.8	missin g	17.6	26.0	22.6	17.8	20.0	15.1		
147	433345	552237		16.4		missin g	19.7	15.6	15.1	7.5	17.7	18.1	22.6	15.8	16.5	12.4		
148	432746	549730		25.8	24.6	20.1	20.3	18.6	19.8	19.2		29.9	32.9	21.9	23.3	17.5		
149	436638	555625		18.4	16.4	14.1	15.0	12.1	12.7	9.5	15.4	16.5	24.7	17.3	15.6	11.8		
150	439650	552718		11.6	9.9	7.8	7.5	7.0	8.0	5.9	7.6		3.5	11.8	8.0	6.0		
151	440339	557317		18.0	15.8	missin g		12.2	10.6	11.9	15.8	18.3	miss	21.4	15.5	12.2		
152	439910	559673									14.4	24.9	25.2	22.4	21.7	14.3		

- All erroneous data has been removed from the NO<sub>2</sub> 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.
- Sunderland City Council confirm that all 2024 diffusion tube data has been uploaded to the Diffusion Tube Data Entry System.

**Notes:**

Exceedances of the NO<sub>2</sub> annual mean objective of 40µg/m<sup>3</sup> are shown in **bold**.

NO<sub>2</sub> annual means exceeding 60µg/m<sup>3</sup>, indicating a potential exceedance of the NO<sub>2</sub> 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 Sunderland During 2024.

Sunderland City Council continues to assess new sources of pollution and during 2024 there were several developments that were granted planning permission that had a potential to impact air quality and therefore have been subject to appropriate assessment.

In September 2024 AESC Plant 3 was granted planning permission.

The proposed development will provide manufacturing space and support accommodation for the production of automotive batteries to enable the drive towards the removal of fossil fuel in automotive vehicles. The proposal will include a gigafactory, together with an Assembly & Warehousing Building and an AESC Office HQ building (which will operate as shared facilities with AESC Plant 2), along with other ancillary buildings and structures including a security gatehouse, bulk store and waste canopies, a HV compound containing a sub-station, plant rooms, MEP plant compounds, sprinkler tank and pumphouse.



An appropriate AQ assessment was provided for the planning application, but further AQ Risk Assessments will be required as the site progresses with an application for an A2 Environmental Permit.

There have been three new Industrial processes that have been granted an Environmental Permit within Sunderland in 2024.

AESC Plant 2 is currently in the commissioning phase and aims to start production in October 2025. This site was granted an Environmental Permit in August 2024. As part of the application an Air Quality Risk Assessment was provided to predict the likely concentrations of any pollutants released at the nearest sensitive receptor. The assessment was based on emissions being released at 3m above the factory roof level (33m) and the compliance with emission limits for individual pollutants. Dispersion computer modelling was used to calculate any impact. The results indicate that there should be no adverse impact to the closest sensitive receptors.

A permit was also granted to a company that has 3 sites that produce kitchen units and have more than one biomass boilers to deal with waste wood offcuts. A biomass screening assessment was submitted during the application phase which identified that the stack height was sufficient to adequately disperse any pollutants. The site is also subject to the controls within the permit to prevent particulate matter from leaving the site.

A third business was also granted a permit to operate a metal decontamination process alongside an existing A2 permit. Conditions to limit emissions to air will be contained within the permit.

### **Additional Air Quality Works Undertaken by Sunderland City Council During 2024.**

Sunderland City Council has not completed any additional works within the reporting year of 2024.

## QA/QC of Diffusion Tube Monitoring

Sunderland City Council diffusion tubes are supplied and analysed by Gradko International Ltd, Winchester, Hampshire. The preparation method used is 20% TEA/ Water. Gradko are a UKAS accredited laboratory, and they also participate in several national quality schemes such as Air PT, LEAP and field intercomparison. Exposure of the diffusion tubes in line with the National Calendar was attempted wherever possible and for the vast majority of 2024 the National Calendar dates were followed.

## Diffusion Tube Annualisation

4 non-automatic sites required annualisation. Annualisation is required for any site with data capture less than 75% but greater than 25%. The Diffusion Tube Processing Tool was used to calculate the factor and the annualisation summary is provided as Table C.1

**Table C.1 – Annualisation Summary (concentrations presented in  $\mu\text{g}/\text{m}^3$ )**

Site ID	Annualisati on Factor Silksworth	Annualisati on Factor Wessington Way	Annualisati on Factor	Annualisati on Factor	Average Annualisati on Factor	Raw Data Annual Mean	Annualised Annual Mean
109	1.0816	1.1273			1.1044	17.1	18.9
144	1.1160	1.2048			1.1604	14.7	17.1
151	1.0443	1.0494			1.0469	15.5	16.2
152	0.9019	0.8461			0.8740	21.7	19.0

## Diffusion Tube Bias Adjustment Factors

The diffusion tube data presented within the 2025 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  $\text{NO}_x/\text{NO}_2$  continuous analysers. Alternatively, the national database of diffusion tube co-location surveys provides bias factors for the relevant laboratory and preparation method.

Sunderland City Council have applied a local bias adjustment factor of 0.75 to the 2024 monitoring data. A summary of bias adjustment factors used by Sunderland over the past

five years is presented in Table C.2. Sunderland also considered using the National Diffusion Tube Bias Adjustment Factor. A bias adjustment factor of 0.85 was obtained from the National Diffusion Tube Bias Adjustment Factor Spread sheet version v 04/25. Sunderland City Council have co located tubes in triplicate at CM2 which is an Urban Background site, and it was considered that using a locally derived bias factor is more appropriate. The results from the Diffusion Tube survey once annualised and Bias adjusted did not exceed the objective when using either the local factor or the National factor.

**Table C.2 – Bias Adjustment Factor**

Monitoring Year	Local or National	If National, Version of National Spreadsheet	Adjustment Factor
2024	Local	-	0.75
2023	Local	-	0.73
2022	National	03/21	0.84
2021	National	03/20	0.81
2020	National	03/19	0.93

**Table C.3 – Local Bias Adjustment Calculation**

	Local Bias Adjustment Input 1	Local Bias Adjustment Input 2	Local Bias Adjustment Input 3	Local Bias Adjustment Input 4	Local Bias Adjustment Input 5
Periods used to calculate bias	11				
Bias Factor A	0.75 (0.72 - 0.79)				
Bias Factor B	33% (27% - 40%)				
Diffusion Tube Mean ( $\mu\text{g}/\text{m}^3$ )	14.1				
Mean CV (Precision)	7.4%				
Automatic Mean ( $\mu\text{g}/\text{m}^3$ )	10.6				
Data Capture	98%				
Adjusted Tube Mean ( $\mu\text{g}/\text{m}^3$ )	11 (10 -11)				

**Notes:**

A single local bias adjustment factor has been used to bias adjust the 2024 diffusion tube results.

**NO<sub>2</sub> Fall-off with Distance from the Road**

Wherever possible, monitoring locations are representative of exposure. However, where this is not possible, the NO<sub>2</sub> concentration at the nearest location relevant for exposure has been estimated using the Diffusion Tube Data Processing Tool/NO<sub>2</sub> fall-off with distance calculator available on the LAQM Support website. Where appropriate, non-automatic annual mean NO<sub>2</sub> concentrations corrected for distance are presented in Table B.1.

**Table C.4 – Non-Automatic NO<sub>2</sub> Fall off With Distance Calculations (concentrations presented in µg/m<sup>3</sup>)**

No diffusion tube NO<sub>2</sub> monitoring locations within Sunderland City Council required distance correction during 2024.

**QA/QC of Automatic Monitoring**

The QA/QC procedures of Sunderland are based on the AURN Site Operator's manual along with training received from our original equipment suppliers, Casella Measurement. Refresher training is provided by the AURN when required for the sites that Sunderland act as LSO or at our affiliate site.

The fundamental aims of a quality assurance/ control programme are:

- The data obtained from measurement systems should be representative of ambient concentrations existing in each area.
- Measurements must be accurate, precise and traceable.
- Data must be comparable and reproducible.
- Results must be consistent over time.

An appropriate level of data capture is required throughout the year.

**Equipment Maintenance**

- Automatic analysers are serviced every 6 months by a qualified engineer under a contract with We Care 4 Air.
- Local Authority staff visits the air quality sites at least once every 2 or 4 weeks during which a check of the equipment is made to ensure it is all working within normal parameters. Filters are also changed during this visit.
- If a problem occurs, then a call-out is instigated to the service centre and an engineer will normally visit site within 48-hours to correct the fault.

### **Calibration**

- At each site visit staff will perform a calibration response check using a certified gas cylinder. Results are passed to our data management partner to adjust data if necessary.
- At the 6-month service the instruments are re-calibrated to the site cylinder certificated value.
- Gas cylinder pressures are regularly checked at routine visits to ensure they are replaced before they run out completely.
- When a cylinder is replaced, the new certified values are recorded and forwarded to the data management team.

### **Data Validation**

During 2024 the contract for data capture has been performed by WeCare4Air, who now host Sunderland's data at Air Quality Service and Data throughout the UK - We Care 4 Air. We Care 4 Air have continued the excellent work of AQDM and follow the same methods as outlined below.

Review data daily to ensure that

- Telecommunications to the station are operational
- The air quality station is operational
- Individual analysers are operational
- Air quality exceedances are identified

- Operational information such as when SWAM filter needs replacing.
- Obvious data errors are identified

### **Data Ratification**

In addition to the initial data screening process (validation), data are further scrutinised in monthly blocks in order to provide a final ratified data set.

The software that collects the data is used to rescale the data using the factor calculated from the monthly/ fortnightly calibration check. Data is then reviewed for erroneous data such as:

- Daily calibration spikes
- Routine or service visit errors
- Analyser faults
- Site faults, such as power outages

When data is satisfactory, it is compared to other local sites. This provides a check to ensure data is realistic.

### **PM<sub>10</sub> and PM<sub>2.5</sub> Monitoring Adjustment**

The data from CM1 (Trimdon Street) was collected using a TEOM and PM<sub>10</sub> monitoring data collected was previously corrected using the Volatile Correction Model (VCM). This calculation is carried out by the data management company prior to it being completed into the final ratified data set. The removal of a nearby FDMS analyser has meant that there is no longer an analyser in range and the correction model cannot be used. After seeking advice from the LAQM helpdesk, the data was corrected using a factor of 1.3 but it cannot be relied heavily upon to make conclusions. To rectify this situation, Trimdon Street has now had a new Particulate monitor installed which can measure both PM<sub>10</sub> and PM<sub>2.5</sub>. Data from this should be reported within next year's ASR.

## Automatic Monitoring Annualisation

**Table C.5 – Automatic NO<sub>2</sub> Annualisation Summary (concentrations presented in µg/m<sup>3</sup>)**

Background Site	Annual Data Capture (%)	Annual Mean (A <sub>m</sub> )	CM1		<Site ID>		<Site ID>		<Site ID>	
			Period Mean (P <sub>m</sub> )	Ratio (A <sub>m</sub> / P <sub>m</sub> )	Period Mean (P <sub>m</sub> )	Ratio (A <sub>m</sub> / P <sub>m</sub> )	Period Mean (P <sub>m</sub> )	Ratio (A <sub>m</sub> / P <sub>m</sub> )	Period Mean (P <sub>m</sub> )	Ratio (A <sub>m</sub> / P <sub>m</sub> )
Sunderland Silksworth	100.0	10.5	10.6	0.986						
Wessington Way	100.0	12.3	12.6	0.975						
Average (R <sub>a</sub> )			0.980							
Raw Data Annual Mean (M)			20.2							
Annualised Annual Mean (M x R <sub>a</sub> )			19.8							

**Table C.6 – Automatic PM<sub>10</sub> Annualisation Summary (concentrations presented in µg/m<sup>3</sup>)**

Background Site	Annual Data Capture (%)	Annual Mean (A <sub>m</sub> )	CM1		<Site ID>		<Site ID>		<Site ID>	
			Period Mean (P <sub>m</sub> )	Ratio (A <sub>m</sub> / P <sub>m</sub> )	Period Mean (P <sub>m</sub> )	Ratio (A <sub>m</sub> / P <sub>m</sub> )	Period Mean (P <sub>m</sub> )	Ratio (A <sub>m</sub> / P <sub>m</sub> )	Period Mean (P <sub>m</sub> )	Ratio (A <sub>m</sub> / P <sub>m</sub> )
Silksworth	100.0	11.0	10.8	1.014						
Newcastle Centre	100.0	11.6	11.4	1.014						
Average (R <sub>a</sub> )			1.014							
Raw Data Annual Mean (M)			13.6							
Annualised Annual Mean (M x R <sub>a</sub> )			13.8							

## NO<sub>2</sub> Fall-off with Distance from the Road

Wherever possible, monitoring locations are representative of exposure. However, where this is not possible, the NO<sub>2</sub> concentration at the nearest location relevant for exposure has been estimated using the NO<sub>2</sub> fall-off with distance calculator available on the LAQM

Support website. Where appropriate, automatic annual mean NO<sub>2</sub> concentrations corrected for distance are presented in Table A.3.

No automatic NO<sub>2</sub> monitoring locations within Sunderland required distance correction during 2024.

