



**North Tyneside Council**

# 2022 Air Quality Annual Status Report (ASR)

In fulfilment of Part IV of the Environment Act 1995  
Local Air Quality Management

Date: 27 June 2022

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# Executive Summary: Air Quality in Our Area

## Air Quality in North Tyneside

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

The mortality burden of air pollution within the UK is equivalent to 28,000 to 36,000 deaths at typical ages<sup>3</sup>, with a total estimated healthcare cost to the NHS and social care of £157 million in 2017<sup>4</sup>.

North Tyneside is located to the east of the regional capital of Newcastle upon Tyne. It is one of the five metropolitan districts that makes up the Tyne and Wear conurbation. The Borough is made up of 20 wards and has a residential population of around 194,000 with approximately 84,000 households and covers an area of 84km<sup>2</sup>. The Borough stretches from the eastern boundary of Newcastle upon Tyne to the North Sea and from the southern boundary of Northumberland to the River Tyne.

The northern fringe of the Borough is open countryside with the main urban areas, including the towns of Wallsend, North Shields, Tynemouth and Whitley Bay located along the river and coastline. Additionally, there are three large settlements to the west of the Borough; Longbenton, Forest Hall and Killingworth and to the north of the Borough there are a number of large villages; Wideopen, Burradon, Annitsford, and Backworth.

The River Tyne is a commercial river with ship repair, offshore fabrication, fishing and port related industries. The riverside urban area is undergoing major regeneration which has

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<sup>1</sup> Public Health England. Air Quality: A Briefing for Directors of Public Health, 2017

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

<sup>3</sup> Defra. Air quality appraisal: damage cost guidance, July 2021

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

resulted in some diversification from ship building to offshore related construction work. There has also been a number of newly developed business parks that have been created along the main transport routes of the A19 and the coast road A1058 consisting of office developments including the Cobalt Business Park, Balliol Business Park and retail outlets including the Silverlink and Royal Quays. New residential areas have been developed on former industrial land adjacent to the former Amec shipyard at Wallsend, Hayhole gas works at Wallsend and a new large development at The Limes, Great Lime Road, Palmersville and also on greenfield land adjacent to the A19 at Backworth and Scaffold Hill.

North Tyneside Council has created 61 smoke control areas that cover the majority of North Tyneside. Within these areas it is an offence to create smoke from a chimney except during lighting up when kindling can be used.

North Tyneside has not declared any Air Quality Management Areas (AQMAs) within the Borough. One area of concern for nitrogen dioxide (NO<sub>2</sub>) was identified in 2017, in DEFRA's "UK Air Quality Plan For Tackling Nitrogen Dioxide". The area was an 800m stretch on the A1058 Wallsend/ Newcastle boundary which was modelled as exceeding the EU NO<sub>2</sub> annual mean limit value at the kerbside. North Tyneside was therefore identified as one of the Local Authorities with a NO<sub>2</sub> exceedance derived from traffic data and air quality modelling. It is important to note that LAQM.TG16 guidance does not consider a footpath location a representative exposure for the annual or one hour mean NO<sub>2</sub> air quality objective. Detailed dispersion modelling using traffic data indicated that this area was expected to be marginally above the EU limit value for NO<sub>2</sub> by 2020. The Local Authority were directed by government to comply with the legal NO<sub>2</sub> limits in the shortest time possible. Measures to address the predicted Coast Road A1058 exceedances were reviewed as part of an option appraisal assessment to determine the possible actions to improve air quality in this area in the shortest possible time. The options appraisal process was developed as a joint initiative between the three authorities; Newcastle, Gateshead and North Tyneside identified with NO<sub>2</sub> exceedances. A joint bid was successfully awarded to ensure all buses passing through NO<sub>2</sub> exceedance zone were able to be retrofitted to improve air quality emissions. Appraisal modelling showed that this would reduce NO<sub>2</sub> emissions to ensure compliance with the EU limit value in North Tyneside by 2020. The option appraisal process determined that a Clean Air Zone (CAZ) would be introduced for the Newcastle Tyne Bridge area, but that an extension of the zone was not required within North Tyneside Borough. Other potential measures considered included

supporting a fleet policy for businesses, further investment in public transport and walking and cycling routes to improve traffic flow and promote sustainable transport modes. These measures and updates regarding them are detailed in Table 2.2.

The main pollutants monitored within the Borough of North Tyneside are NO<sub>2</sub>, PM<sub>2.5</sub> and PM<sub>10</sub> which are principally traffic related emissions. Monitoring carried out throughout the Borough in 2021 has shown that the pollutant levels for nitrogen dioxide have marginally increased when compared with 2020 monitoring data. However, all monitoring locations continue to show concentrations below the UK air quality objectives, including at the automatic monitoring station located at NTC01 on the Coast Road A1058. Three new sites were introduced in 2021, these were CC1 located on John Street in Cullercoats, HP1 on Whitley Road at Holystone to monitor pollutant levels next to Holystone Primary School and RV1 at Monkseaton Drive, Whitley Bay.

The latest annual monitoring data for 2021 for NO<sub>2</sub>, PM<sub>2.5</sub> and PM<sub>10</sub> have reported concentration levels that are below the air quality objectives. Due to this there was no requirement to declare any AQMAs.

There were two major developments granted planning approval in 2021 that had the potential to give rise on air quality however the air quality impact assessments for these developments indicated negligible impact for air quality and demonstrated that there was no risk that the air quality objectives would be exceeded. The details of these planning developments are listed on Appendix C.

One new industrial process applied for an environmental permit in 2021 as shown in appendix C which will lead to localised emissions of volatile organic solvents. This permit was granted in January 2022. The industrial process consists of adhesive manufacturing, which is regulated under the Environmental Permitting Regulations 2016 to control and minimise emissions to air. The process utilises an adhesive and an activator which mixed together to form the product. Two types of products are manufactured at the site using different ratios of adhesive to activator. Additional chemicals are then added to determine the characteristics of the final product.

There are no new major sources of nitrogen dioxide and particulate matter in the Borough in 2021. North Tyneside Council will continue to monitor for nitrogen dioxide using passive and real time monitoring, and particulates using the real time station.

## Actions to Improve Air Quality

Whilst air quality has improved significantly in recent decades and will continue to improve due to national policy decisions, there are some areas where local action is needed to improve air quality further.

The 2019 Clean Air Strategy<sup>5</sup> sets out the case for action, with goals to reduce exposure to harmful pollutants. The Road to Zero<sup>6</sup> sets out the approach to reduce exhaust emissions from road transport through a number of mechanisms; this is extremely important given that the majority of Air Quality Management Areas (AQMAs) are designated due to elevated concentrations heavily influenced by transport emissions.

North Tyneside Borough Council's actions to improve air quality during 2021 have continued to focus on major road improvements to reduce traffic congestion and improve the flow of traffic through the Borough. This includes completion of the cycling and walking route on the A189. A new transport interchange is proposed in North Shields that will reconfigure highway links and bus stands locations to improve access to public transport for local people. The scheme will also include for a new active travel link between the town centre and the popular fish quay area to encourage use.

Another scheme going forward is a new bus priority corridor on the A188 and A189. A new southbound bus lane will be introduced between the A188 Goathland Avenue junction in Longbenton and the entrance of Four Lane Ends interchange. This scheme will also include for enhancements to local walking and cycling routes including new segregated cycling links between Four Lane Ends and the A188 and A191 cycle routes. On-road segregated cycling links are also being provided between Norham Road in New York and the foxhunters roundabout in Monkseaton. Pedestrian and cycling improvements are expected to increase the number of multi-modal journeys in the area thereby improving air quality.

The Council continues to support an increase in electric vehicle use with the provision of additional charging points, with currently 16 host charging points provided in car parks

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<sup>5</sup> Defra. Clean Air Strategy, 2019

<sup>6</sup> DfT. The Road to Zero: Next steps towards cleaner road transport and delivering our Industrial Strategy, July 2018

across the borough. The council is committed to providing more electric charging points in its public car parks and leisure centres, as well as ensuring disabled access at the points. The council will also ensure charge points are included as part of new housing developments. The council has committed to also ensuring charge points are provided in areas where there are terraced streets and households cannot provide off-street parking. The council will engage with private charge point providers to look at introducing hub arrangements, such as at nearby car parks or public buildings.

The Council encourages greater use of public transport and other modes of transport such as walking, cycling, and car sharing, when travelling to work and school, to make their journeys greener, cheaper and to provide positive health benefits. One project undertaken by the council is the GoSmarter, a North Tyneside scheme which aims to encourage more sustainable travel choices to and from schools by encouraging parents to leave the car at home and to use more sustainable forms of transport via cycling, walking, scooting or using public transport. As well as aiming to change pupil, parent and staff behaviour, the initiative involves physical changes to streets near schools. As part of the initiative, pupils are encouraged in getting involved in designing local cycling and walking improvements, which are then introduced.