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

Figure D.1 – Map of CM 1 and DT Site 88

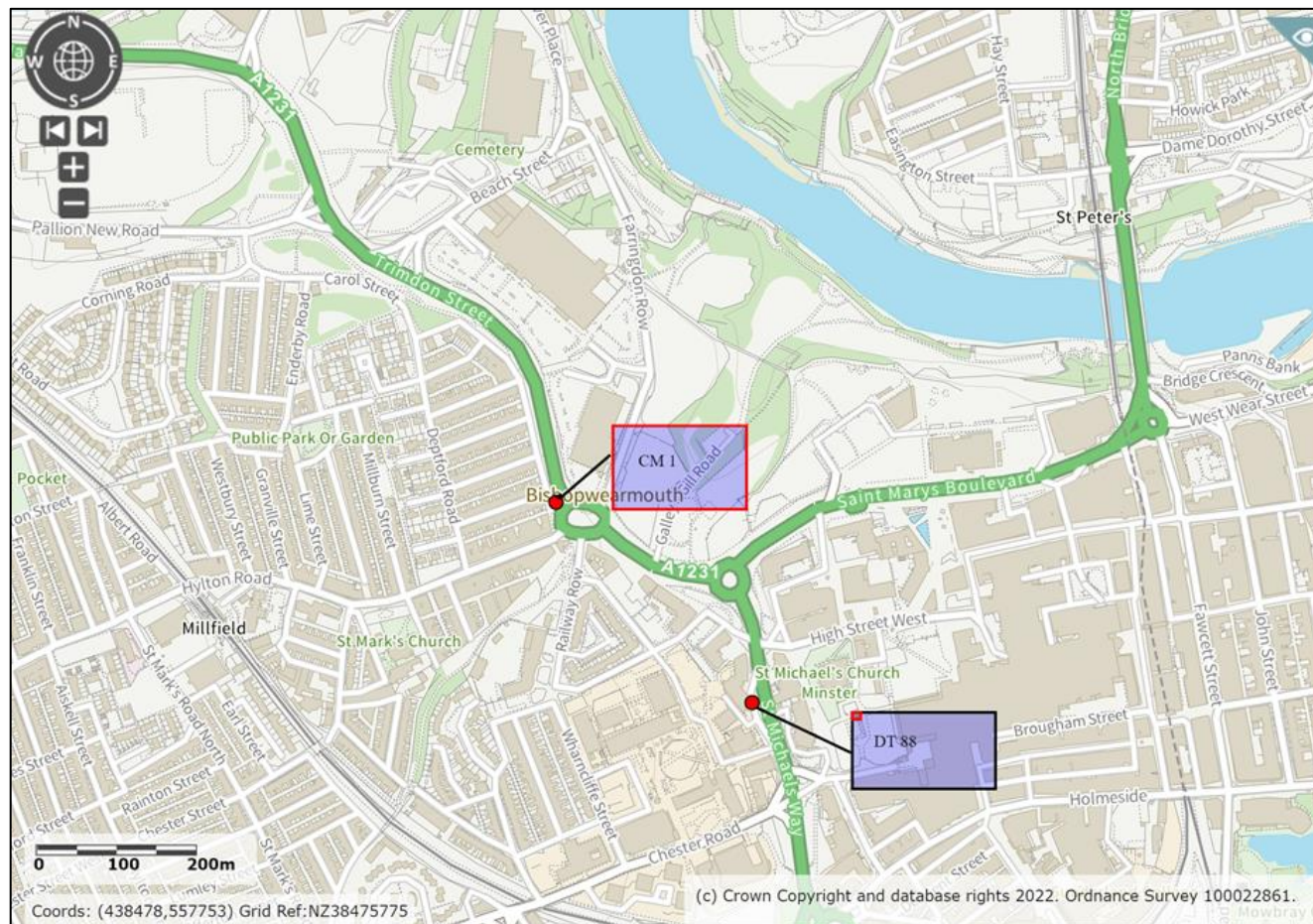
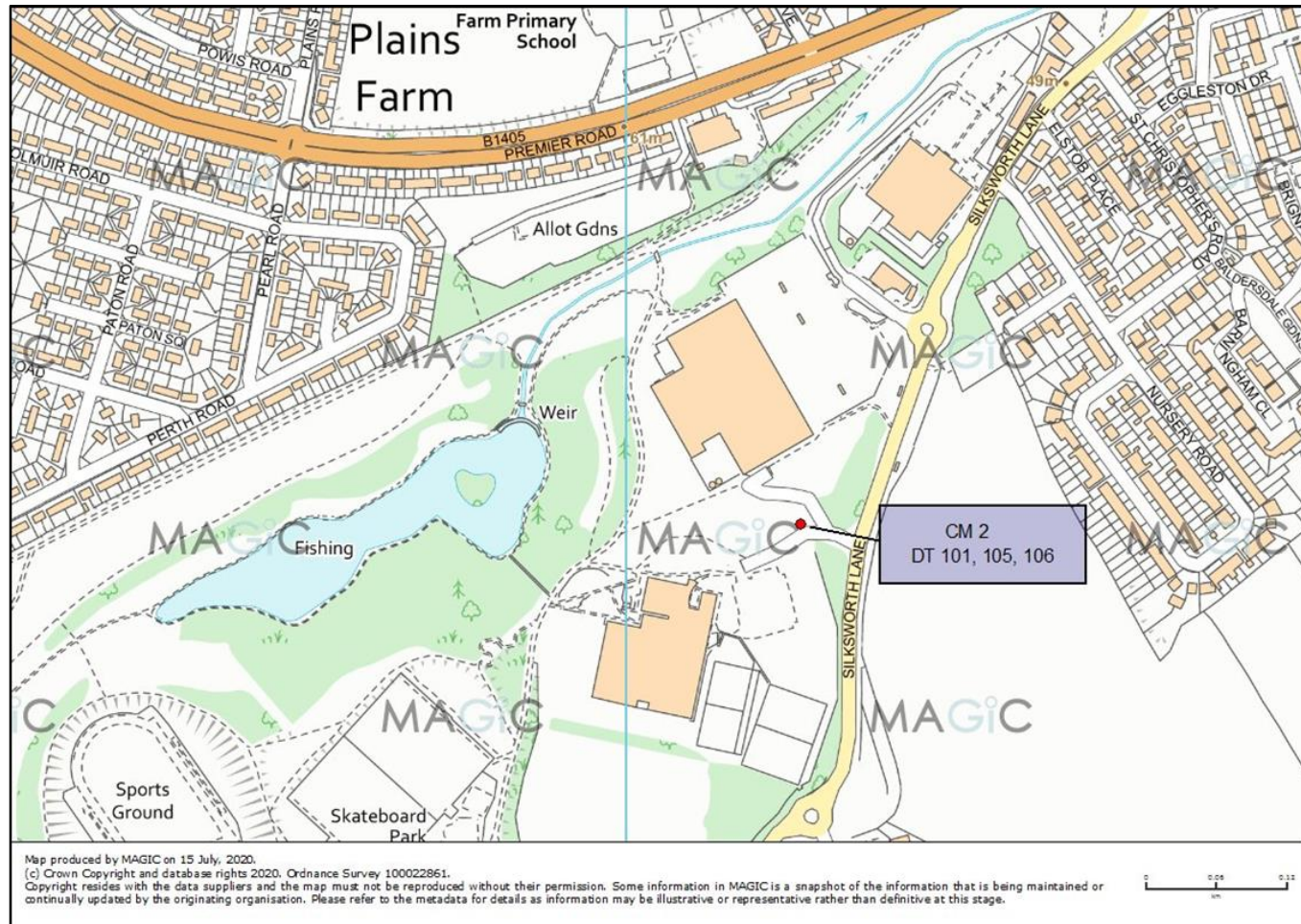


Figure D.2 – Map of CM 2 and Diffusion Tubes 101, 105 & 106



**Figure D.3 – Map of CM 3 and Diffusion Tubes 133 & 134**

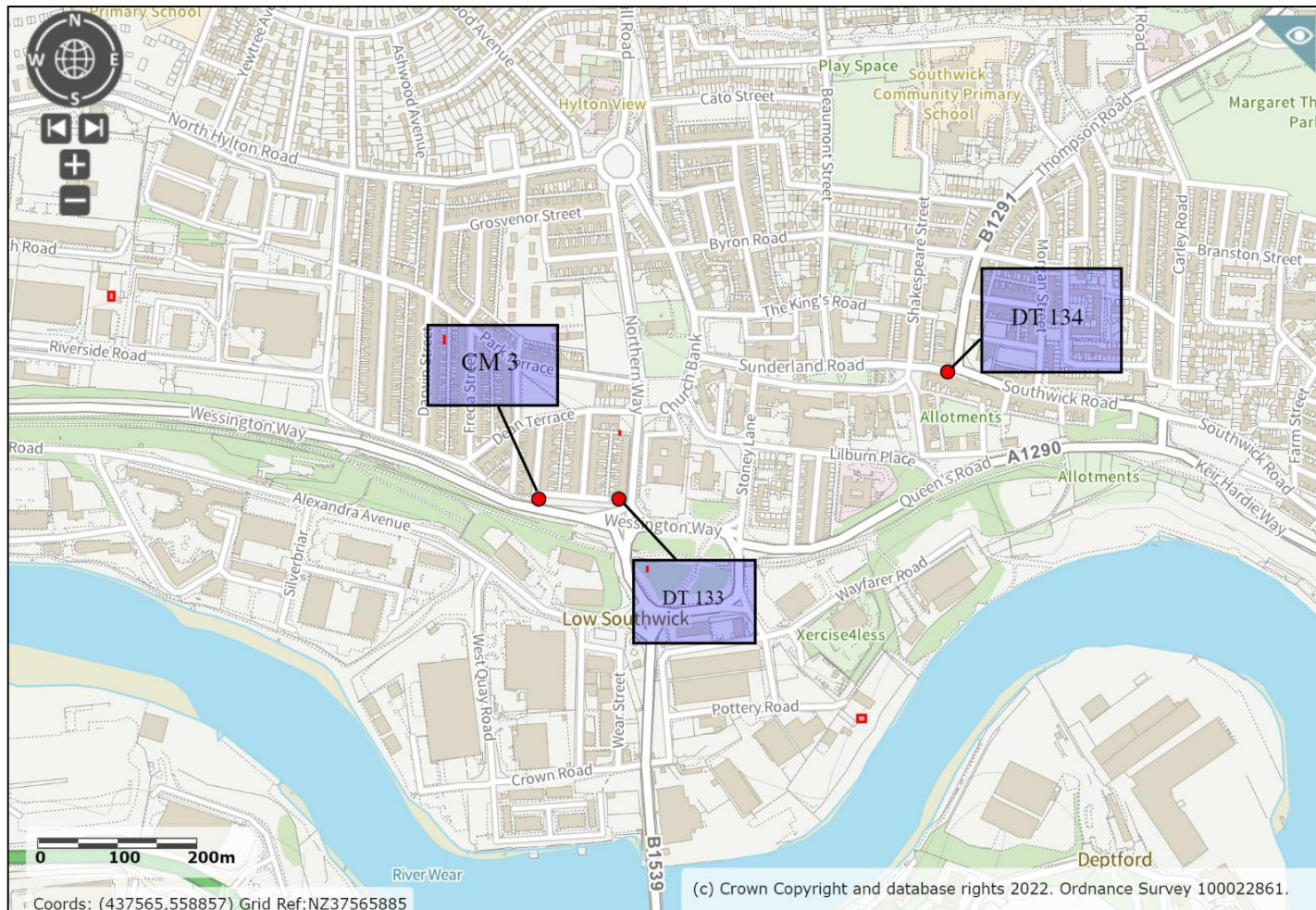


Figure D.4 – Map Diffusion Tube 135

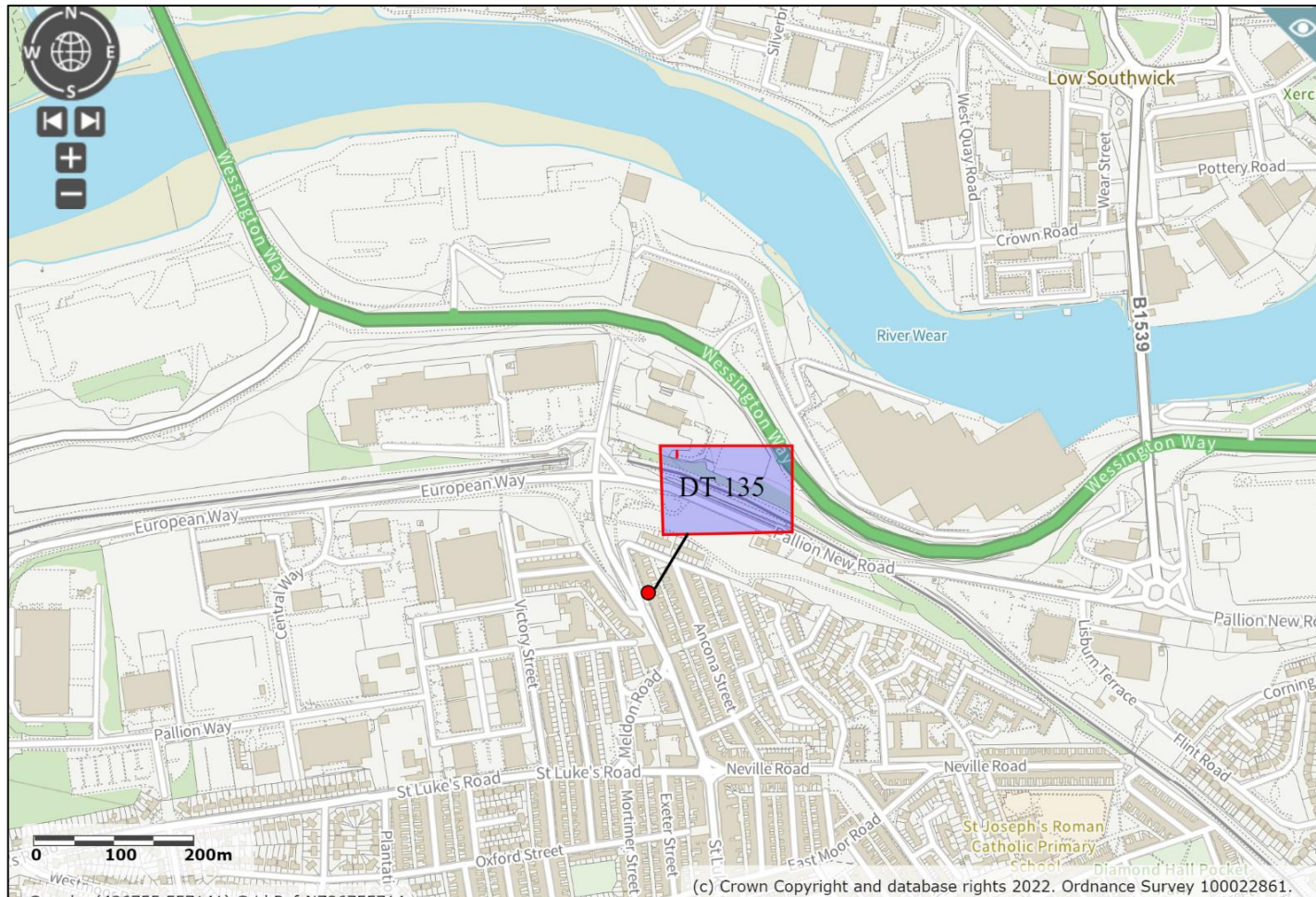
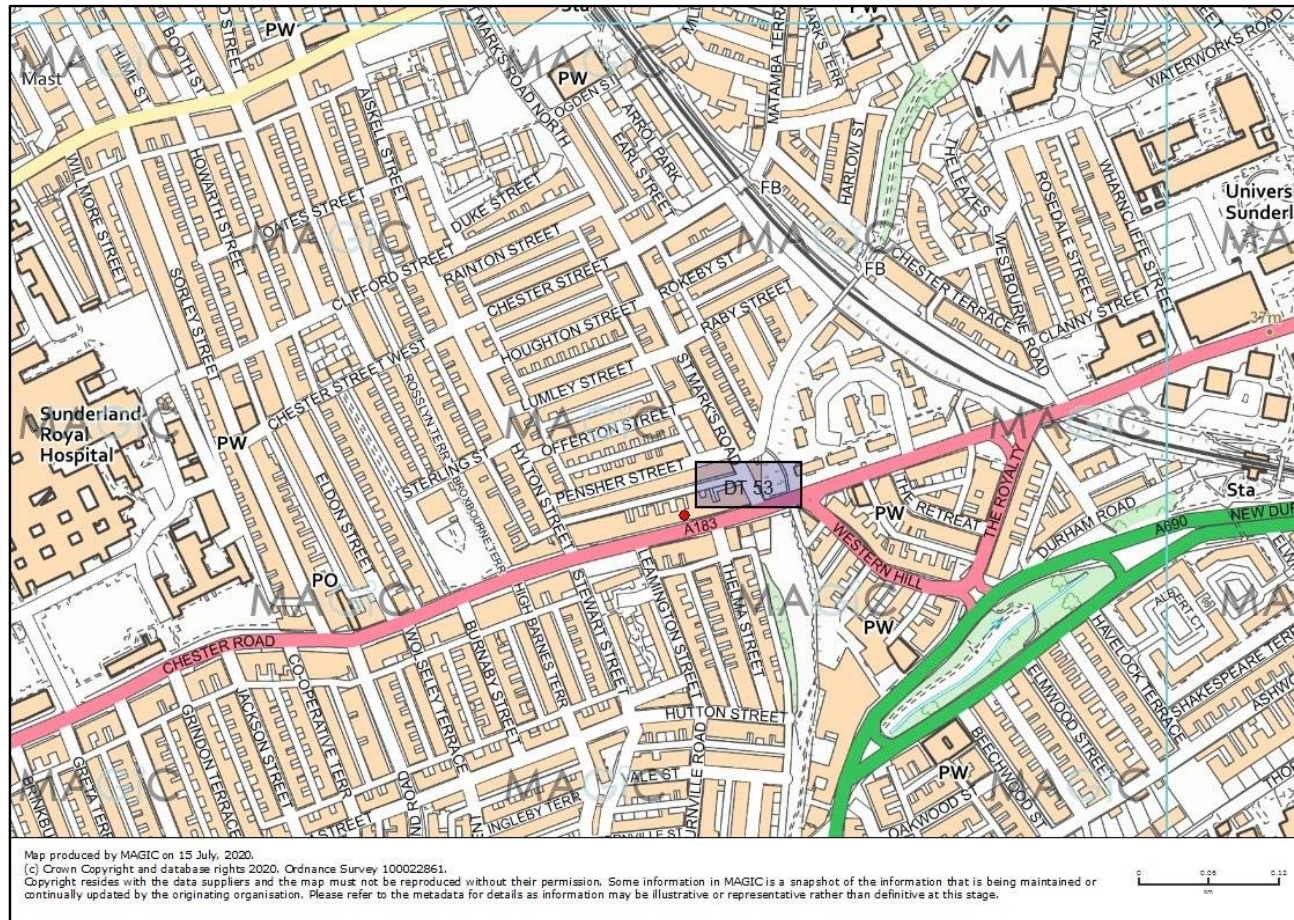