The closure of streets outside school gates to motor vehicles during drop-off and pick-up times each day was implemented in 2021. The closures are proposed for 18 months but they could be made permanent. Signage is displayed in the street to show restricted the areas, and the streets are marshalled by school representatives.

North Tyneside Council are encouraging and promoting alternative clean transport modes such as cycling to improve air quality. A summer of cycling was launched in 2021, aimed at getting residents cycling and exploring the borough. The event began with free weekly inclusive cycling lessons held at the Parks Sports centre. Guided cycle rides were also offered as part of the scheme for young people and families during the school summer holidays. These guided cycle rides complemented the Bikeability cycle safety training aimed at children aged eight and over that took place in July and August 2021. The council's cycling strategy is available at:

<https://my.northtyneside.gov.uk/category/1226/cycling-strategy-and-design-guidance>

North Tyneside continues to support a cycle to work scheme where employees are able to purchase a cycle via salary sacrifice. This scheme encourages employees to cycle to work and by promoting the scheme it is hoped that additional employees will choose to cycle to

work and along with health benefits associated with regular exercise, it is hoped that this will improve air quality within the Borough.

North Tyneside Council also supports a car sharing scheme for all employees located at the main Council offices at The Quadrant. This scheme is managed by the Cobalt Travel Centre that coordinates drivers and passengers. An employee applies to join the scheme and the travel centre find a suitable match for the lift sharing buddy. The Council has 80 employees currently signed up for the lift sharing scheme.

In addition, North Tyneside Council has a taxi licensing scheme that applies a vehicle age policy. As from 2024 no new taxi licences will be granted where the vehicle is more than four years old, with the existing licences require a vehicle over eight years of age to be removed from service from 2026. All electric and zero emission vehicles are exempt from the age standards.

During 2021 the retrofitting of buses with SCR technology was completed. Grant funding was awarded from the Clean Bus Technology Fund, comprising of a £40 million funding boost as part of a government drive to put more low emission buses on the roads. The funding has enabled currently 69 buses travelling along the Coast Road A1058 to be retrofitted with a Selective Catalytic Reduction (SCR) system. This technology assists reductions in NO<sub>x</sub> and NO<sub>2</sub> emissions and will also reduce harmful particulate matter.

## Conclusions and Priorities

North Tyneside Council can report that there are no exceedances of the Air Quality Objectives identified during the year 2021. North Tyneside Council does not currently have any AQMA's and given that the air quality monitoring data for 2021 has shown that levels of pollutants are below the annual air quality objective levels we would conclude that it is unnecessary to declare any AQMAs for any pollutants.

A review of the monitoring data over the last five years indicates that in 2020 there was a decrease in pollutant levels over 2017-2019, due to reduced car usage during the pandemic. Levels in 2021 have increased marginally when compared to 2020 pollutant levels. However, pollutant levels are still below the National Air Quality Objectives and there are no new developments that are considered likely to impact on air quality.



## Local Engagement and How to get Involved

Information on air quality is provided on the Council's website. The website provides details on how and where we monitor air quality. There is also information provided on the smoke control orders and links to the daily air pollution forecast. Copies of historic annual air quality reports are also available.

Public participation remains a high priority for the Council so that everyone can do their bit to improve air quality. Public information on how to improve the energy efficiency of their homes and in turn reduce their fuel consumption and pollution emissions is promoted on the Council's website so that the consumer can save money as well as reduce air emissions. The Council provides signposting on government initiatives to help householders to insulate their properties and the links to these initiatives are given on the Council's website.

North Tyneside Council encourages everyone to consider how they travel, as cycling and walking will improve health and well-being, but also the environment. A network of cycle routes has been developed and is promoted on North Tyneside's website.

A cycling strategy and local transport strategy have been adopted by the Council. Further information about these strategies can be obtained from the following website:

<https://my.northtyneside.gov.uk/category/1226/cycling-strategy-and-design-guidance>

Information on North Tyneside Council climate change and sustainability policies are available on the following websites:

[Http://my.northtyneside.gov.uk/category/539/sustainability](http://my.northtyneside.gov.uk/category/539/sustainability)

<https://my.northtyneside.gov.uk/category/1237/transport-strategy>

Detailed information is also available on the government stance on air quality. Further information on Local Air Quality Management is available at the following web address:

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

Information on North Tyneside Council's air quality, including past reports are available at:

<http://my.northtyneside.gov.uk/category/589/air-quality>

## Local Responsibilities and Commitment

This ASR was prepared by the Environmental Health Department of North Tyneside Council with the support and agreement of the network management department. This ASR has been approved by the Head of Service, Joanne Lee.

If you have any comments on this ASR please send them to Frances McClen or Claire Wilson at:

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# 1 Local Air Quality Management

This report provides an overview of air quality in North Tyneside during 2021. It fulfils the requirements of Local Air Quality Management (LAQM) as set out in Part IV of the Environment Act (1995) 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 pursuit of the objectives. This Annual Status Report (ASR) is an annual requirement showing the strategies employed by North Tyneside to improve air quality and any progress that has been made. The statutory air quality objectives applicable to LAQM in England are presented in Table E.1.

## 2 Actions to Improve Air Quality

### Air Quality Management Areas

Air Quality Management Areas (AQMAs) are declared when there is an exceedance or likely exceedance of an air quality objective. After declaration, the authority should prepare an Air Quality Action Plan (AQAP) within 12 months setting out measures it intends to put in place in pursuit of compliance with the objectives.

North Tyneside Council currently does not have any declared AQMAs.

## Progress and Impact of Measures to address Air Quality in North Tyneside

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

- The Council has good QA/QC procedures, which were applied appropriately and accurately to the 2020 monitoring data; national adjustment factors have been determined
- In the report, the Council has detailed extensive measures and plans to continue to address air quality within its administrative boundaries
- On the basis of the evidence provided by the local authority the conclusions reached are acceptable for all sources and pollutants.
- The appraisal referenced to four new developments but advised that additional information on the air quality impacts should be provided.

North Tyneside Council has taken forward a number of direct measures during the current reporting year of 2021 in pursuit of improving local air quality. Details of all measures completed, in progress or planned are set out in Table 2.1. Seven measures are included within Table 2.1, with the type of measure and the progress North Tyneside Council have made during the reporting year of 2021 presented. Where there have been, or continue to be, barriers restricting the implementation of the measure, these are also presented within Table 2.1. These measures are transport lead air quality improvements. More details on transport related actions can be found in the Tyne and Wear Local Transport Plan, <http://www.tyneandwearltp.gov.uk/documents>. North Tyneside Council has a Sustainable Transport team with responsibility for encouraging behaviour change in everyday travel to schools, businesses, and residential areas. Activity includes promoting and providing realistic sustainable travel opportunities for all.

The team's 'Go Smarter' project is largely aimed at schools and promotes the environmental benefits of sustainable travel, alongside improvements to physical and mental health inherent in active travel, and safer journeys to school.

The team carries out educational delivery, changes to infrastructure to assist active travel where suitable, and works with the charity Living Streets to incentivise active travel. As



well as this, the team have been carrying out an anti-idling campaign with schools during the current academic year.

Schools which have implemented the anti-idling campaign include Langley First School, Wellfield Middle School, Hadrian Park Primary and Denbigh Community Primary started Feb / Mar 2021. They are nearing the end of the 18 month trial period and the council will be going to public consultation during 2022 to implement the measures permanently.

Further information on the campaign can be found at <https://my.northtyneside.gov.uk/category/1511/school-streets>.

The Air Quality Strategy has yet to be adopted. It was anticipated that this would be progressed during 2021 but has been subject to further delay due to the Covid19 pandemic. The aim to progress this during 2022. The strategy will focus on measures to address air quality improvements within the Borough including measures that will mitigate PM<sub>2.5</sub> impacts.

North Tyneside Council have completed the following measures over the course of this reporting year:

- Retrofitting of buses with SCR technology on 69 buses operating along the A1058 Coast Road.
- Support for monitoring of NO<sub>2</sub> at 29 diffusion tube locations.
- Support of real time continuous air quality monitoring for NO<sub>2</sub> and Particulates at the real time air station located on the Coast Road A1058.

North Tyneside Council's priorities for the coming year are:

- Implementation of the draft Air Quality Strategy, which has been subject to delays due to the Covid pandemic.
- Support for monitoring of NO<sub>2</sub> at 29 diffusion tube locations.
- Support of real time continuous air quality monitoring for NO<sub>2</sub> and Particulates at 1 automatic monitoring site located on the Coast Road A1058.