Figure D.5 – Map of Diffusion Tubes 53



**Figure D.6 – Map of Diffusion Tube 55**

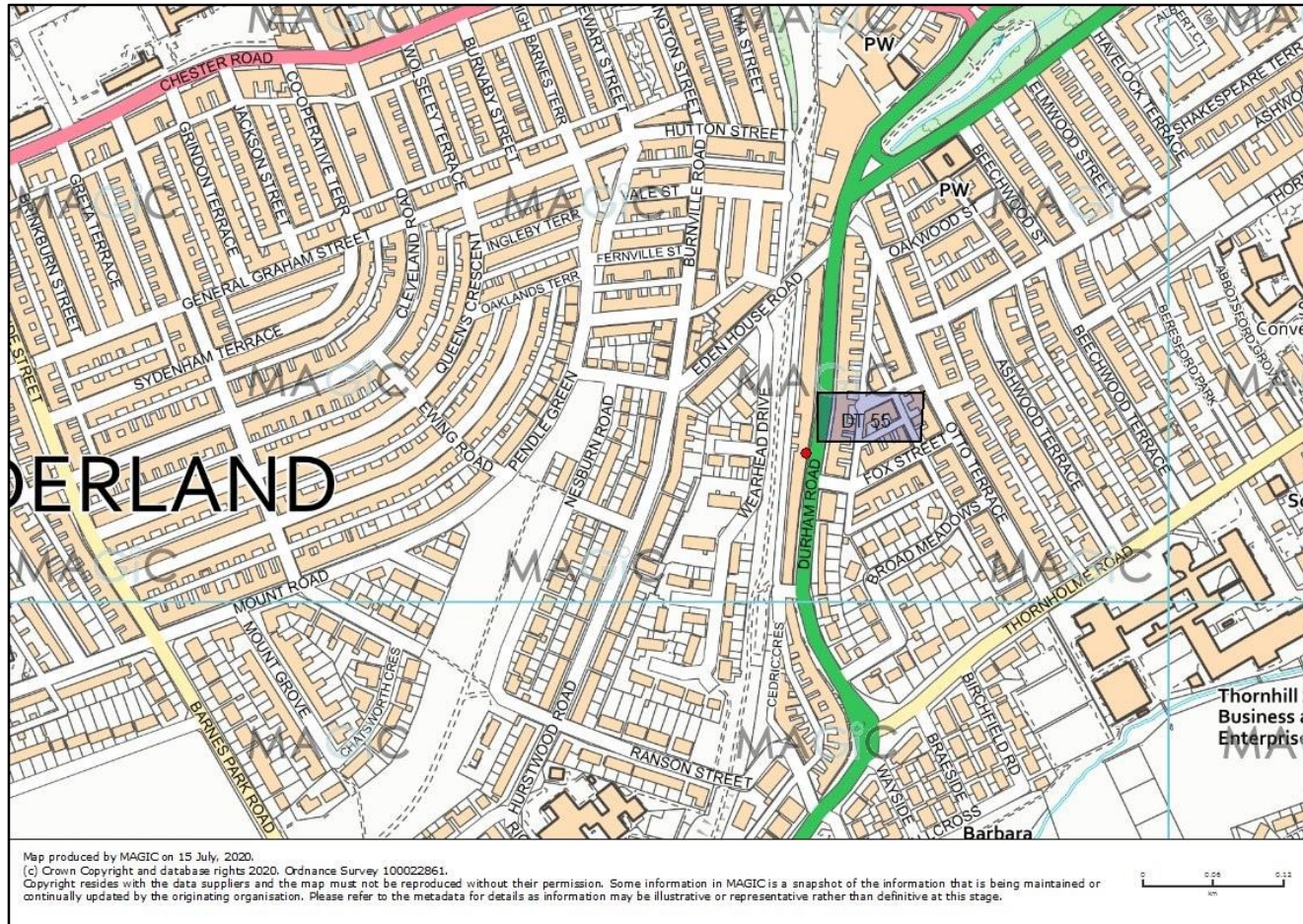


Figure D.7 – Map of Diffusion Tubes, 56, 57, 109 & 132.