Table 2.1 – Progress on Measures to Improve Air Quality

Measure No.	Measure	Category	Classification	Year Measure Introduced	Estimated / Actual Completion Year	Organisations Involved	Funding Source	Defra AQ Grant Funding	Funding Status	Estimated Cost of Measure	Measure Status	Reduction in Pollutant / Emission from Measure	Key Performance Indicator	Progress to Date	Comments / Barriers to Implementation
1	A189 Cycle and Walking Route	Promoting Travel Alternatives	Promotion of cycling	2020	2021	Local Authority Transport Dept.	Developers & highway infrastructure funding	NO	Funded	£100k - £500k	Completed	Reduced vehicle emissions	Reduction of NO <sub>2</sub> and PM	Complete	NA
2	Cobalt Car Sharing Scheme	Promoting Travel Alternatives	Workplace Travel Planning	2015	N/A	Cobalt Travel Team	NA	NO	Not Funded	< £10k	Implementation	Reduced vehicle emissions	Reduction of NO <sub>2</sub> and PM	Implementation on-going	NA
3	Cycle Strategy	Promoting Travel Alternatives	Promotion of cycling	N/A	N/A	Local Authority Transport Dept.	N/A	NO	Not Funded	< £10k	Implementation	Reduced vehicle emissions	Reduction of NO <sub>2</sub> and PM	Implementation on-going	NA
4	Retrofitting of Buses with SCRT	Promoting Low Emission Transport	Other	2019	2022	Local Authority Environmental Health	Clean Bus Technology Fund	YES	Funded	£1 million - £10 million	Completed	Reduced vehicle emissions	Reduction of NO <sub>2</sub>	Complete	Delays due to Covid 19
5	Compliance Charge for Part B Processes	Environmental Permits	Other	N/A	Ongoing	Local Authority Environmental Health	NA	NO	Not Funded	N/A	Implementation	Reduced industrial emissions	Reduction of NO <sub>2</sub> , PM	Implementation on-going	NA
6	Taxi Licensing Scheme	Promoting Low Emission Transport	Taxi Licensing conditions	2020	Ongoing	Local Authority Licensing	NA	NO	Not Funded	N/A	Implementation	Reduced vehicle emissions	Reduction of NO <sub>2</sub> , PM	Implementation on-going	NA
7	Go Smarter Scheme	Promoting Travel Alternatives	Schools Travel Plan		Ongoing	Local Authority Transport Dep.	NA	No	Not Funded	<10k	Implementation	Reduced vehicle emissions	Reduction of NO <sub>2</sub> , PM	Implementation on-going	NA

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

As detailed in Policy Guidance LAQM.PG16 (Chapter 7), local authorities are expected to work towards reducing emissions and/or concentrations of PM<sub>2.5</sub> (particulate matter with an aerodynamic diameter of 2.5µm or less). There is clear evidence that PM<sub>2.5</sub> has a significant impact on human health, including premature mortality, allergic reactions, and cardiovascular diseases.

North Tyneside Council aims to adopt an Air Quality Strategy to address the measures taken to reducing PM<sub>2.5</sub> in the Borough. This draft strategy has been delayed but it is expected to be progressed through a Steering Group, whose membership consists of all relevant partners including transport planners, public health team, planning, climate change team and environmental health. The strategy details the actions necessary to help improve and promote air quality and thereby have the overall benefit of contributing to reducing PM<sub>2.5</sub>.

North Tyneside is taking the following measures to address PM<sub>2.5</sub>:

- Use of an Air Quality steering group to prioritise actions and measures to tackle PM<sub>2.5</sub>. The membership consists of all relevant partners including transport planners, public health team, planning, climate change team and environmental health.
- Adoption of an Air Quality Strategy that sets effective goals to bring about air quality improvements.
- An ongoing commitment to bring about traffic management improvements to reduce congestion.
- Reduce emissions from new developments (during the construction phase and in subsequent use) and existing buildings by implementing energy efficiency measures and affordable warmth schemes to reduce heat loss and drive down fuel bills.
- Encouraging use of public transport and promoting alternative modes of transport. Thereby reducing emissions from vehicles on the road and encouraging the uptake of alternative 'low emission' vehicles. Other measures include the use of travel plans for new developments, introduction of electric charging points, parking charges, and reducing of engines idling etc.

- Promotion of a cycling strategy that was adopted in 2018. The council promotes and encourage cycling as a healthy and sustainable way of making everyday journeys. The cycling strategy outlines the Councils strategic approach to supporting cycling in the Borough.

North Tyneside Council secured 1.2m funding for the retrofitting of 69 buses operated by Arriva, Go North East and Stagecoach to meet latest emission standards. The buses were retrofitted with SCR technology that operate along the Coast Road A1058. The retrofitting programme commenced in July 2019 and was partially completed in 2020. The retrofitting of the 69 buses was completed in 2021.

The use of an age standard for all taxi licensed to operate within the Borough will provide air quality benefits for both particulates and NO<sub>2</sub>. The Council has appraised its taxi licensing scheme and introduced a policy to require all new taxis to be less than four years old from 2024. Current taxi licences when renewed will have to be less than eight years old from 2026. The age standard does not apply for electric or zero emission vehicles and this age policy is to encourage the uptake of use of ultra-low emission vehicles.

North Tyneside Council will continue to provide information to residents on air pollution, promote advice to the public on measures that can be taken on an individual level, and health issues by maintaining an up-to-date webpage. Residents will be encouraged to compost garden waste rather than burn it in bonfires.

The Environmental Health Team of North Tyneside Council closely monitors dust emissions from industrial installations and respond to any complaints regarding dust emissions from demolition and/or construction sites. It is considered that construction sites contribute to localised particulate emissions and therefore as part of the planning process a condition is attached where applicable to approvals requiring construction sites to have a Construction Environmental Management Plan (CEMP) in place.

North Tyneside Council promotes the provision of the smoke control areas within the Borough to remind residents that it is an offence to create smoke from a chimney except if using authorised fuel or an exempt fireplace or smoke arising during lighting up when kindling may be used. Residents are directed via the Council's website to relevant guidance on the correct use of solid fuel appliances s to minimise particulate emissions.

North Tyneside Council will continue the regulation of Part B and A2 permitted air pollution industrial installations. Planned risk-based inspections to ensure the compliance with the permitted processes will be carried out in accordance with DEFRA guidance. The regulation of processes will ensure that emissions from small industrial processes (Part B and A2 processes) do not exceed the national process guidance note emission limits and are minimised as far as is practically possible not exceeding excessive cost.

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

This section sets out the monitoring undertaken within 2021 by North Tyneside Council and how it compares with the relevant air quality objectives. In addition, monitoring results are presented for a five-year period between 2017 and 2021 to allow monitoring trends to be identified and discussed.

### Summary of Monitoring Undertaken

#### 3.1.1 Automatic Monitoring Sites

North Tyneside Council undertook automatic (continuous) monitoring at 1 sites during 2021. 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 [https://www.airqualityengland.co.uk/local-authority/reports?la\\_id=255](https://www.airqualityengland.co.uk/local-authority/reports?la_id=255) page presents automatic monitoring results for North Tyneside Council, with automatic monitoring results also available through the UK-Air website .

This is a real time continuous air quality monitoring site within North Tyneside. The site is owned and maintained by the Urban Observatory and located on the Coast Road in Wallsend.

A map showing the location of the monitoring site is provided in Appendix D1d. Further details on how the monitor is calibrated and how the data has been adjusted are included in Appendix C.

#### 3.1.2 Non-Automatic Monitoring Sites

North Tyneside Council undertook non- automatic (i.e. passive) monitoring of NO<sub>2</sub> at 29 sites during 2021. Table A.2 in Appendix A presents the details of the non-automatic sites.

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

## Individual Pollutants

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

### 3.1.3 Nitrogen Dioxide (NO<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 2021 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.

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.

The latest monitoring results for the real time continuous air station located on the Coast Road has shown that the annual mean concentration is 35.9µg/m<sup>3</sup>. This is below the annual mean objective of 40µg/m<sup>3</sup>. The pollutant level in 2021 is similar to that reported in 2020 and is significantly lower than the annual mean concentration monitored in 2019 (46µg/m<sup>3</sup>). This site is located at the roadside, some 80 metres to the nearest residential property on Home Park and previous passive NO<sub>2</sub> monitoring carried out in 2019 on Home Park, monitoring location CR1, indicated emission levels well below the annual mean objective.

The most recent diffusion tube data in 2021 has shown that no diffusion tube locations have an annual mean concentration above the annual mean objective level. The highest recorded annual means were at the location W10 about Coast Road Battlehill which reported annual mean concentrations, following bias adjustment, of 26.10µg/m<sup>3</sup>.