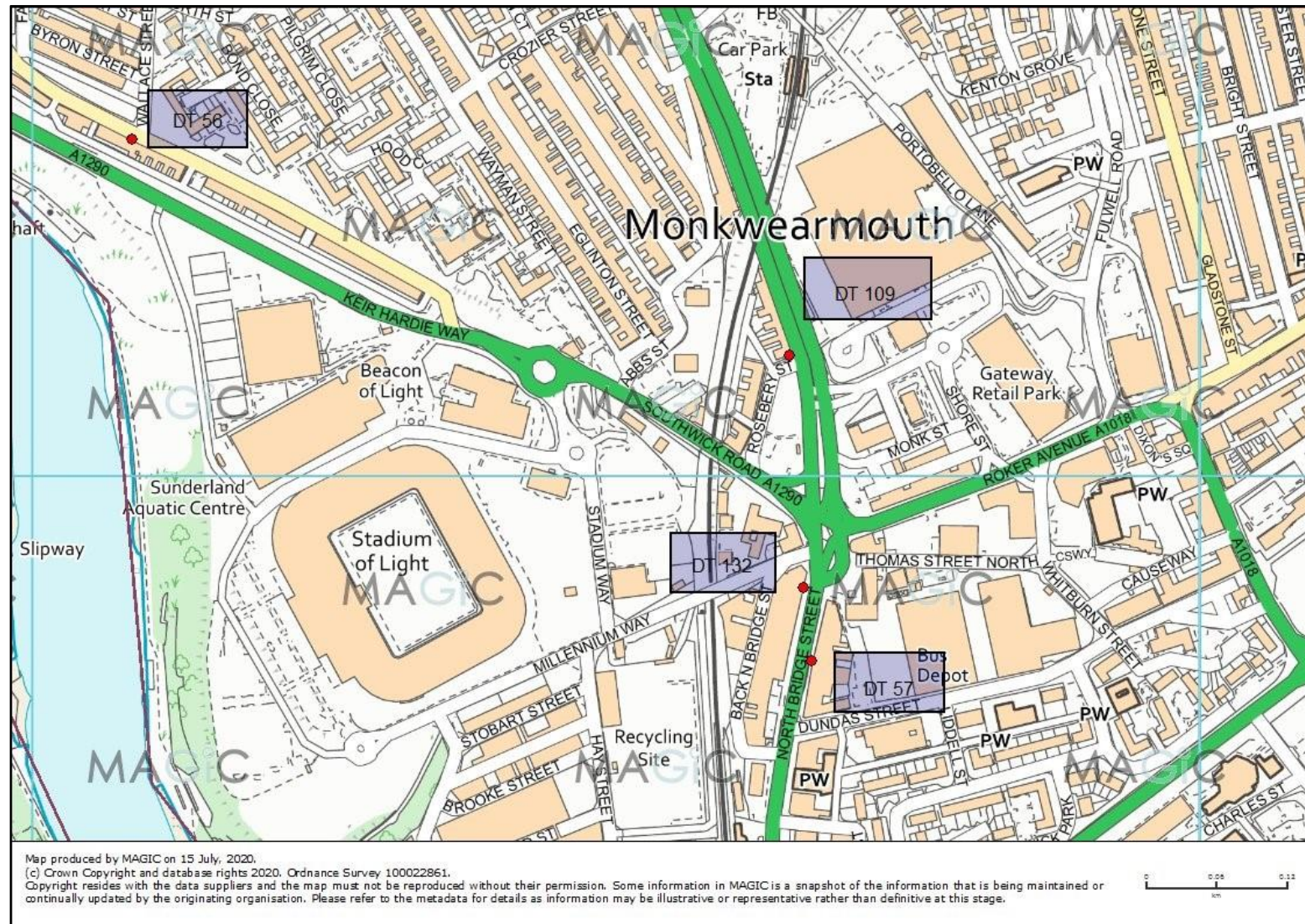


Figure D.8 – Map of Diffusion Tube 58

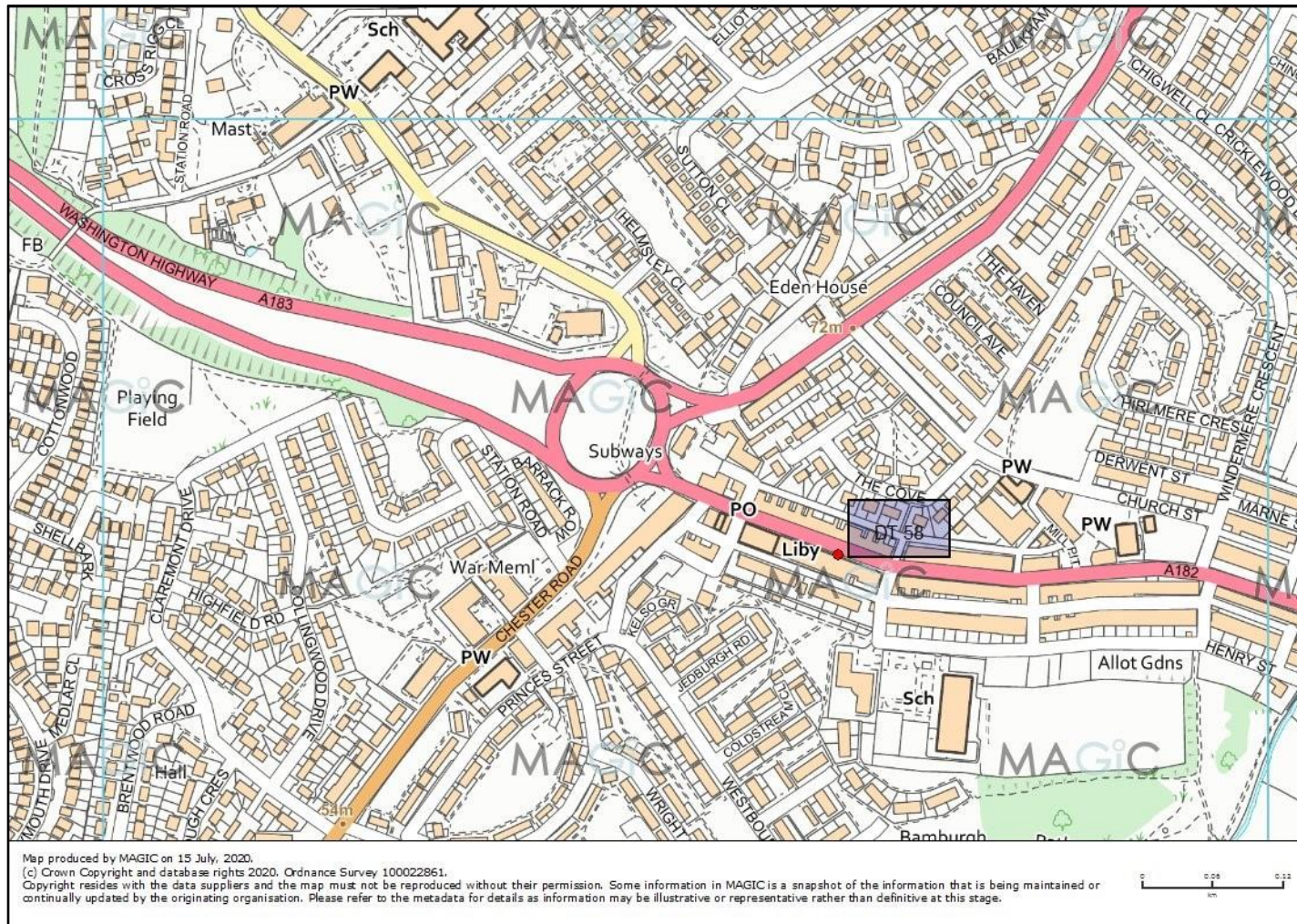


Figure D.9 – Map of Diffusion Tubes 86, 88, 94 & 117

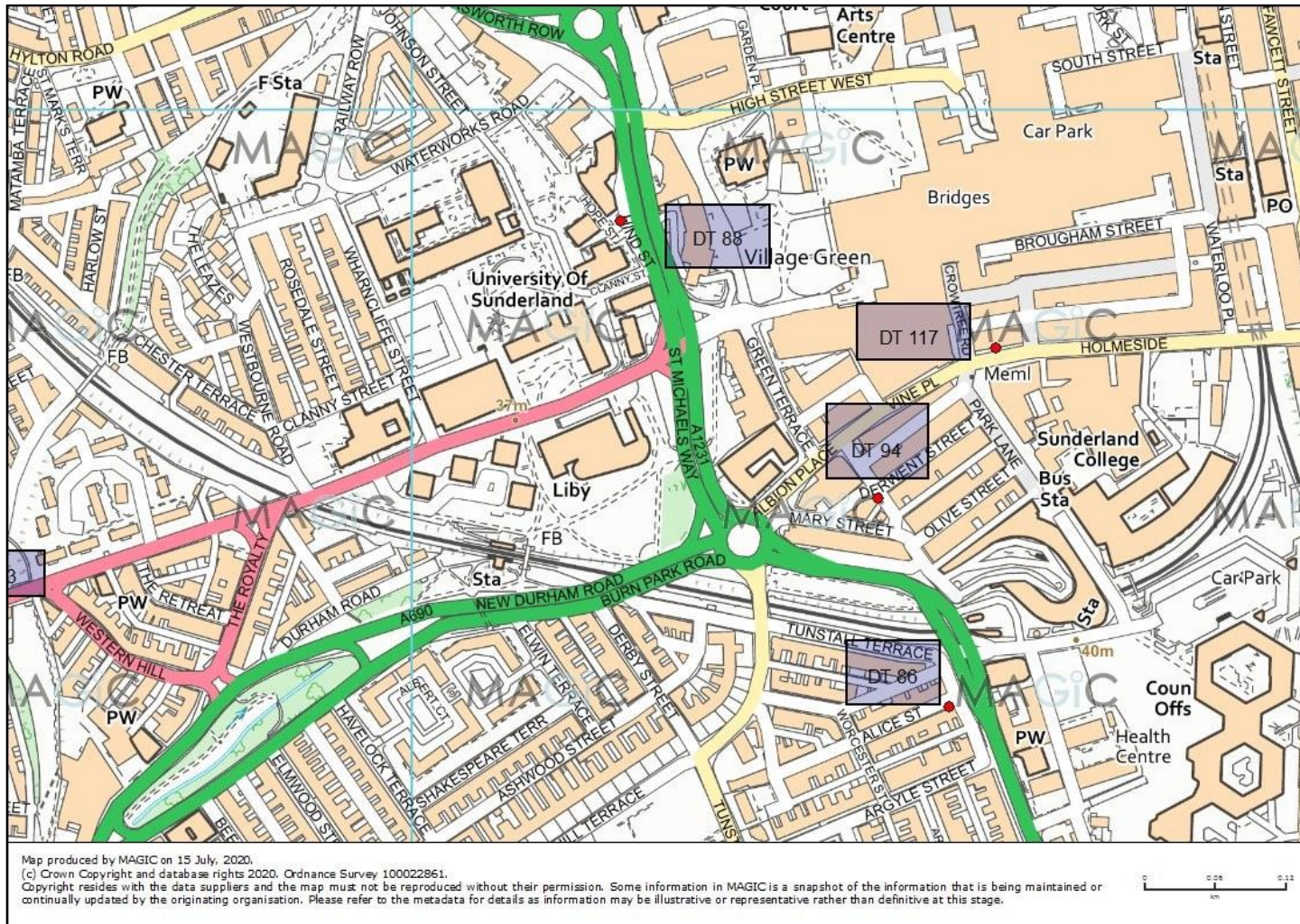


Figure D.10 – Map of Diffusion Tube 111

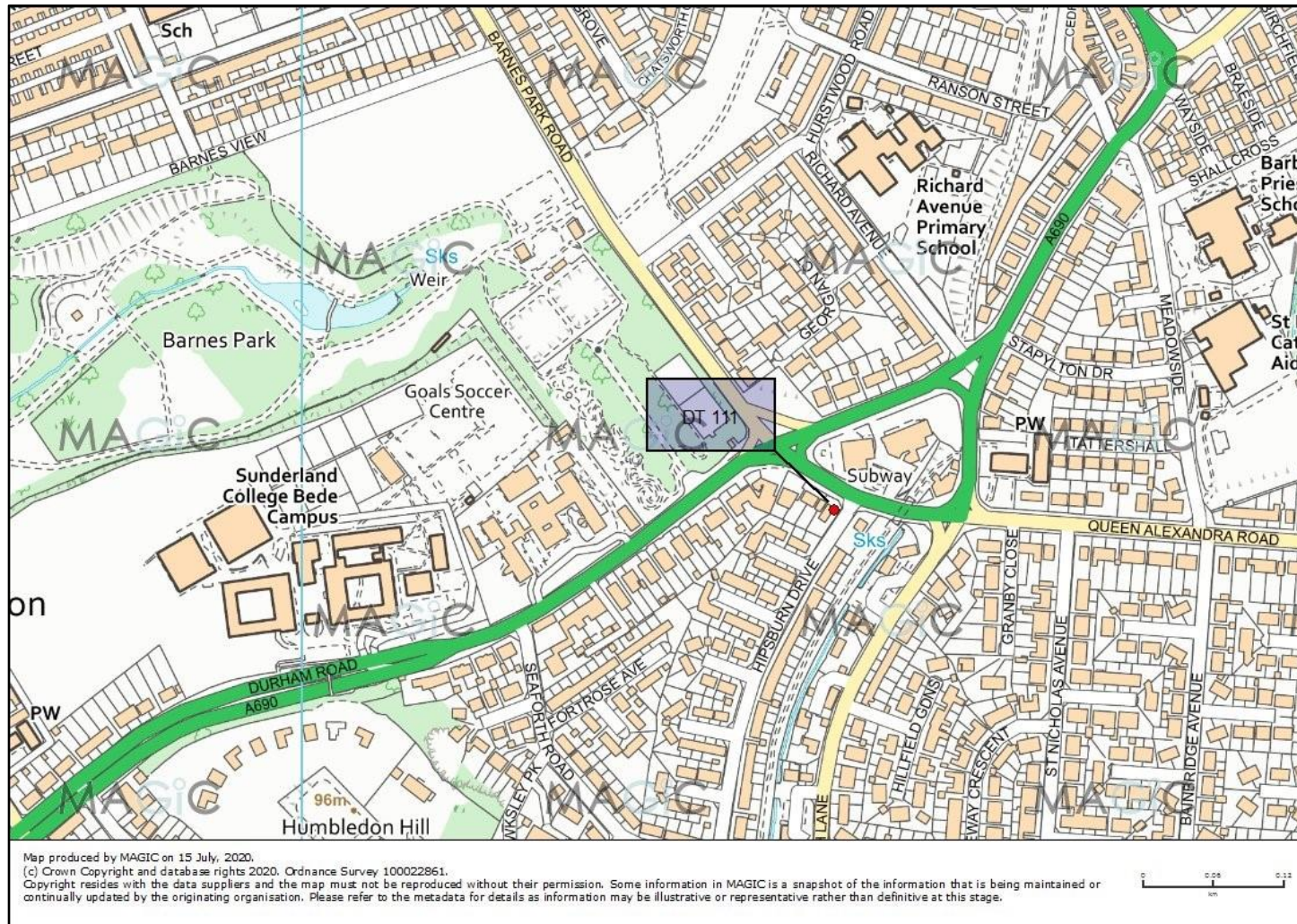


Figure D.11 – Map of Diffusion Tube 113.

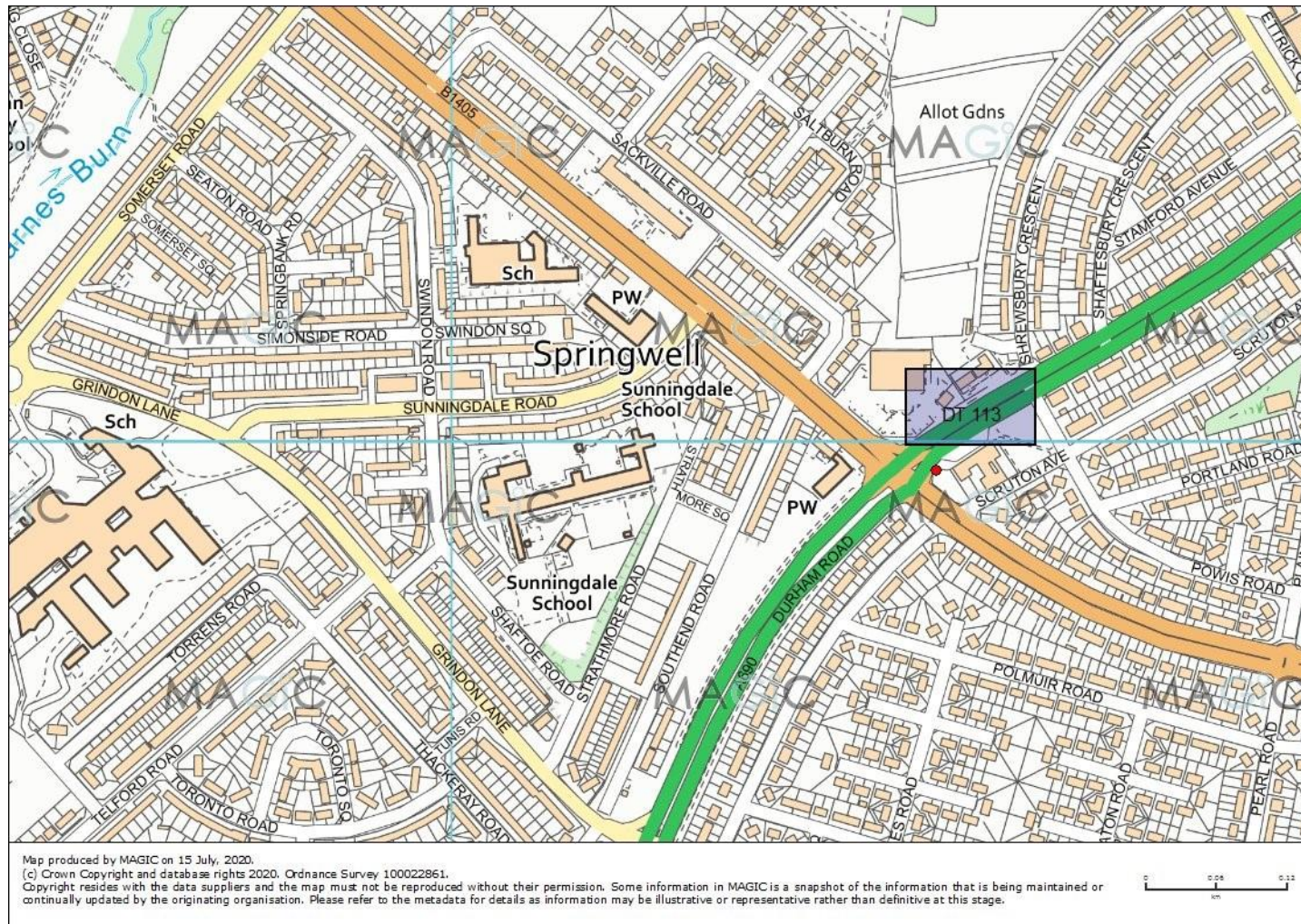


Figure D.12 – Map of Diffusion Tubes 118, 128 & 130

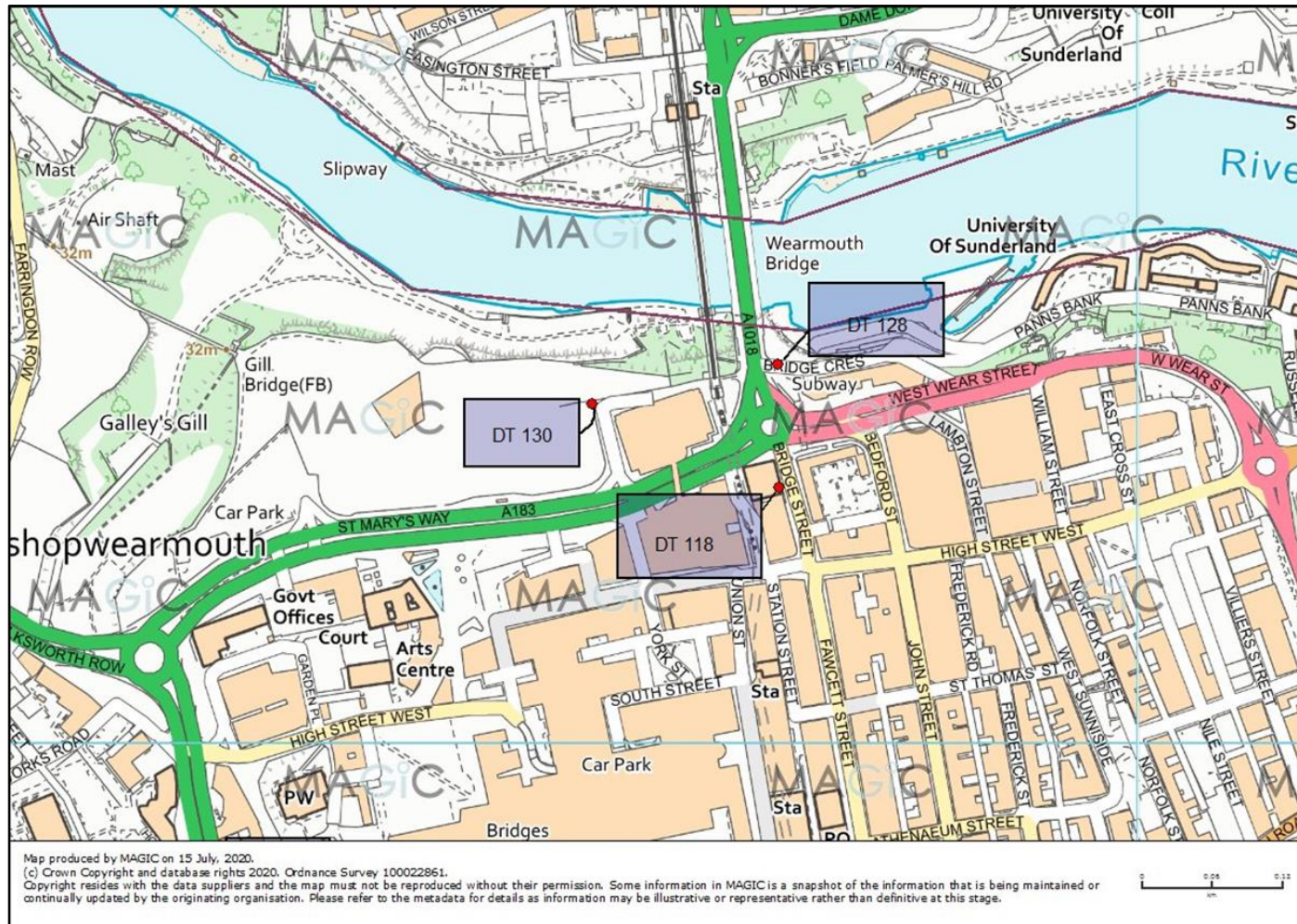


Figure D.13 – Map of Diffusion Tube 121

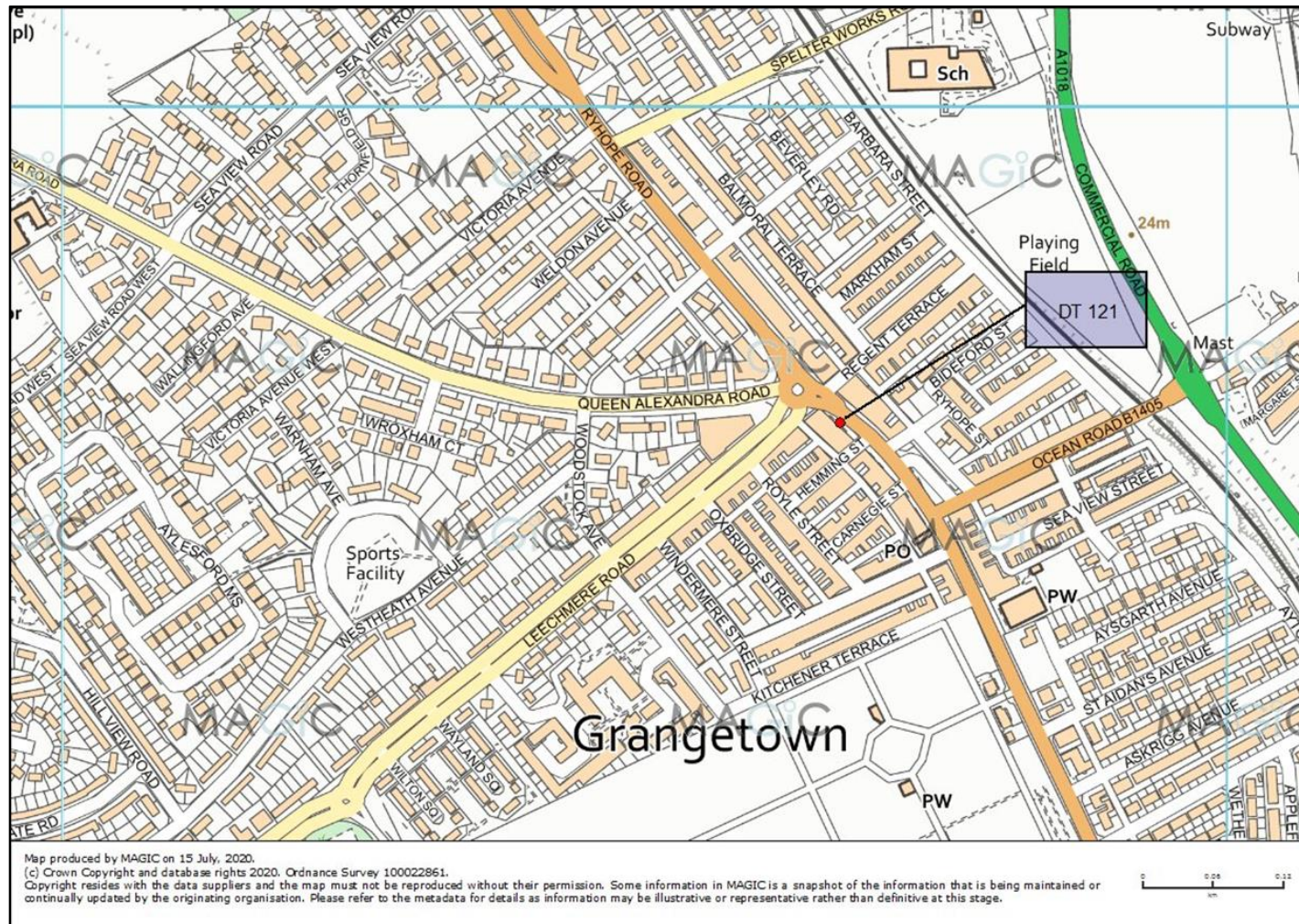


Figure D.14 – Map of Diffusion Tube 123 and 142.