The annual mean real time monitoring NO<sub>2</sub> results of Table A.3 indicate a slight increase in concentrations at all sites compared to the 2020 data, except for 1 location, but still show a decrease in concentrations when compared to 2019. This is thought to be the result of improved traffic flows from road network improvements in the borough.

The long-term trend chart in Figures A.1 provide a comparison between 2017 and 2021 of the long-term monitoring sites and shows a slight increase in nitrogen dioxide levels at some of the sites from 2017 to 2019, but then a decrease in 2020 as a result of decreased vehicle usage during the COVID related lockdowns and restrictions. 2021 continue to show decreased concentrations at long term sites when compared with 2017 to 2019 believed to be the result of improved traffic flows and reduced congestion at busy road junctions.

It is concluded that the NO<sub>2</sub> monitoring results for both the continuous monitoring site, and the diffusion tube locations show consistent results below the annual mean NO<sub>2</sub> objective. In addition the 1-hour NO<sub>2</sub> objective has not been exceeded at the Coast Road monitoring location, and due to all diffusion tube monitoring locations being below 60µg/m<sup>3</sup> there is no indication that the 1-hour mean objective is likely to be breached.

#### **3.1.4 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. There has been 1 exceed of the air quality objective, but this is an improvement on 2019 when there were 5 occasions when the air quality objective.

#### **3.1.5 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.

The annual mean for 2021 was 8.06µg/m<sup>3</sup> which is well below the annual mean target value of 25µg/m<sup>3</sup>. The 2021 monitoring annual mean is a marginal increase on the



annual mean concentration of  $7.5\mu\text{g}/\text{m}^3$  monitored in 2020, but is lower than the level of  $9\mu\text{g}/\text{m}^3$  monitored in 2019.

## Appendix A: Monitoring Results

Table A.1 – Details of Automatic Monitoring Sites

Site ID	Site Name	Site Type	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Pollutants Monitored	In AQMA? Which AQMA?	Monitoring Technique	Distance to Relevant Exposure (m) <sup>(1)</sup>	Distance to kerb of nearest road (m) <sup>(2)</sup>	Inlet Height (m)
NTC01	Coast Road	Roadside	428352	566974	NO <sub>2</sub> ,PM <sub>10</sub> ,PM <sub>2.5</sub>	NO	Chemiluminescent; Palas FIDAS (optical light scattering)	37	2	2

**Notes:**

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

(2) N/A if not applicable

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

Diffusion Tube ID	Site Name	Site Type	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Pollutants Monitored	In AQMA? Which AQMA?	Distance to Relevant Exposure (m) <sup>(1)</sup>	Distance to kerb of nearest road (m) <sup>(2)</sup>	Tube Co-located with a Continuous Analyser?	Tube Height (m)
BM1	Park Lane, Shiremoor	Roadside	431743	570649	NO2	No	4.0	2.0	No	3.0
BR1	Burradon Road, Annitsford	Roadside	427095	573616	NO2	No	5.0	2.0	No	3.0
CC1	John Street, Cullercoats	Kerbside	436246	571385	NO2	No	8.0	<1.0	No	3.0
CH1	Norham Road/ Rothbury Terrace	Kerbside	433580	567865	NO2	No	NA	<1.0	No	3.0
CH5	Front Street, Chirton	Roadside	434456	568275	NO2	No	NA	2.9	No	3.0
CM1	Broadway, Cullercoats	Industrial	435803	571122	NO2	No	15.0	<1.0	No	3.0
FS1	Front Street, Monkseaton	Kerbside	434064	571727	NO2	No	5.0	<1.0	No	3.0
GH1	Lower Crane Street, Shiremoor	Kerbside	431751	571811	NO2	No	5.0	2.0	No	3.0
HP1	Whitley Road, Holystone	Roadside	430473	570490	NO2	No	5.0	<1.0	No	3.0
HR1	Bewicke Road, Willington Quay	Suburban	432664	566413	NO2	No	5.0	2.0	No	3.0
HW3	Meldon Street, East Howdon	Roadside	433202	566428	NO2	No	2/0	<1.0	No	3.0
LB1	West Farm Avenue, /Benton Road, Longbenton	Industrial	426871	568591	NO2	No	6.0	2.0	No	3.0

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)
LB2	Front Street/Benton Road, Longbenton	Kerbside	427094	568383	NO2	No	2.0	<1.0	No	3.0
LH7	Battlehill Drive, Wallsend	Roadside	430735	567974	NO2	No	4.0	4.0	No	3.0
LP1	Dudley Lane, Seaton Burn	Kerbside	424237	573762	NO2	No	10.0	<1.0	No	3.0
MC1	White House Drive, Adjacent Miller and Carter	Kerbside	426331	570973	NO2	No	NA	2.0	No	3.0
MR1	Manor Road, Tynemouth	Roadside	436720	569437	NO2	No	10.0	<1.0	No	3.0
NS10	Queen Alexandra Road, North Shields	Kerbside	434103	569099	NO2	No	NA	<1.0	No	3.0
PG2	North Road, Preston Road, Preston Grange	Roadside	435069	569861	NO2	No	1.0	2.0	No	3.0
RV1	Monkseaton Drive, Whitley Bay	Roadside	435076	573325	NO2	No	5.0	2.0	No	3.0
SP1	Holystone Way, Holystone	Roadside	430444	570242	NO2	No	5.0	2.0	No	3.0
TR1	Tynemouth Road, Rosehill	Roadside	431831	566955	NO2	No	3.0	2.0	No	3.0
TY1	Front Street, Tynemouth	Roadside	437016	569377	NO2	No	3.0	<1.0	No	3.0

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)
W10	Coast Road, Wallsend	Kerbside	429316	567388	NO2	No	3.0	2.0	No	3.0
W17	Hotspur Street, Wallsend	Roadside	429094	568218	NO2	No	5.0	2.0	No	3.0
W99	Frank Street, Wallsend	Kerbside	429934	566314	NO2	No	30.0	2.0	No	3.0
WB9	Morrison Petrol Station, Whitley Bay	Kerbside	435390	571977	NO2	No	2.0	2.0	No	3.0
WB20	Grosvenor Drive/Norham Road, Whitley Bay	Kerbside	435205	571823	NO2	No	NA	<1.0	No	3.0
WR1	Whitley Road, Whitley Bay	Kerbside	435801	572022	NO2	No	10.0	2.0	No	3.0

**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 2021 (%) <sup>(2)</sup>	2017	2018	2019	2020	2021
NTC01	428352	566974	Roadside	99.6	99.6	N/A	N/A	<b>46</b>	35	35.9

Annualisation has been conducted where data capture is <75% and >25% in line with LAQM.TG16.

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

**Notes:**

The annual mean concentrations are presented as µg/m<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.TG16 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 2021 (%) <sup>(2)</sup>	2017	2018	2019	2020	2021
BM1	431743	570649	Roadside	92.3	92.3	24.2	20.8	22.4	16.6	16.9
BR1	427095	573616	Roadside	92.3	92.3	NA	18.1	16.7	11.0	13.2
CC1	436246	571385	Kerbside	51.9	51.9	NA	NA	NA	NA	14.0
CH1	433580	567865	Kerbside	100	100.0	24.9	27.3	30.2	22.1	25.0
CH5	434456	568275	Roadside	67.3	67.3	27.0	24.4	26.4	17.6	21.0
CM1	435803	571122	Industrial	100	100.0	N/A	16.5	17.8	12.2	13.5
FS1	434064	571727	Kerbside	90.4	90.4	21.9	19.8	21.6	16.4	16.6
GH1	431751	571811	Kerbside	100	100.0	NA	21.7	24.6	17.5	18.5
HP1	430473	570490	Roadside	42.3	42.3	NA	NA	NA	NA	14.4
HR1	432664	566413	Suburban	92.3	92.3	26.3	23.5	26.7	19.5	23.6
HW3	433202	566428	Roadside	100	100.0	N/A	18.1	20.7	16.7	18.4
LB1	426871	568591	Industrial	92.3	92.3	31.9	32.1	28.9	20.3	22.2
LB2	427094	568383	Kerbside	100	100.0	35.1	23.6	26.5	18.8	20.5

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 2021 (%) <sup>(2)</sup>	2017	2018	2019	2020	2021
LH7	430735	567974	Roadside	92.3	92.3	26.2	22.1	25.5	20.0	23.5
LP1	424237	573762	Kerbside	82.7	82.7	N/A	19.4	16.4	12.8	10.2
MC1	426331	570973	Kerbside	100	100.0	N/A	N/A	N/A	15.2	17.1
MR1	436720	569437	Roadside	80.8	80.8	N/A	N/A	18.1	12.3	13.2
NS10	434103	569099	Kerbside	100	100.0	29.6	22.1	22.9	19.2	20.0
PG2	435069	569861	Roadside	92.3	92.3	29.1	26.4	26.2	20.3	22.1
RV1	435076	573325	Roadside	51.9	51.9	NA	NA	NA	NA	18.1
SP1	430444	570242	Roadside	80.8	80.8	27.4	25.3	29.2	21.5	23.0
TR1	431831	566955	Roadside	82.7	82.7	27.2	25.5	25.4	21.2	24.0
TY1	437016	569377	Roadside	100	100.0	30.7	23.6	28.4	18.1	18.8
W10	429316	567388	Kerbside	75	75.0	27.1	28.3	31.6	23.1	26.1
W17	429094	568218	Roadside	100	100.0	24.1	18.6	19.2	14.0	15.2
W99	429934	566314	Kerbside	92.3	92.3	N/A	24.4	25.5	19.0	20.2
WB9	435390	571977	Kerbside	75	75.0	21.7	19.7	23.9	17.5	17.6



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 2021 (%) <sup>(2)</sup>	2017	2018	2019	2020	2021
WB20	435205	571823	Kerbside	92.3	92.3	16.7	15.8	16.9	13.1	13.2
WR1	435801	572022	Kerbside	100	100.0	N/A	21.4	21.1	17.0	16.9

Annualisation has been conducted where data capture is <75% and >25% in line with LAQM.TG16.