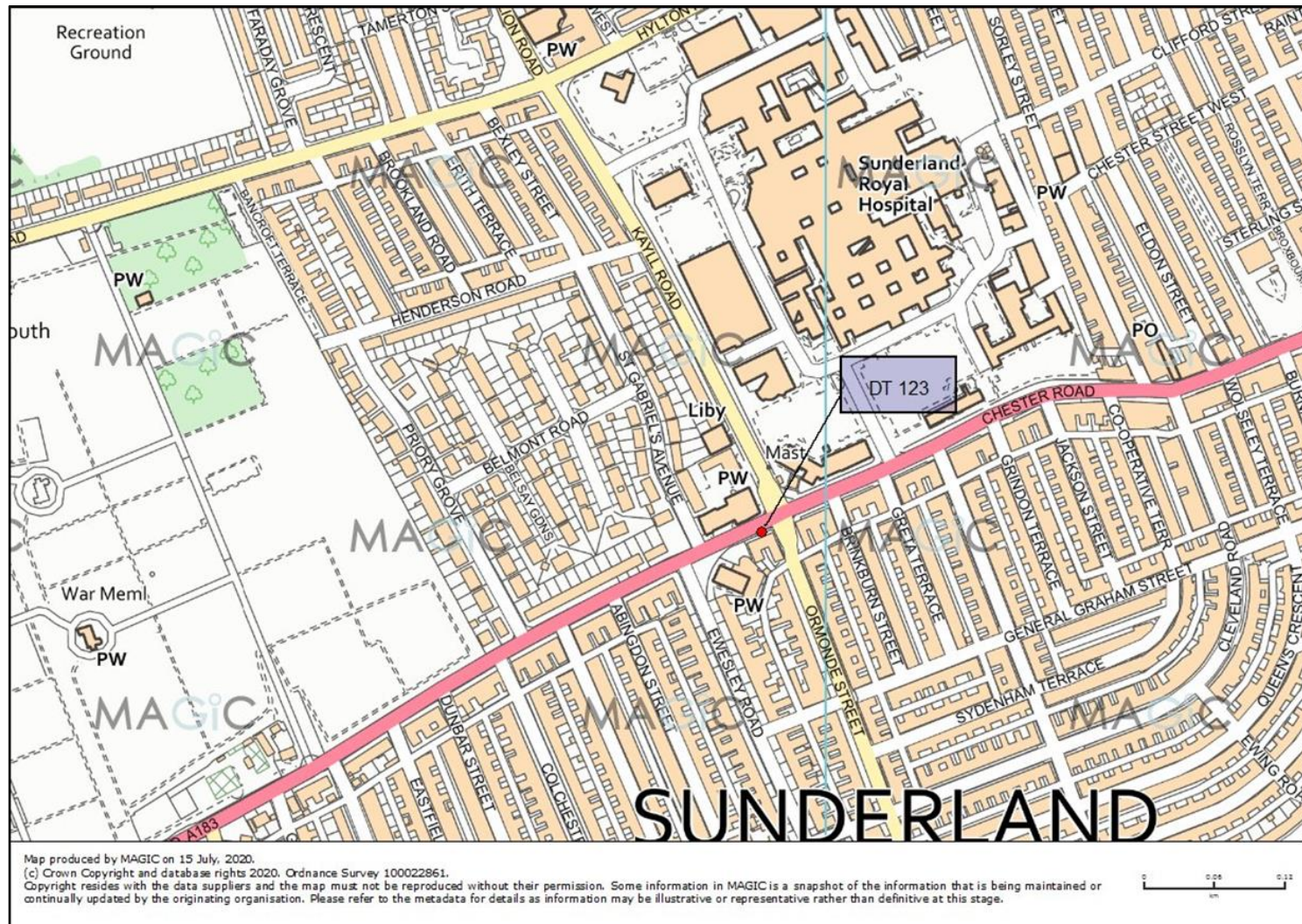


Figure D.15 – Map of Diffusion Tube 125

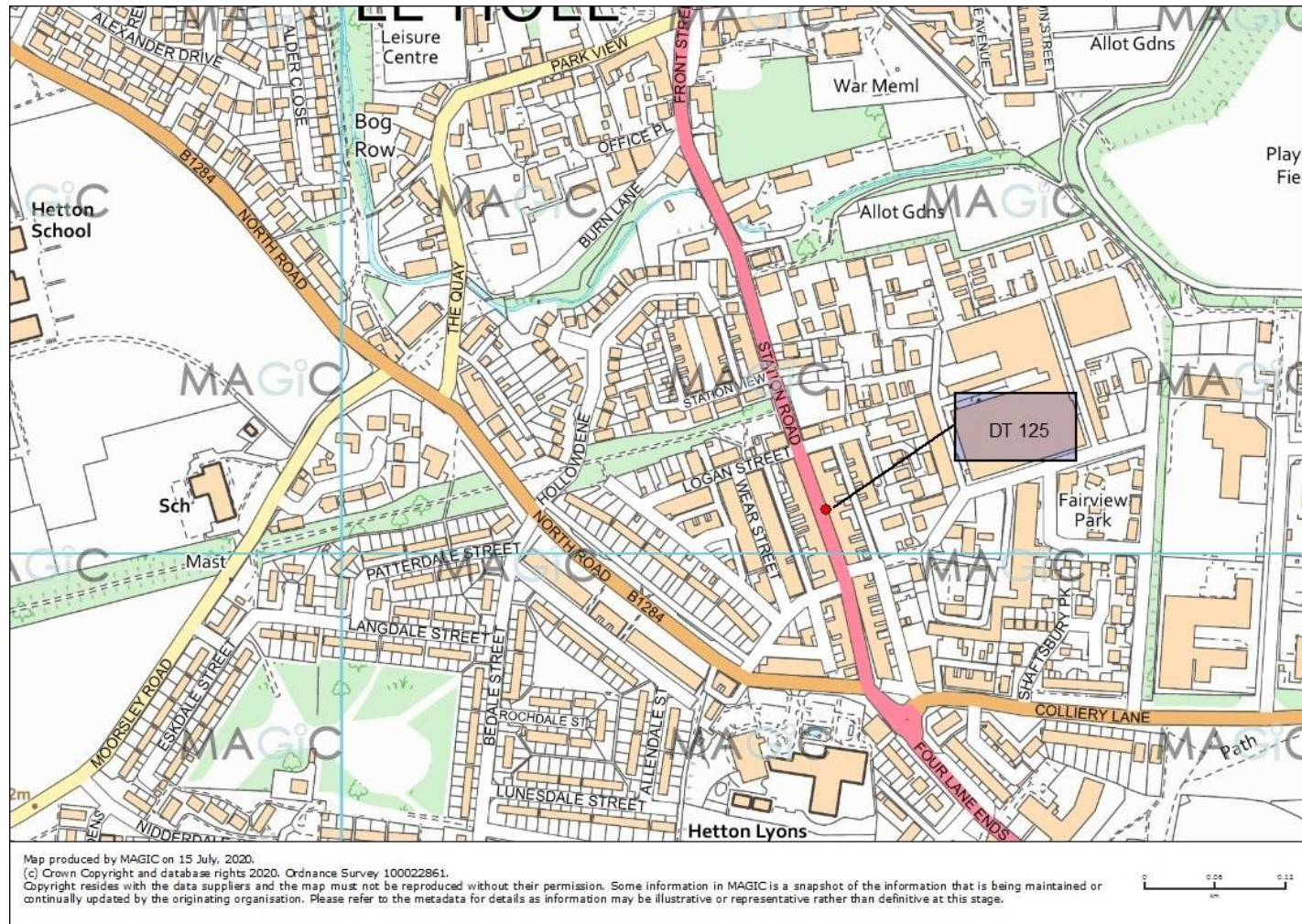


Figure D.16 – Map of Diffusion Tubes 136

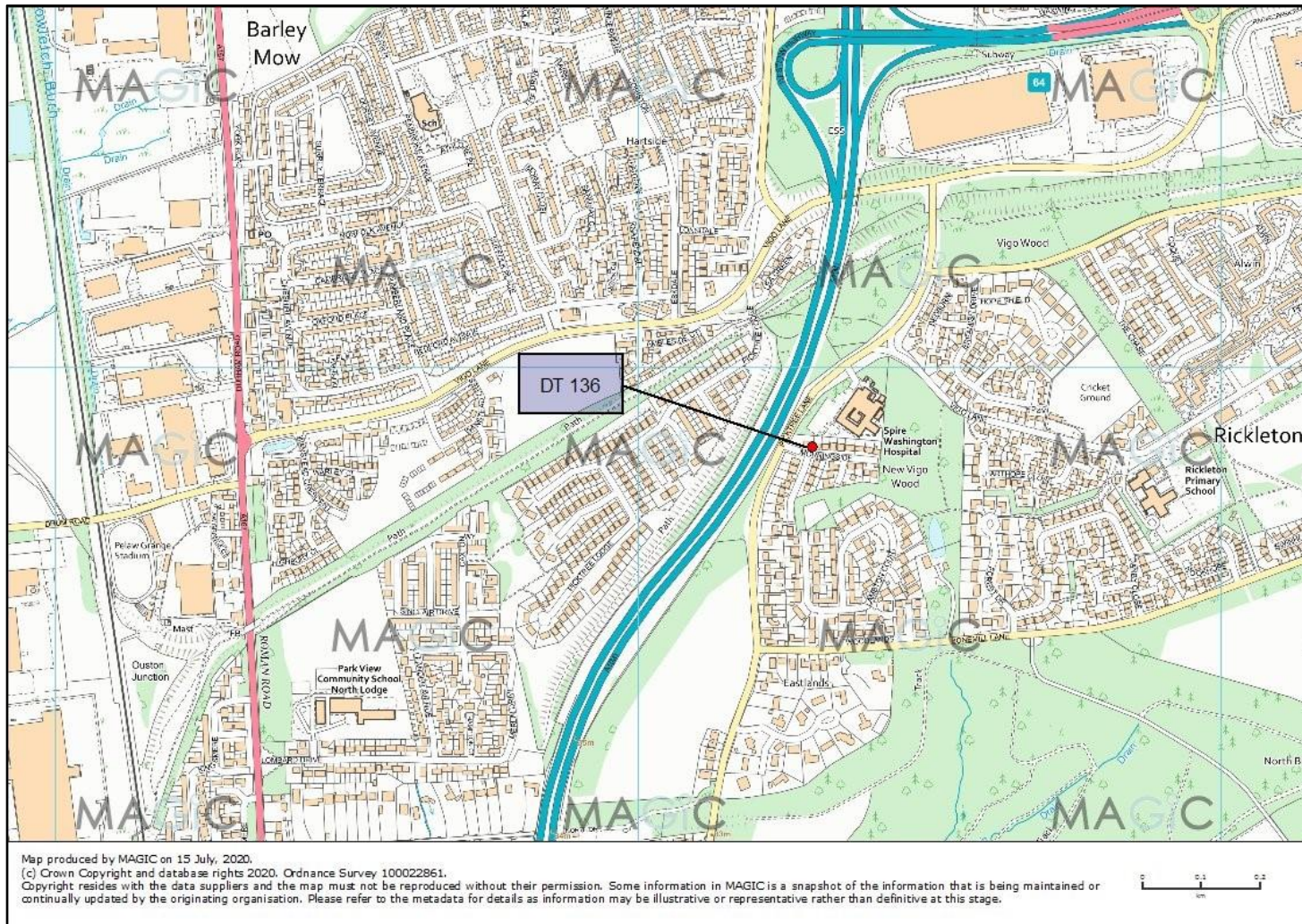


Figure D.17 – Map of Diffusion Tubes 137, 138, 139 & 140.

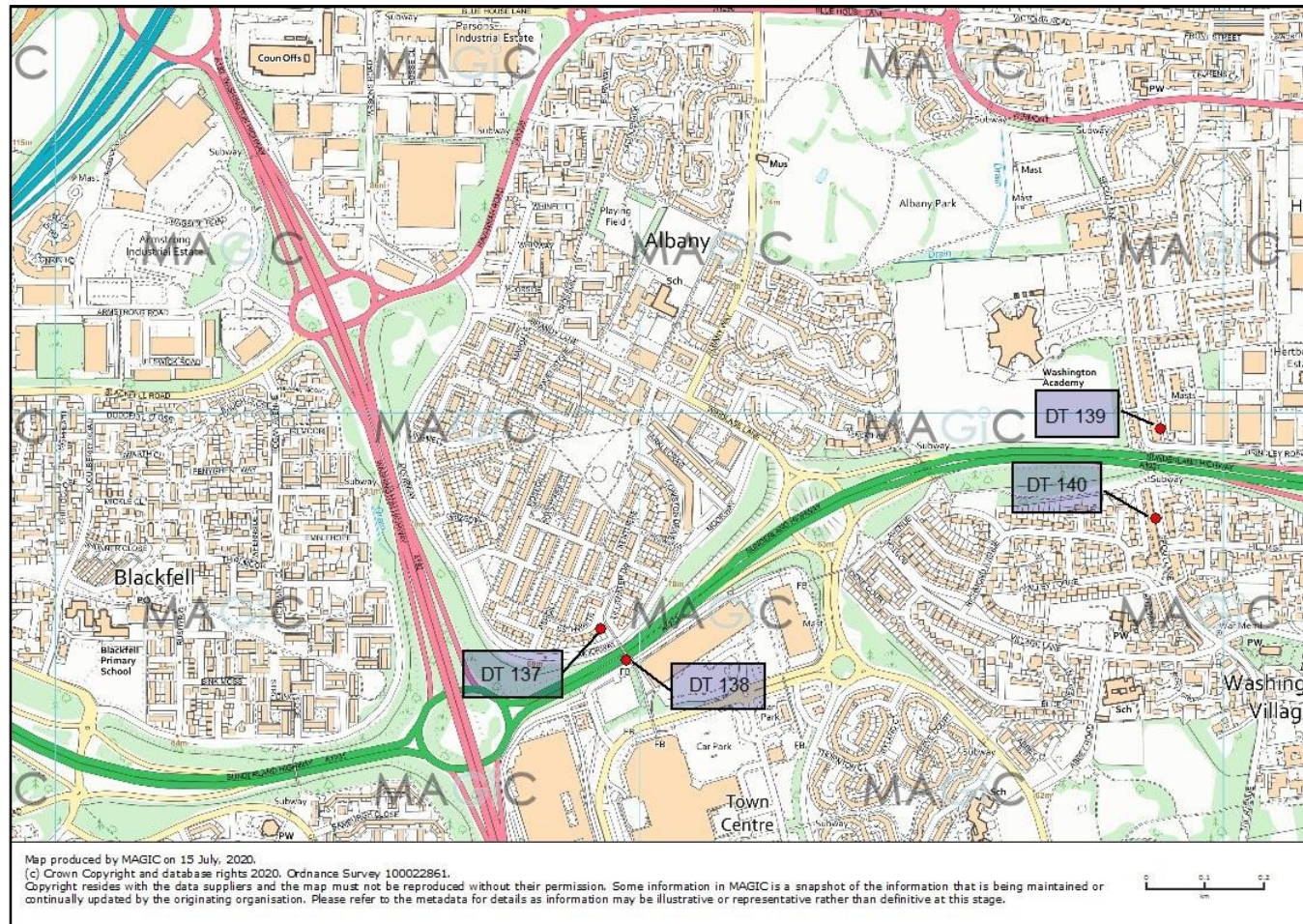


Figure D.18 – Map of Diffusion Tube 141.

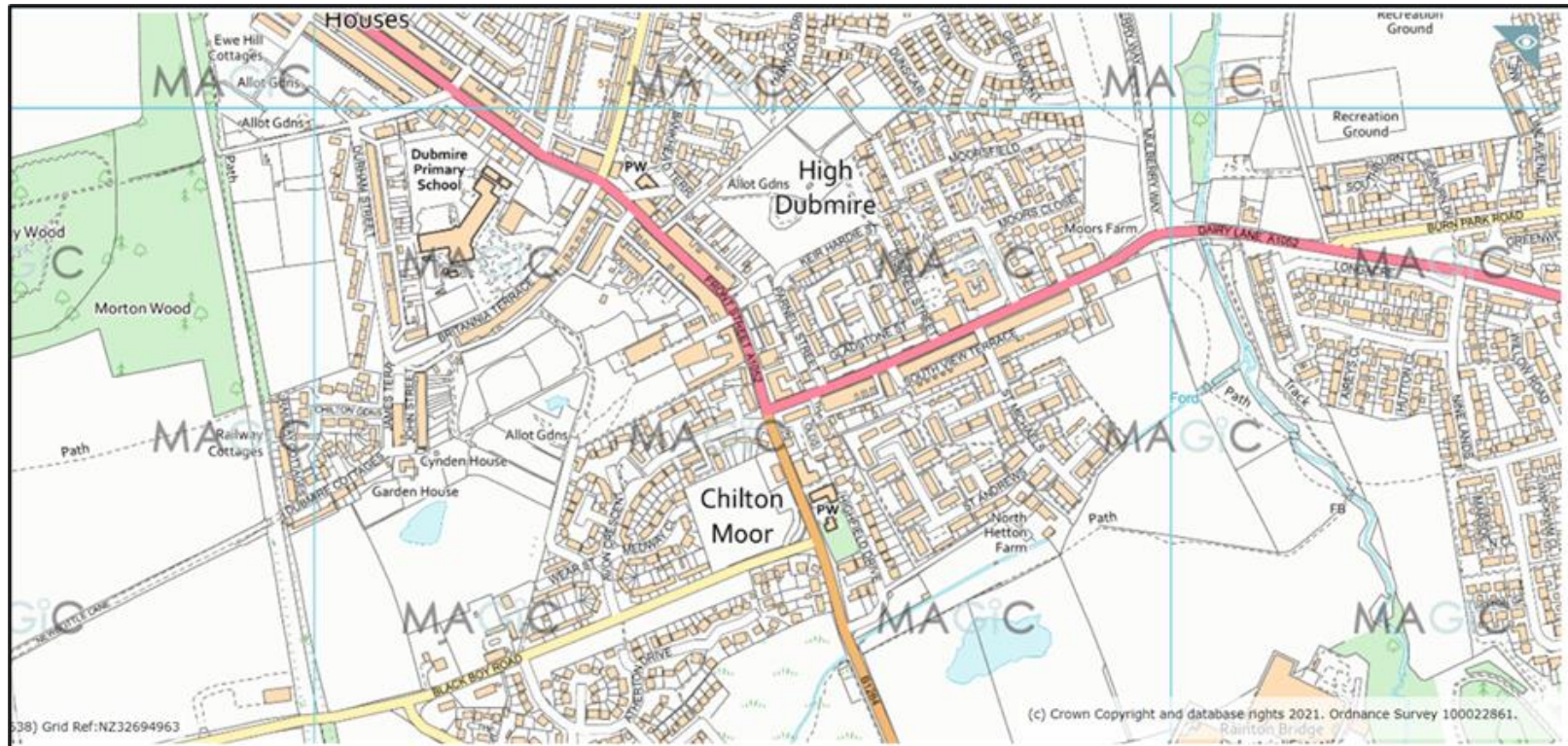


Figure D.19 – Map of Diffusion Tube 142.

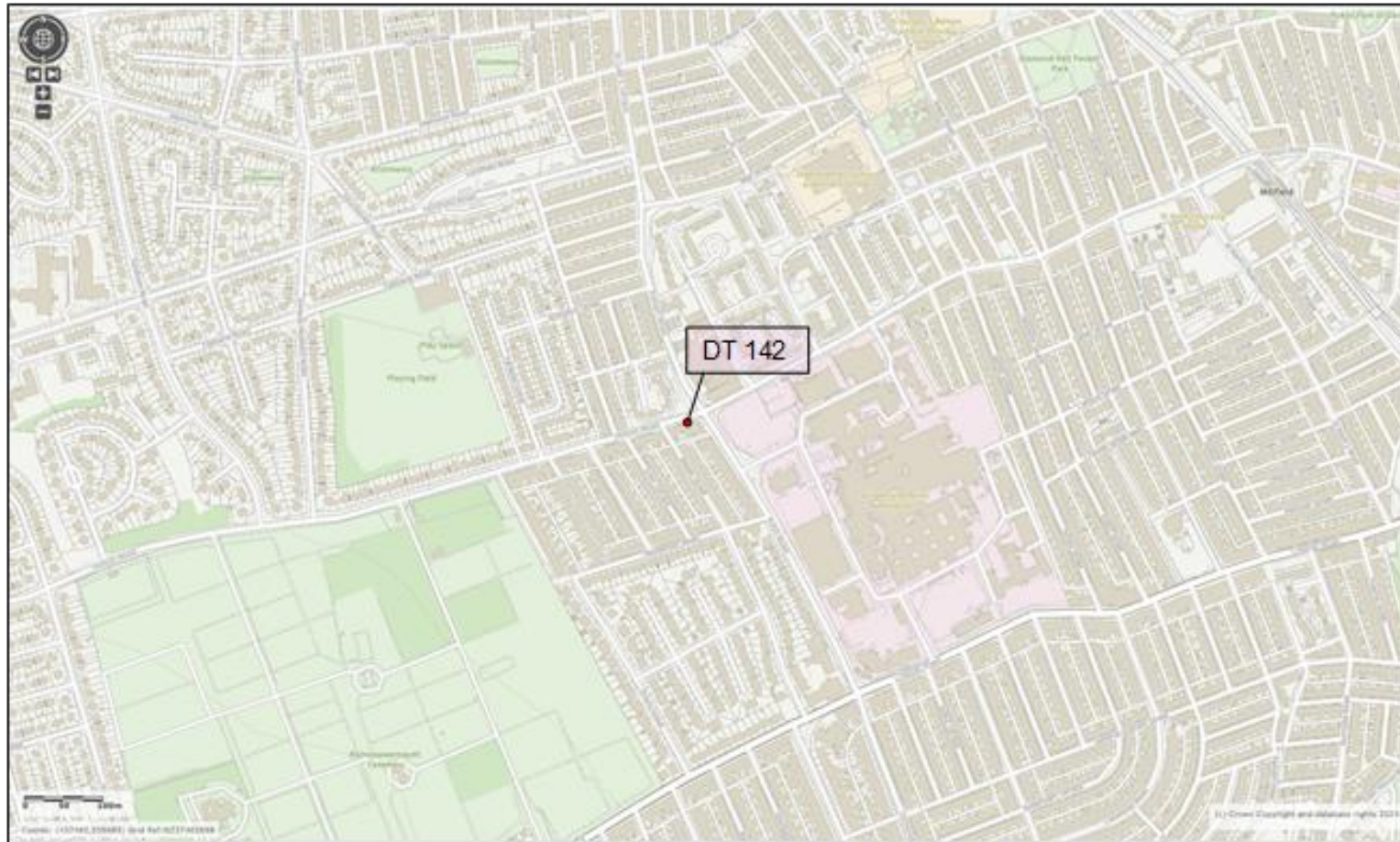


Figure D.20 – Map of Diffusion Tube 143.

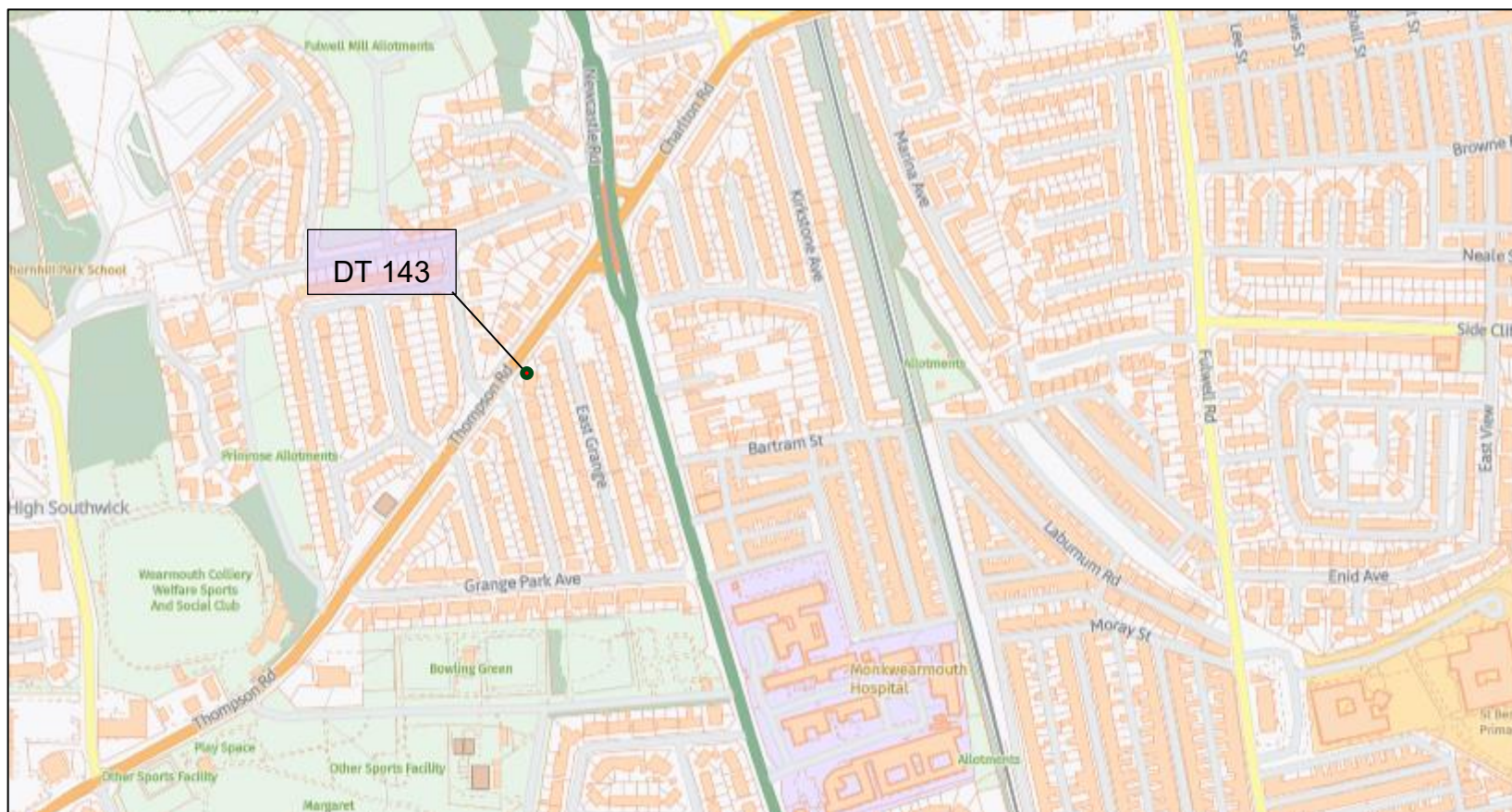


Figure D.21 – Map of Diffusion Tube 144.

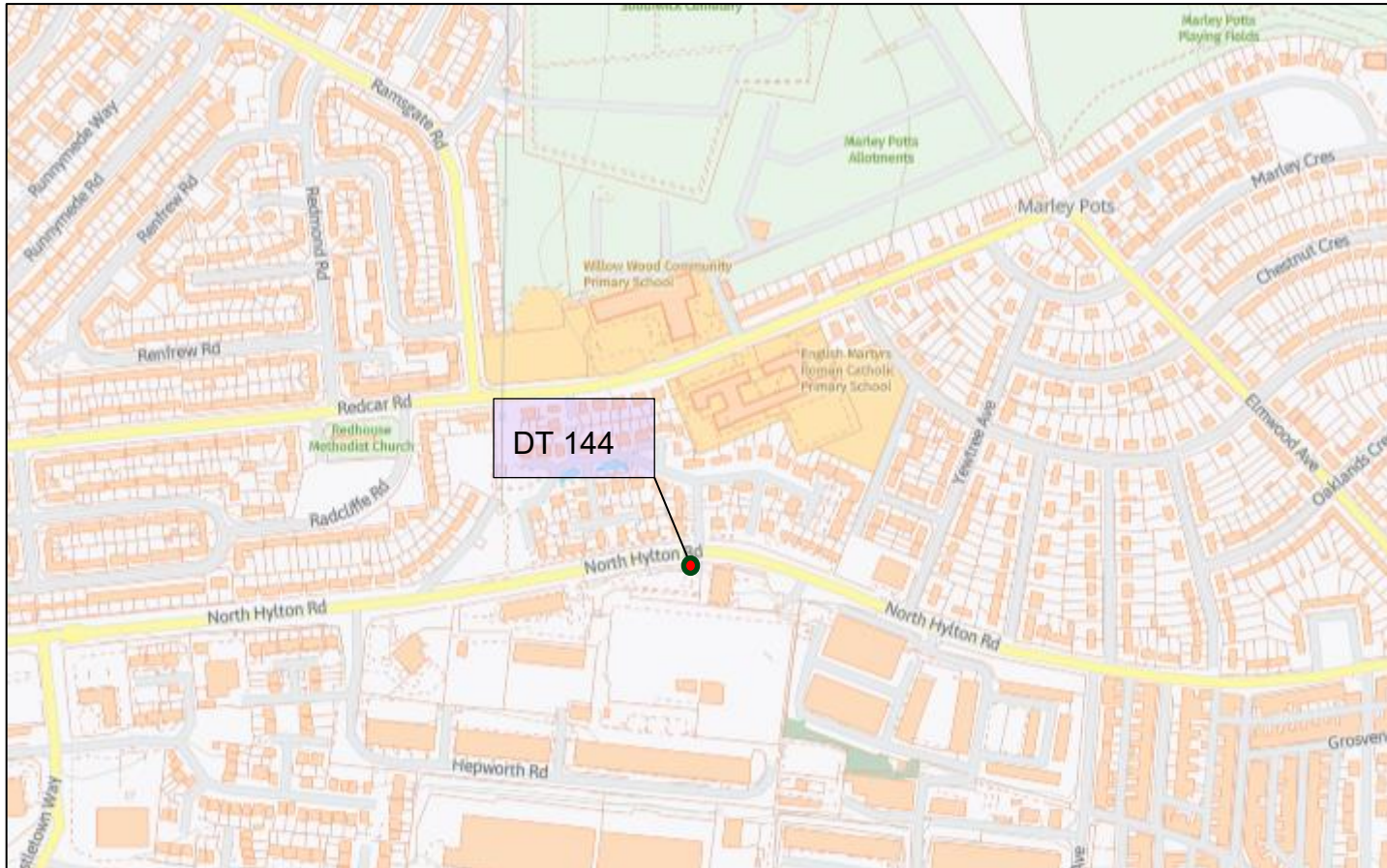


Figure D.22 – Map of Diffusion Tube 145 and 146.