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 NO<sub>2</sub> annual mean objective of  $40\mu\text{g}/\text{m}^3$  are shown in **bold**.

NO<sub>2</sub> annual means exceeding  $60\mu\text{g}/\text{m}^3$ , indicating a potential exceedance of the NO<sub>2</sub> 1-hour mean objective are shown in **bold and underlined**.

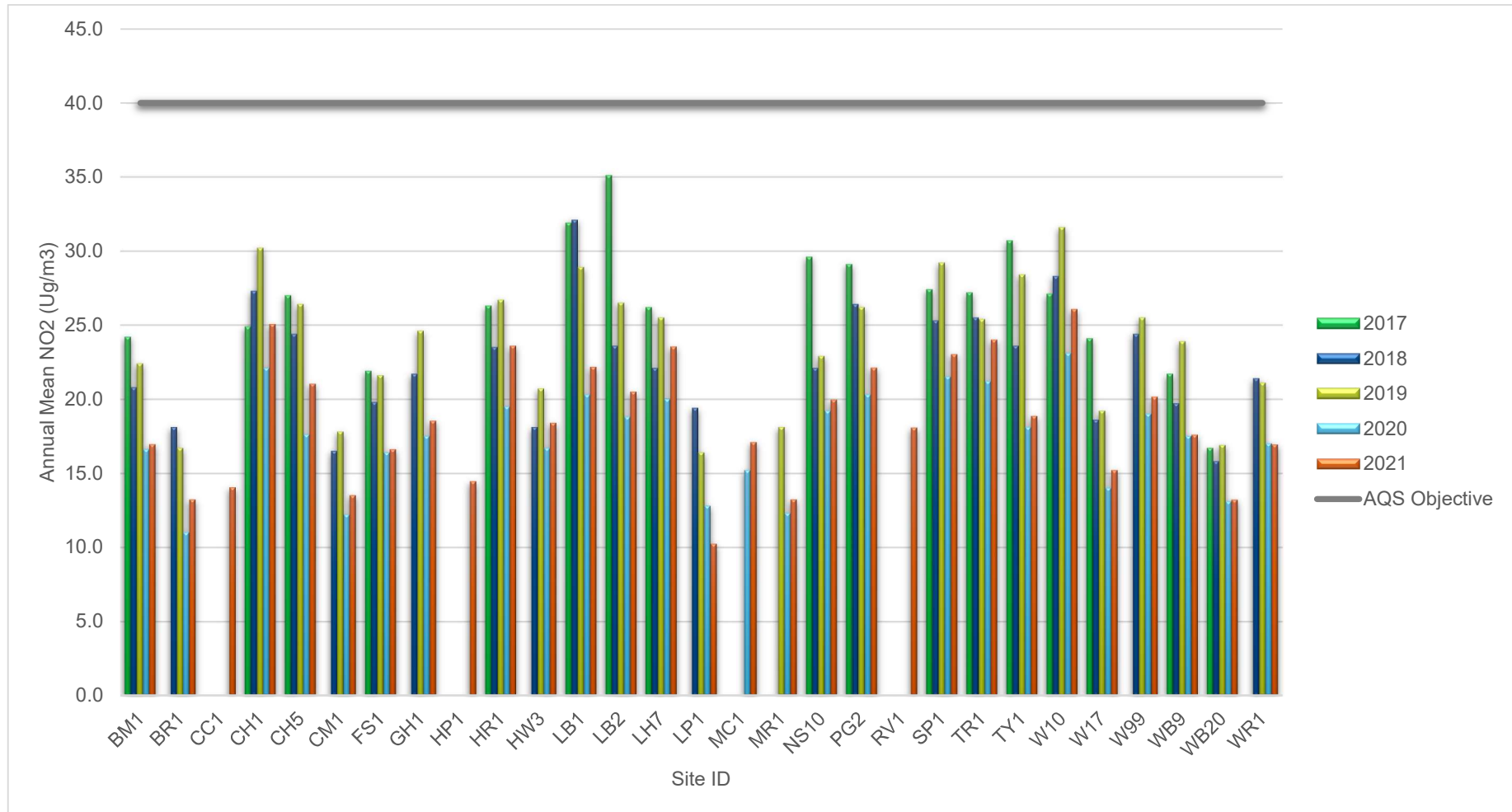
Means for diffusion tubes have been corrected for bias. All means have been “annualised” as per LAQM.TG16 if valid data capture for the full calendar year is less than 75%. See Appendix C for details.

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



**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 2021 (%) <sup>(2)</sup>	2017	2018	2019	2020	2021
NTC01	428352	566974	Roadside	99.6	99.6	<b>N/A</b>	<b>N/A</b>	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 2021 (%) <sup>(2)</sup>	2017	2018	2019	2020	2021
NTC01	428352	566974	Roadside	91.3	91.3	<b>N/A</b>	<b>N/A</b>	17	15.4	16.7

**Annualisation has been conducted where data capture is <75% and >25% in line with LAQM.TG16.**

**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.TG16 if valid data capture for the full calendar year is less than 75%. See Appendix C for details.

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

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

**Table A.7 – 24-Hour Mean PM<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 2021 (%) <sup>(2)</sup>	2017	2018	2019	2020	2021
NTC01	428352	566974	Roadside	91.3	91.3	<b>N/A</b>	<b>N/A</b>	5	3	1

**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 2021 (%) <sup>(2)</sup>	2017	2018	2019	2020	2021
NTC01	428352	566974	Roadside	91.3	91.3	N/A	N/A	9	7.5	8.06

**Annualisation has been conducted where data capture is <75% and >25% in line with LAQM.TG16.**

**Notes:**

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

All means have been “annualised” as per LAQM.TG16 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%).

## Appendix B: Full Monthly Diffusion Tube Results for 2021

Table B.1 – NO<sub>2</sub> 2021 Diffusion Tube Results (µg/m<sup>3</sup>)

DT ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northin g)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean: Raw Data	Annual Mean: Annualised and Bias Adjusted (0.84)	Annual Mean: Distance Corrected to Nearest Exposure	Comment
BM1	431743	570649	33.3	N/S	15.1	18.2	20.9	13.5	14.2	13.0	19.5	25.0	20.2	28.8	20.2	16.9	-	
BR1	427095	573616	18.9	18.7	11.0	16.8	15.2	9.6	13.8	14.6	17.2	18.0	N/S	19.2	15.7	13.2	-	
CC1	436246	571385	N/S	N/S	N/S	N/S	N/S	N/S	12.1	11.9	16.5	19.9	18.6	22.9	17.0	14.0	-	
CH1	433580	567865	41.6	32.9	25.4	31.4	32.8	24.9	27.5	24.7	30.7	28.4	26.1	31.3	29.8	25.0	-	
CH5	434456	568275	35.3	N/S	N/S	20.6	21.0	16.9	17.1	18.4	N/S	28.1	30.1	N/S	23.4	21.0	-	
CM1	435803	571122	21.5	18.2	12.6	16.3	15.8	11.8	13.0	14.0	15.5	18.2	14.8	21.3	16.1	13.5	-	
FS1	434064	571727	28.0	24.4	16.6	20.9	17.3	14.0	15.7	14.8	19.6	N/S	20.2	25.9	19.8	16.6	-	
GH1	431751	571811	30.0	25.5	16.9	19.5	17.6	15.5	14.8	19.0	22.4	28.0	26.8	28.7	22.1	18.5	-	
HP1	430473	570490	N/S	N/S	N/S	N/S	N/S	N/S	N/S	16.4	20.1	18.3	13.0	25.1	18.6	14.4	-	
HR1	432664	566413	36.4	30.6	22.3	26.6	N/S	40.7	21.9	21.5	28.1	24.9	27.0	29.0	28.1	23.6	-	
HW3	433202	566428	34.1	26.8	18.2	20.0	17.7	15.1	15.9	16.6	21.4	24.3	26.8	25.9	21.9	18.4	-	
LB1	426871	568591	35.1	29.2	23.3	26.1	N/S	4.9	24.1	22.3	30.1	30.9	31.4	33.0	26.4	22.2	-	
LB2	427094	568383	0.6	11.3	24.4	27.5	23.3	25.0	25.8	24.6	33.5	31.9	33.2	31.6	24.4	20.5	-	
LH7	430735	567974	34.7	31.1	18.8	24.7	26.5	22.0	25.5	25.0	N/S	32.4	33.3	34.2	28.0	23.5	-	
LP1	424237	573762	N/S	18.7	11.4	15.7	16.5	11.2	12.5	12.2	13.8	N/S	6.7	3.1	12.2	10.2	-	
MC1	426331	570973	22.2	24.2	17.1	18.7	18.5	12.1	17.8	17.4	20.9	25.5	26.6	23.0	20.3	17.1	-	
MR1	436720	569437	21.6	19.1	11.2	N/S	15.4	11.0	10.7	12.9	15.6	N/S	16.9	23.0	15.7	13.2	-	
NS10	434103	569099	35.2	27.3	23.1	18.1	16.7	15.8	14.8	18.3	24.1	27.1	31.3	33.0	23.8	20.0	-	

DT ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northin g)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean: Raw Data	Annual Mean: Annualised and Bias Adjusted (0.84)	Annual Mean: Distance Corrected to Nearest Exposure	Comment
PG2	435069	569861	N/S	27.7	26.7	23.7	21.0	21.0	20.0	25.2	29.9	30.7	35.0	28.7	26.3	22.1	-	
RV1	435076	573325	N/S	N/S	N/S	N/S	N/S	N/S	17.8	15.8	21.9	27.0	21.8	26.9	21.9	18.1	-	
SP1	430444	570242	31.9	31.7	22.5	27.2	27.9	23.1	N/S	26.0	29.6	N/S	23.5	30.7	27.4	23.0	-	
TR1	431831	566955	38.8	30.1	27.5	31.6	28.3	24.3	26.2	N/S	29.7	N/S	21.0	28.1	28.6	24.0	-	
TY1	437016	569377	29.8	25.0	20.4	18.2	17.4	16.2	15.0	18.3	24.3	27.3	26.2	31.0	22.4	18.8	-	
W10	429316	567388	38.7	N/S	25.5	N/S	N/S	25.3	25.8	27.8	32.5	32.3	35.8	35.6	31.0	26.1	-	
W17	429094	568218	28.7	22.4	14.9	15.9	15.4	10.9	10.9	13.1	18.4	20.6	19.7	26.3	18.1	15.2	-	
W99	429934	566314	35.2	31.2	21.1	22.0	22.6	16.7	18.2	18.4	N/S	24.5	26.8	27.1	24.0	20.2	-	
WB9	435390	571977	28.4	N/S	18.1	23.8	20.8	16.0	15.8	17.2	21.7	N/S	N/S	26.6	20.9	17.6	-	
WB20	435205	571823	24.9	21.4	14.6	14.5	12.1	9.5	9.8	11.4	N/S	16.0	16.3	22.4	15.7	13.2	-	
WR1	435801	572022	26.9	24.4	17.7	16.9	16.9	13.4	15.2	15.0	19.4	24.9	24.2	27.0	20.2	16.9	-	

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.TG16.

Local bias adjustment factor used.

National bias adjustment factor used.

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

North Tyneside Council confirm that all 2021 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 North Tyneside During 2021**

There were three new developments during 2021 that were identified to have potential effects on the air quality within North Tyneside. Two of the new developments were planning applications for residential developments of which each provided an Air Quality Assessment to gain approval.

19/00257/FULES was an application by Northumberland Estates for a development of 310 residential dwellings (including affordable housing) with associated infrastructure and engineering works, and the creation of a new access from the A191 Rake Lane. This development is located at a parcel of land between Rake Lane Farm off the A191 and Whitley Bay High School. An air quality assessment was provided with the application that assessed the potential air quality impacts with the new development. The assessment concluded that there would be negligible impacts on the pollutant levels for nitrogen dioxide and particulates with the new development.

20/01435/FULES was an application for the construction of 565 residential dwellings with means of access, landscaping, open space, sustainable drainage, public rights of way diversion and associated infrastructure, was made by Bellways Homes Ltd (North East) and Banks Property Ltd. Air quality was considered as part of the Environmental Statement submitted with the application. The principal pollutants of concern were nitrogen dioxide and particulates, associated with the road traffic emissions arising from the local road network and from the new development. The air quality assessment determined that the overall air quality impacts would be negligible, resulting in a very minor increase with the new development but that the pollutant levels would be well below the air quality objectives.

The third new source identified during 2021 was an industrial source that applied for a new Part B environmental permit. Full details of the new industrial source are provided in Table C.1

**Table C.1 – New Industrial Sources**

Permit No.	Company Name	Address	Guidance Note	Description
NT170	Scrigrip Adhesives Ltd	1 New York Way, New York Ind Park, North Shields, NE27 0QF	Pg 6/44	Adhesives Manufacturer

## Additional Air Quality Works Undertaken by North Tyneside Council During 2021

North Tyneside Council has not completed any additional works within the reporting year of 2021.

## QA/QC of Diffusion Tube Monitoring

### Diffusion Tube Annualisation

Four diffusion tubes have been annualised, as shown in Table C.1, where data capture has fallen below 75%, but greater than 25%. Automatic monitoring data has been used from Newcastle Centre and Hartlepool St Abbs Walk urban background continuous sites. Annualisation has been completed using the LAQM diffusion tube data processing tool therefore in accordance with the methodology detailed within LAQM.TG16.

### Diffusion Tube Bias Adjustment Factors

The diffusion tube data presented within the 2021 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.TG16 provides guidance with regard to the application of a bias adjustment factor to correct diffusion tube

monitoring. Triplicate co-location studies can be used to determine a local bias factor based on the comparison of diffusion tube results with data taken from NO<sub>x</sub>/NO<sub>2</sub> continuous analysers. Alternatively, the national database of diffusion tube co-location surveys provides bias factors for the relevant laboratory and preparation method.

North Tyneside Council have applied a national bias adjustment factor of 0.84 to the 2021 monitoring data. A summary of bias adjustment factors used by North Tyneside Council over the past five years is presented in Table C..

- A summary of bias adjustment factors used by North Tyneside over the past five years is presented in Table C..
- North Tyneside Council operates a continuous NO<sub>2</sub> monitoring station on the Coast Road Site but there are no co-location tubes available at the site to derive a local bias factor, thus the national bias adjustment factor spreadsheet has been used.
- Diffusion tubes for North Tyneside Council are supplied and analysed by Gradko International Ltd. The tubes were prepared using the 20% TEA in water preparation method. The national bias adjustment factor for Gradko 20% TEA in water is 0.84 for the year 2021 (based thirty-two studies) as derived from the national bias adjustment factor spreadsheet as presented in Table C.1

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

Monitoring Year	Local or National	If National, Version of National Spreadsheet	Adjustment Factor
2021	National	03/22	0.84
2020	National	03/21	0.81
2019	National	03/20	0.93
2018	National	03/18	0.92
2017	National	03/17	0.87

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

Distance correction is only required for sites with an annual mean concentration of greater than 36µg/m<sup>3</sup> where the site is not at a point of relevant exposure. No diffusion tube NO<sub>2</sub> monitoring locations within North Tyneside required distance correction during 2021.

## QA/QC of Automatic Monitoring

North Tyneside utilities data from an automatic monitoring site operated and owned by the Urban Observatory at Newcastle University. The Urban Observatory carries out routine manual calibrations fortnightly. The supplier Air monitors carries out maintenance and independent calibration on the equipment every six months. North Tyneside Council uses Ricardo to ratify the data. The [https://www.airqualityengland.co.uk/local-authority/reports?la\\_id=255](https://www.airqualityengland.co.uk/local-authority/reports?la_id=255) page presents automatic monitoring results for North Tyneside, with automatic monitoring results also available through the UK-Air website .

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

The type of PM<sub>10</sub> and PM<sub>2.5</sub> monitors utilised within North Tyneside do not require the application of a correction factor.

### Automatic Monitoring Annualisation

All automatic monitoring locations within North Tyneside recorded data capture of greater than 75% therefore it was not required to annualise any monitoring data. In addition, any sites with a data capture below 25% do not require annualisation.