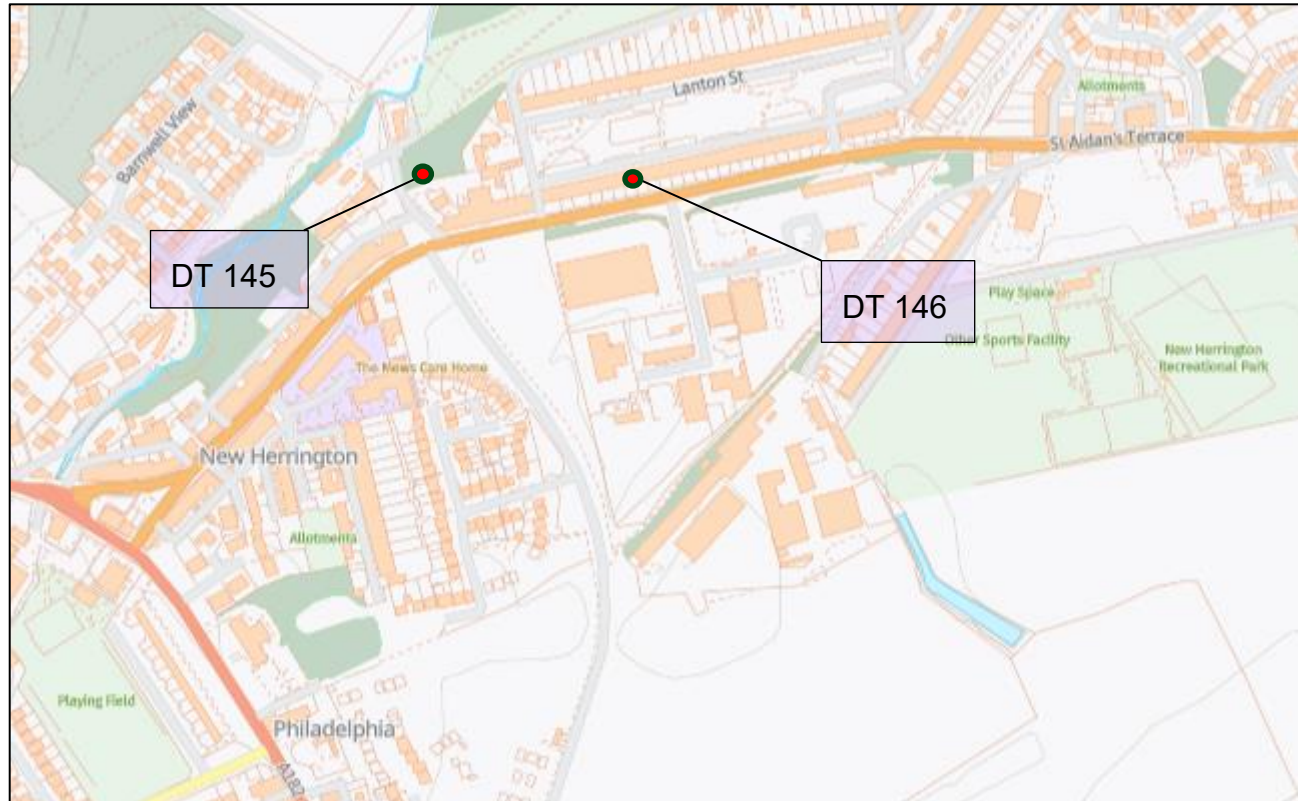


Figure D.23 – Map of Diffusion Tube 147.



Figure D.24 – Map of Diffusion Tube 148.



Figure D.25 – Map of Diffusion Tube 149.

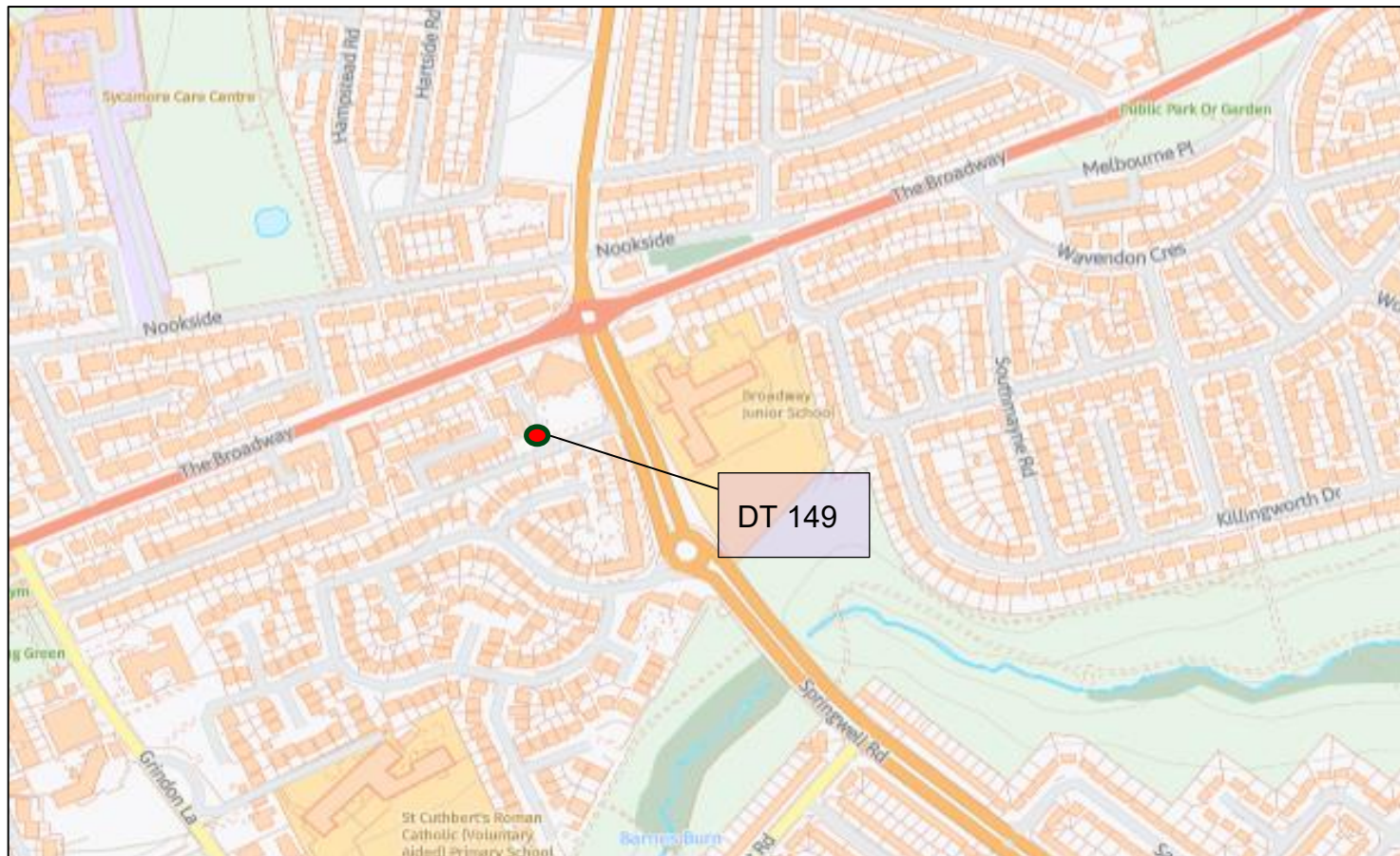


Figure D.26 – Map of Diffusion Tube 150.

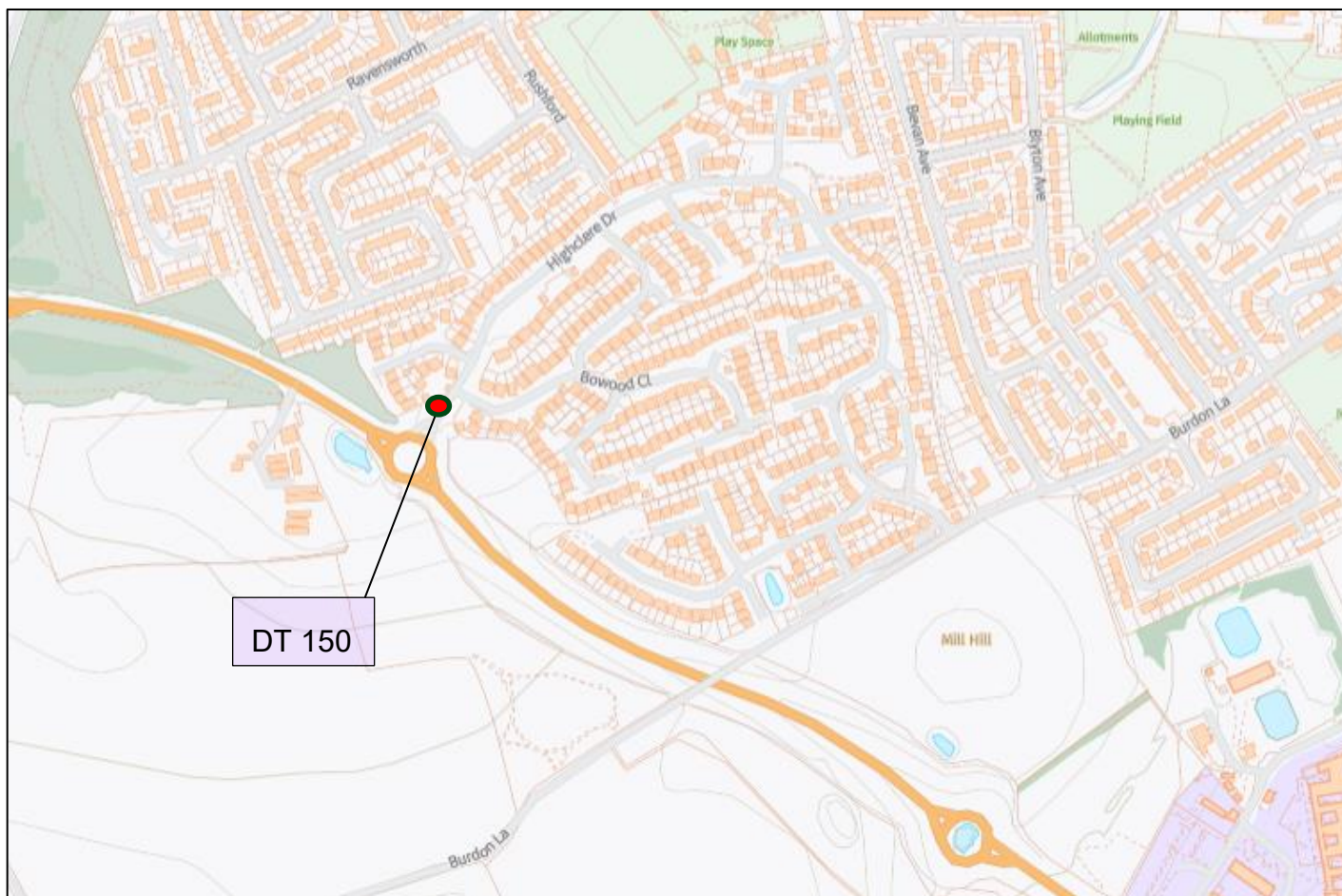


Figure D.27 – Map of Diffusion Tube 151.