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

No automatic NO<sub>2</sub> monitoring locations within North Tyneside required distance correction during 2021.

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

Site ID	Annualisation Factor Newcastle Cradlewell	Annualisation Factor Hartlepool St Abbs Walk	Annualisation Factor -	Annualisation Factor -	Average Annualisation Factor	Raw Data Annual Mean	Annualised Annual Mean	Comments
CC1	0.9904	0.9764			0.9834	17.0	16.7	
CH5	1.0287	1.1080			1.0684	23.4	25.0	
HP1	0.9573	0.8940			0.9257	18.6	17.2	
RV1	0.9904	0.9764			0.9834	21.9	21.5	



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

Figure D.1a – Map of Non-Automatic Monitoring Site (North East)

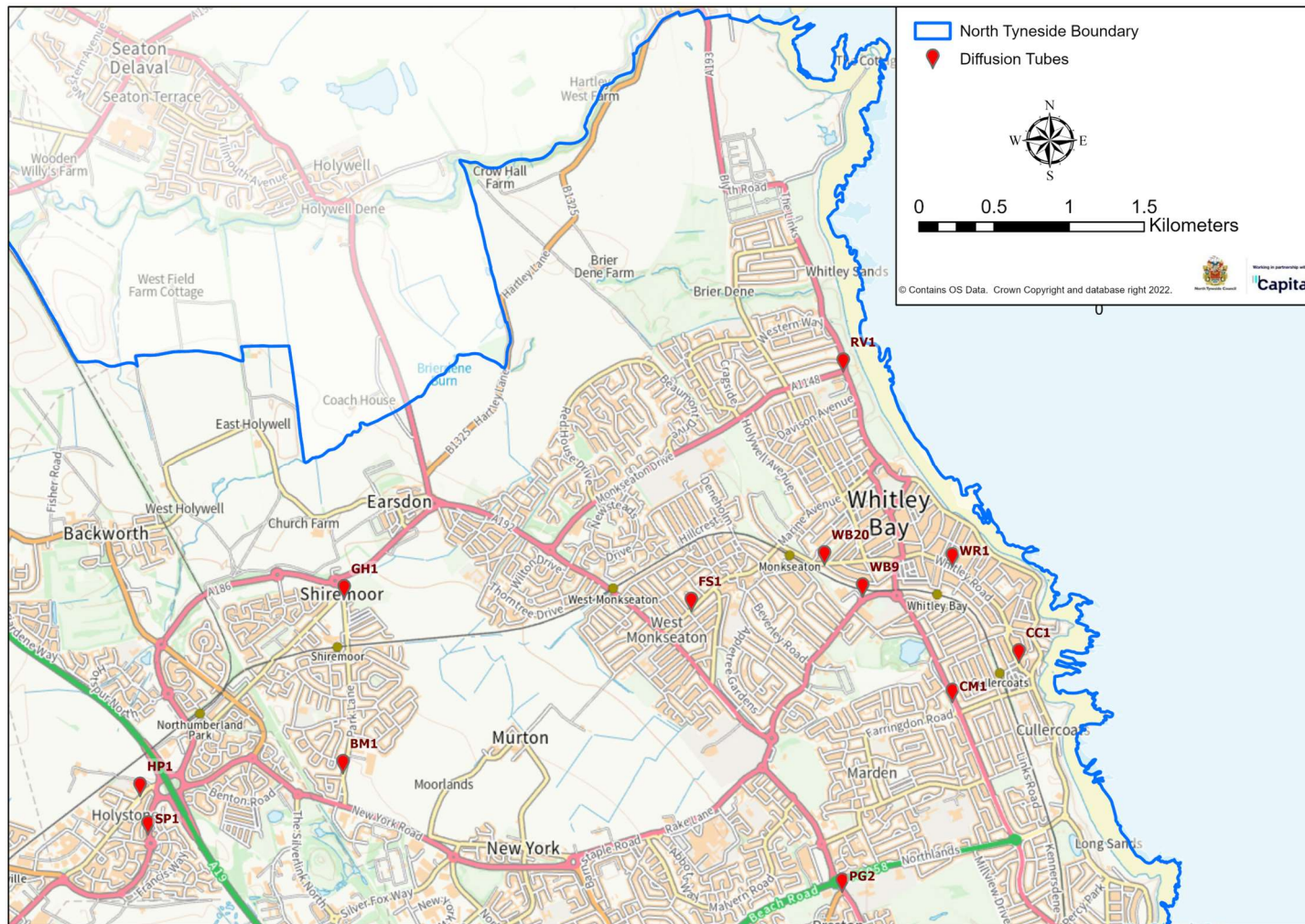


Figure D.2b – Map of Non-Automatic Monitoring Site (North West)

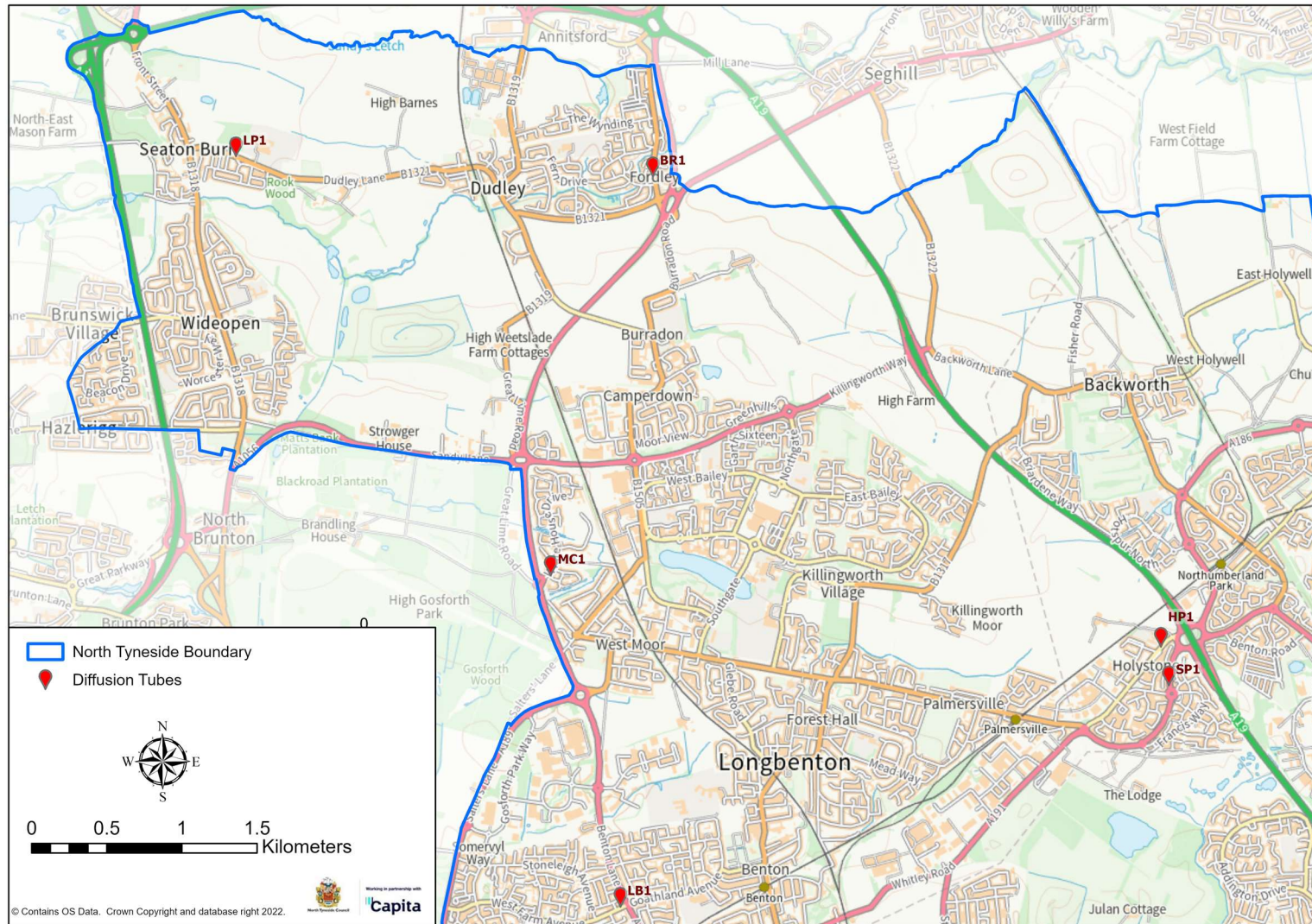




Figure D.3c – Map of Non-Automatic Monitoring Site (South East)

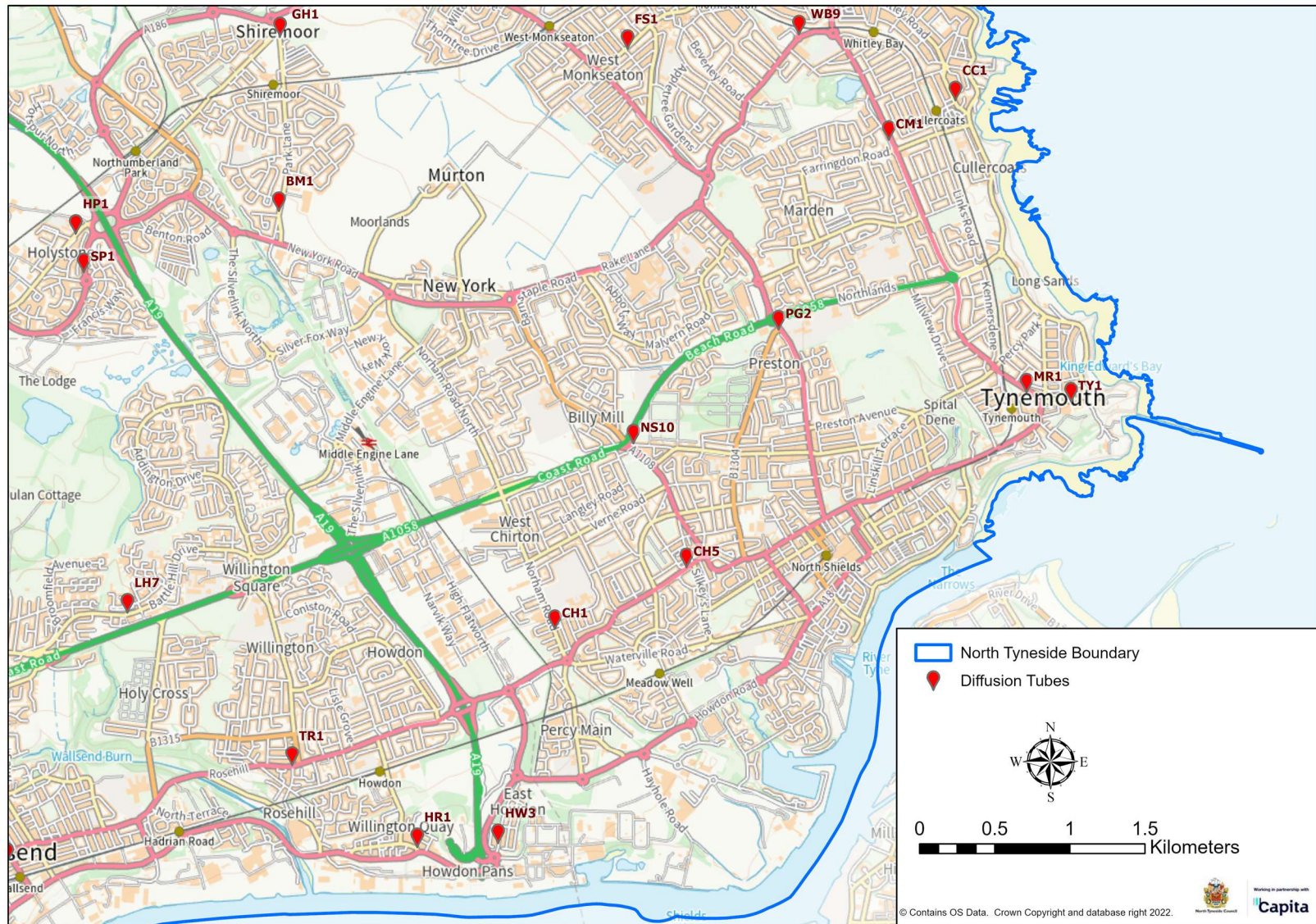
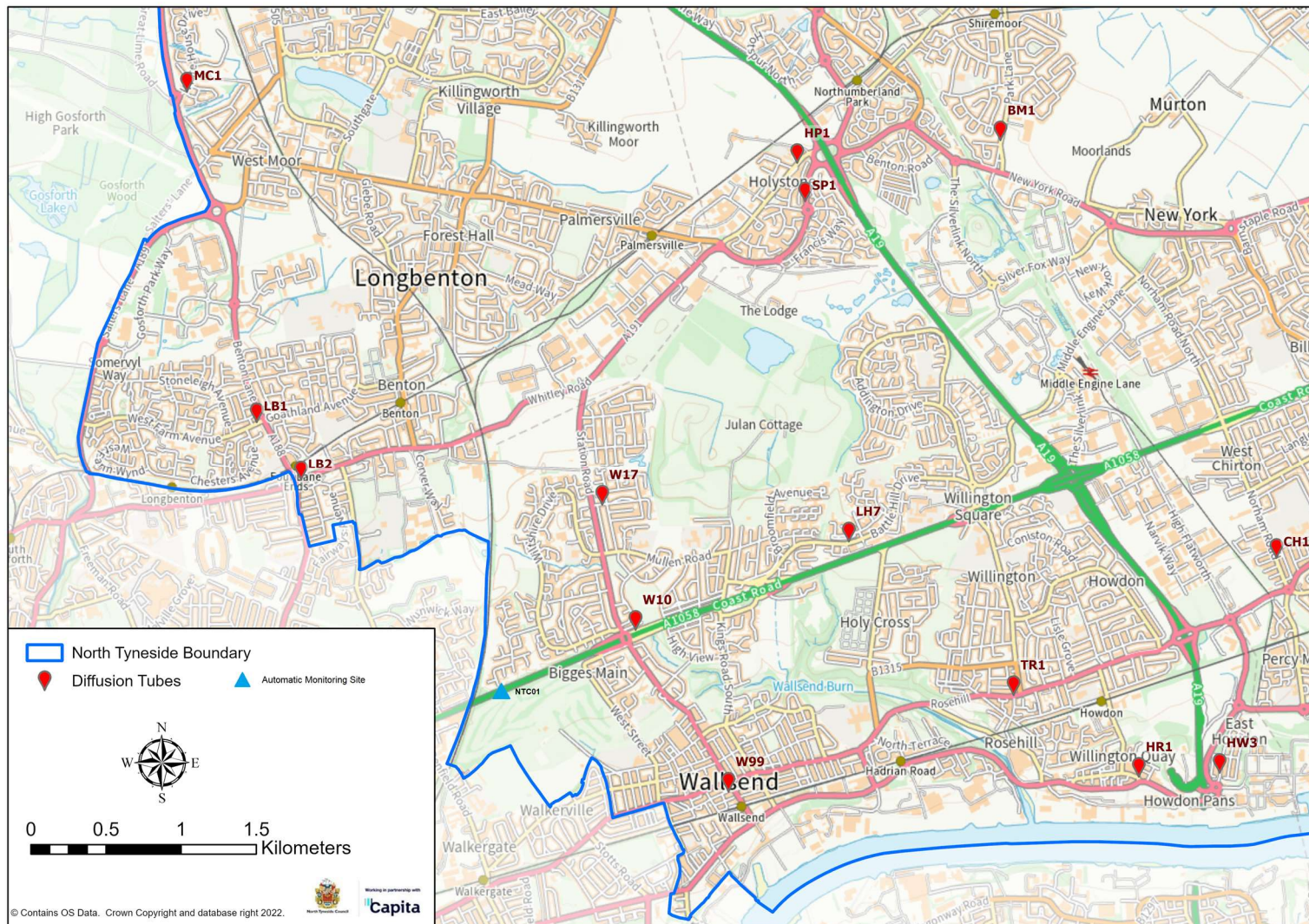


Figure D.4d – Map of Automatic and Non-Automatic Monitoring Site (South West)



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

Table E.1 – Air Quality Objectives in England<sup>7</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>7</sup> The units are in microgrammes of pollutant per cubic metre of air (µg/m<sup>3</sup>).

## Glossary of Terms

Abbreviation	Description
AQAP	Air Quality Action Plan - A detailed description of measures, outcomes, achievement dates and implementation methods, showing how the local authority intends to achieve air quality limit values'
AQMA	Air Quality Management Area – An area where air pollutant concentrations exceed / are likely to exceed the relevant air quality objectives. AQMAs are declared for specific pollutants and objectives
ASR	Annual Status Report
Defra	Department for Environment, Food and Rural Affairs
DMRB	Design Manual for Roads and Bridges – Air quality screening tool produced by National Highways
EU	European Union
FDMS	Filter Dynamics Measurement System
LAQM	Local Air Quality Management
NO <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.TG16. April 2021. 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.PG16. May 2016. Published by Defra in partnership with the Scottish Government, Welsh Assembly Government and Department of the Environment Northern Ireland.