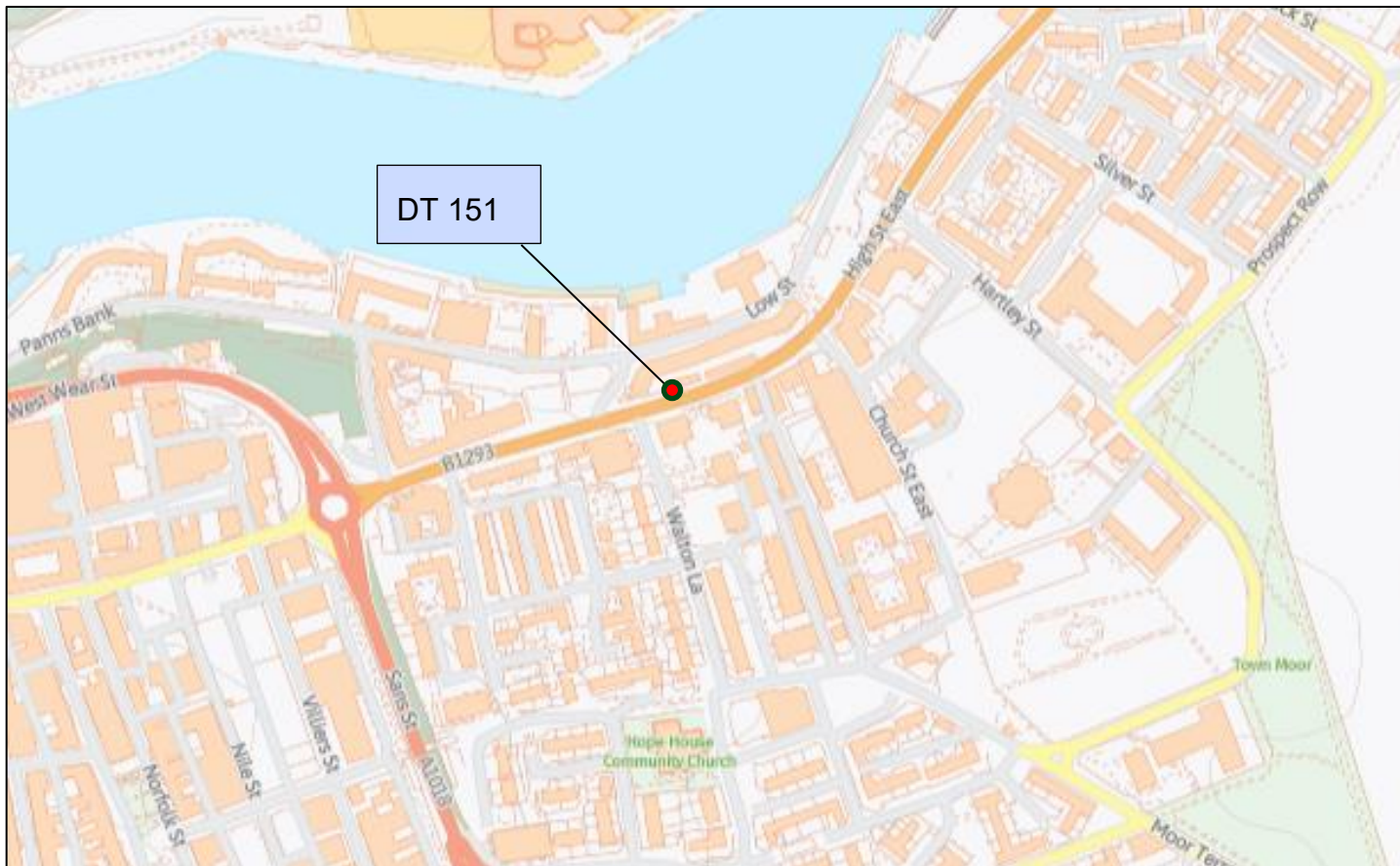
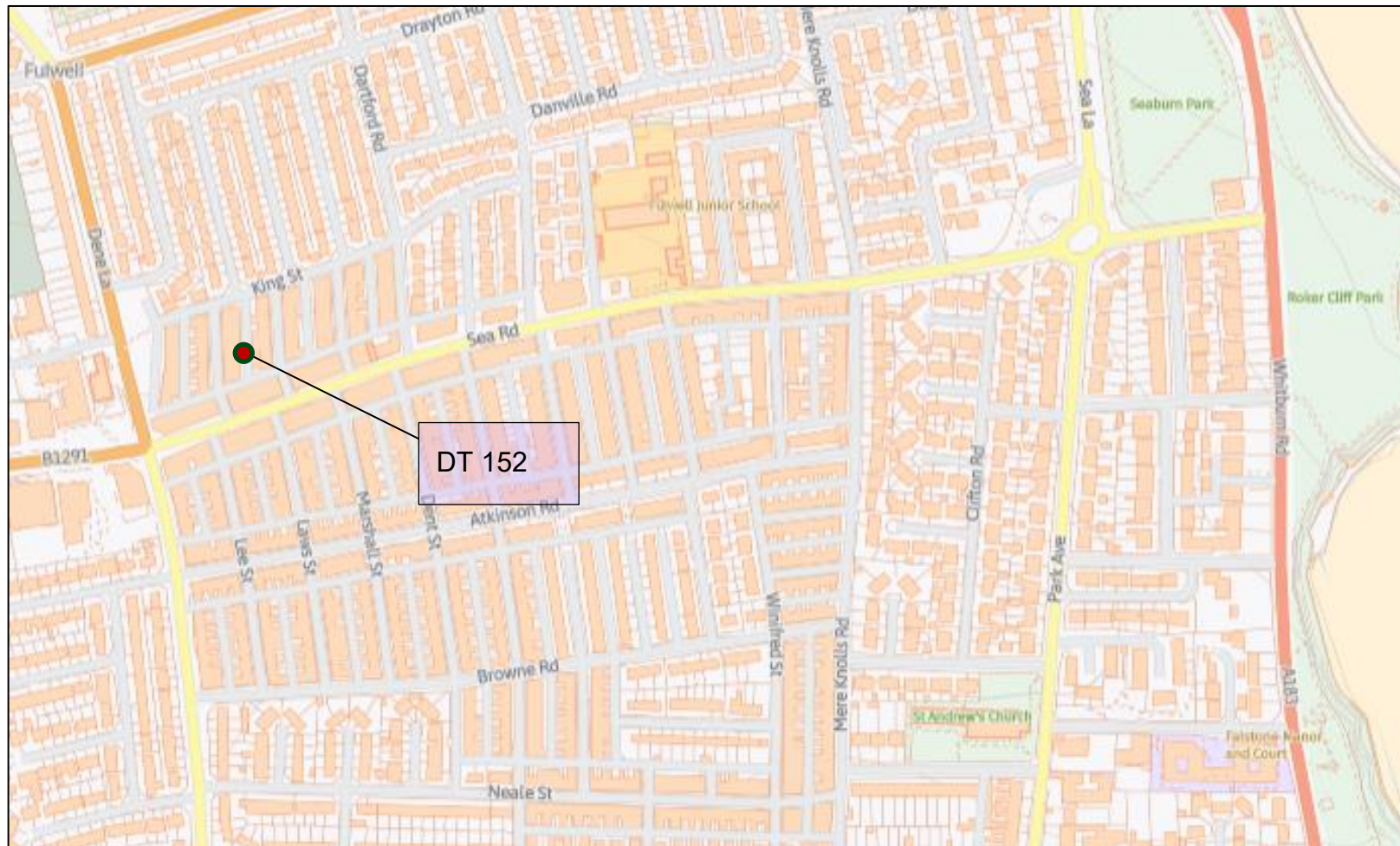


Figure D.28 – Map of Diffusion Tube 152.



## 4 Appendix E: Summary of Air Quality Objectives in England

**Table E.1 – Air Quality Objectives in England<sup>5</sup>**

Pollutant	Air Quality Objective: Concentration	Air Quality Objective: Measured as
Nitrogen Dioxide (NO <sub>2</sub> )	200µg/m <sup>3</sup> not to be exceeded more than 18 times a year	1-hour mean
Nitrogen Dioxide (NO <sub>2</sub> )	40µg/m <sup>3</sup>	Annual mean
Particulate Matter (PM <sub>10</sub> )	50µg/m <sup>3</sup> , not to be exceeded more than 35 times a year	24-hour mean
Particulate Matter (PM <sub>10</sub> )	40µg/m <sup>3</sup>	Annual mean
Sulphur Dioxide (SO <sub>2</sub> )	350µg/m <sup>3</sup> , not to be exceeded more than 24 times a year	1-hour mean
Sulphur Dioxide (SO <sub>2</sub> )	125µg/m <sup>3</sup> , not to be exceeded more than 3 times a year	24-hour mean
Sulphur Dioxide (SO <sub>2</sub> )	266µg/m <sup>3</sup> , not to be exceeded more than 35 times a year	15-minute mean

<sup>5</sup> The units are in microgrammes of pollutant per cubic metre of air (µg/m<sup>3</sup>).

## 5 Appendix F: Air Quality Priorities 2025-2030

Key Themes	Actions	Outcomes
<b>Remain legally compliant with National Air Quality Objectives</b>	<ul style="list-style-type: none"> <li>Monitoring and maintenance of 35 sampling locations using diffusion tubes.</li> <li>Analysis of diffusion tube data.</li> </ul>	Provide a monthly and annual concentration for NO <sub>2</sub> . Compiling data to review historical trends.
	<ul style="list-style-type: none"> <li>Monthly calibration and maintenance checks of automatic air quality station at Trimdon Street monitoring real time data.</li> <li>Undertake calibration and maintenance checks for DEFRA AURN site at Wessington Way and Silksworth (adopted AURN site).</li> </ul>	Comparison of results with relevant Air Quality Objectives. Provision of real time data on public facing website. Compiling data to review historical trends.
	<ul style="list-style-type: none"> <li>Assess local air quality within Sunderland as required under the Environment Act 1995. Compare measured or predicted pollutant levels against national air quality standards and objectives prescribed in regulations for the purpose of local air quality management (LAQM). Produce an Air Quality status report for DEFRA</li> </ul>	Fulfilling Sunderland City Council's obligations under part IV of the Environment Act. Interrogation of data to provide responses for Public requests, FOI's and complaints.
<b>To increase our understanding on PM<sub>2.5</sub> levels within Sunderland in accordance with new air quality objective under the Environment Act 2021.</b>	<ul style="list-style-type: none"> <li>Installation of SWAM PM<sub>2.5</sub>/PM<sub>10</sub> monitor real time data at Trimdon Street</li> <li>Monthly calibration and maintenance of equipment.</li> <li>Analysis of data</li> </ul>	Obtain and analyse 24-hour and annual mean PM <sub>2.5</sub> concentrations and compare against air quality objectives. Continue monitoring trends of PM <sub>2.5</sub> creating baseline data before the objective comes into force in 2040.
	<ul style="list-style-type: none"> <li>Phase 2 AURN expansion within Sunderland to include PM<sub>2.5</sub> at Wessington Way as part of the northeast programme.</li> </ul>	Increased number of sites monitoring PM <sub>2.5</sub> across Sunderland providing real time data.

<b>To have a greater understanding of Air Quality at a local level.</b>	<ul style="list-style-type: none"> <li>Smart City project which involves the installation of 31 low-cost data sensors to collect Air Quality data around the city's road network. The sensors measure NO<sub>2</sub>, PM<sub>2.5</sub>, PM<sub>10</sub> and Ozone.</li> </ul>	Co-locating of 5 diffusion tubes to verify results. Increased number of sites monitoring AQ data across Sunderland.
	<ul style="list-style-type: none"> <li>Short Term Diffusion Tubes Sampling – 10 additional diffusion tubes used to carry out short term surveys over a 12-month period (2024-2025). To be rotated around locations within the city in response to increased development, congestion or ongoing complaints.</li> </ul>	To provide data to respond to public concerns about AQ in their area. Provide baseline data in areas where development has recently happened or is planned.
<b>Improve connections and joint working with partners who share common goals on AQ or who can influence emissions at a local level.</b>	<ul style="list-style-type: none"> <li>Low carbon team. Sunderland City Council declared a Climate change emergency in March 2019.</li> </ul>	Increased awareness and partnership working in areas where services have shared goals and overlapping objectives. The Council has a Low Carbon Framework Document which sets out the target of Sunderland to become a net neutral carbon city by 2040.
	<ul style="list-style-type: none"> <li>Planning Policy - local plan The National Planning Policy Framework (NPPF) 2021</li> </ul>	Awareness of local AQ issues both now and in the future. Using AQ data and trend analysis to influence Planning Policy. Continuing to respond as a consultee to planning applications consultee requests. Requesting Air Quality Assessments to ensure developments do not worsen air quality. Greater consideration towards the PM <sub>2.5</sub> objective and sensitive receptors such as schools and healthcare settings. Application of relevant and developing guidance.
	<ul style="list-style-type: none"> <li>Hackney Carriage and Private Hire Licensing Policy – restrictions on emissions and age of vehicles. As from and including 1st April 2025 the Council will not issue new Vehicle</li> </ul>	Influence future policy to continue to promote the use of newer, less polluting vehicles.
<b>Building capacity in local councils through training, guidance and knowledge sharing</b>		

	<p>Licences in respect of vehicles aged over five years of age. This will ensure compliance with Euro 6 Emissions Standards;</p> <ul style="list-style-type: none"> <li>• By 2030 the Council also aims to only issue new Vehicle Licences to ultra-low, or zero emission vehicles.</li> </ul>	
	<ul style="list-style-type: none"> <li>• Transport strategy / Highways. The current Road Investment Strategy (RIS2 2020 to 2025) includes clear commitments to deliver better environmental outcomes including reducing air pollution. Projects include; School streets, climate friendly schools, and improvements to highways locations.</li> </ul>	Opportunities for funding available for AQ monitoring around school streets as part of the climate friendly school's project.
	<ul style="list-style-type: none"> <li>• Sunderland Health City Plan / Sunderland Health Inequalities Strategy / The Chief Medical Officer's 2022 annual report</li> </ul>	Increased awareness of potential for joint working, common objectives.
<b>To ensure that citizens and other stakeholders are well informed about indoor and outdoor pollutants, how to mitigate exposure and reduce their own contribution.</b>	<ul style="list-style-type: none"> <li>• Raising public awareness of AQ issues</li> </ul>	<p>Improved Council web pages and signposting. Exploring campaign opportunities such as;</p> <ul style="list-style-type: none"> <li>▪ Clean air day</li> <li>▪ Clean air night – Winter campaign</li> <li>▪ School campaign non idling vehicles.</li> <li>▪ Support homeowners to move away from solid fuel fires.</li> <li>▪ Education of homeowners on health benefits of cleaner fuels.</li> </ul>
	<ul style="list-style-type: none"> <li>• Indoor air quality</li> </ul>	Explore opportunities working with Private sector housing or Local Housing Associations.
	<ul style="list-style-type: none"> <li>• Respond to public and FOI enquiries on Air quality issues.</li> </ul>	Enhance webpages so enquiries can find information directly. Provide direct officer contact for advice.
<b>To review how Local authority functions are exercised and they are carried out in a way</b>	<ul style="list-style-type: none"> <li>• Land-Use Planning &amp; Development Control - Planning consultee:</li> <li>• Request and assessment of Air Quality assessments / environmental impact assessments as requested through the Planning Practice Guidance (PPG) on air quality. Common request for housing developments near to roadsides.</li> </ul>	<p>Application of the PM<sub>2.5</sub> Targets: Interim Planning Guidance. <a href="https://uk-air.defra.gov.uk/pm25targets/planning">https://uk-air.defra.gov.uk/pm25targets/planning</a></p> <p>Staff are suitability trained, taking account of air quality issues within the local areas of the development sites and applying most recent</p>

<b>which reduces emissions to local air quality</b>	<ul style="list-style-type: none"> <li>Request and assessment Construction and environmental management plans (CEMPS). Common source of PM<sub>2.5</sub>/PM<sub>10</sub> emissions.</li> <li>Demolition sites.</li> </ul>	government guidance. Planning for Air Quality (Institute of Air Quality Management (LAQM and Environmental Protection UK) January 2017
	<ul style="list-style-type: none"> <li>Reducing pollution from Commercial waste burning - enforcement of regulations under the Environmental Protection Act 1990</li> </ul>	Develop good working practice and sharing of intelligence fire service and Environment Agency for effective regulatory enforcement. Reducing local emissions from commercial combustion / business burning waste.
	<ul style="list-style-type: none"> <li>Reducing pollution from domestic bonfires - Enforcement of regulations regarding the burning of waste.</li> <li>Increased public awareness of alternative recycling options.</li> </ul>	Links with Low carbon team and promote increased composting. Reducing local emissions from domestic combustion / garden bonfires.
	<ul style="list-style-type: none"> <li>Smoke Control Zones – Enforcement of Regulations under the Clean Air Act 1993 and the Environment Act 2021.</li> </ul>	Education of public on correct methods on burning on open fires.
	<ul style="list-style-type: none"> <li>Sale of fuel meets the requirements of The Air Quality (Domestic Solid Fuels Standards) (England) Regulations 2020. Ready to burn scheme.</li> </ul>	Review of sellers / manufacturers within Sunderland and they meet the requirements for sale.  Education of homeowners / Support behavioural change.
	<ul style="list-style-type: none"> <li>Reducing emissions from industrial sources through improved enforcement of environmental permits. The Council has 68 permits issued under The Environmental Permitting (England and Wales) Regulations 2016 (65 Part B or reduced fee sites and 3 Part A2 sites)</li> <li>Review of A(2) installations to ensure compliance with Industrial Emissions directive in accordance with Uk</li> </ul>	Regular monitoring of permit conditions and appropriate enforcement is taken when conditions are not met.  The revision of BAT guidance and the introduction of environmental management into regulatory framework reinforces sustainability,

	<p>Interpretive Guidance for: UK BAT Surface treatment of Metals and UK BAT Foundries</p> <ul style="list-style-type: none"> <li>• Review of Part B activities in accordance with revised guidance for: Crematoria Guidance Review</li> </ul>	<p>recycling, waste reduction within the sectors. Enhanced monitoring and reporting for sites. But also information sharing, education on ways to reduce pollution including providing info to industry of relevant schemes and good practice.</p>
	<ul style="list-style-type: none"> <li>• Environment Agency Permits</li> </ul>	<p>Consultation from the EA on new applications received with the SCC area. Attend EA / LA joint Liaison Meeting to discuss sites.</p>
<p><b>To involve local community to obtain opinions and views on air quality in Sunderland.</b></p>	<ul style="list-style-type: none"> <li>• Produce a public questionnaire to understand what residents think about the air quality in Sunderland and how it relates to them and where they live.</li> </ul>	<p>Use the feedback to identify public support and consider suggested alternative actions.</p>

## 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
LAQM	Local Air Quality Management
NO <sub>2</sub>	Nitrogen Dioxide
NO <sub>x</sub>	Nitrogen Oxides
PM <sub>10</sub>	Airborne particulate matter with an aerodynamic diameter of 10µm or less
PM <sub>2.5</sub>	Airborne particulate matter with an aerodynamic diameter of 2.5µm or less
QA/QC	Quality Assurance and Quality Control
SO <sub>2</sub>	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.