Working in partnership with CAPITA

2018 Air Quality Annual Status Report (ASR)

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

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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 and older people, and those with heart and lung conditions. There is also often a strong correlation with equalities issues, because areas with poor air quality are also often the less affluent areas[1,2].

The annual health cost to society of the impacts of particulate matter alone in the UK is estimated to be around £16 billion[3].

North Tyneside has one area of concern within the borough for nitrogen dioxide exceedances. In 2017 DEFRA identified North Tyneside as one of the Local Authorities with a nitrogen dioxide exceedance. This NO2 kerbside exceedance area was for an area of 800 metres along the Coast Road A1058 at the boundary with Newcastle. Air Quality Modelling using traffic data indicated that this area is expected to be marginally above the annual objective level of NO_2 by 2020. A feasibility study is currently being carried out during 2018 to assess what measures are to be implemented to improve air quality in this locality. 5 new nitrogen dioxide passive diffusion tube monitoring points in the identified exceedance area were introduced in August 2017 to monitor nitrogen dioxide levels in the area..A real time monitoring station has been installed in the exceedance area. NO2 diffusion tube monitoring of the feasibility area is not reported in the 2017 report as there is less than 6 months data to allow ratification of data. The results will be reported in the next ASR to be submitted in June 2019.

Air quality monitoring carried out throughout the rest of the borough of North Tyneside has indicated good air quality. Road traffic emissions remain the main area of concern raised by the public during 2017. In response to air quality concerns, a

[1] Environmental equity, air quality, socioeconomic status and respiratory health, 2010
[2] Air quality and social deprivation in the UK: an environmental inequalities analysis, 2006
[3] Defra. Abatement cost guidance for valuing changes in air quality, May 2013

NO_2 diffusion tube was located to Battle Hill Drive in Wallsend to assess the extent of the pollutant levels. The main pollutants of concern within the borough of North Tyneside are nitrogen dioxide and particulate matter which are principally traffic related emissions.

The latest annual monitoring data for 2017 for nitrogen dioxide and particulates has indicated consistently low concentration levels year on year and are below the air quality objectives, with no requirement to declare any air quality management areas. There are no new major sources of nitrogen dioxide and particulate matter in the borough in 2017. North Tyneside Council will continue to monitor for Nitrogen dioxide using passive and real time monitoring, and particulates using the real time stations.

Actions to Improve Air Quality

North Tyneside Council's actions to improve air quality during 2017 have continued to focus on major road improvements to reduce traffic congestion and improve the flow of traffic through the borough. Such congestion schemes include the duelling of the A191 Holystone Way to improve traffic flows and the continuation of work on the A19/A1058 Coast Road at the Silverlink Roundabout. Another scheme to be implemented during 2018 includes transport infrastructure improvements to the A189 Salters Lane. This is one of the five main commuter routes for local and regional travel between key employment sites within North Tyneside and Newcastle.

North Tyneside Council is working in partnership with the North East Combined Authority (NECA) for strategic transport. The NECA provided support for an application for funding to retrofit buses operating along the Coast Road A1058. North Tyneside Council were successful with this bid and were awarded 1.2 million for the retrofitting of 69 buses operated by Arriva, Go North East and Stagecoach with Selective Catalytic Reduction (SCR) technology to meet the latest emission standards.

North Tyneside Council are encouraging and promoting alternative clean transport modes such as cycling to improve air quality. The authority continues to encourage 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.

Conclusions and Priorities

North Tyneside Council will undertake a feasibility study into the options to be taken forward for reducing the NO_2 exceedance area along the Coast Road. The feasibility study is to be completed during 2018 with measures implemented in 2019 to achieve compliance with the NO_2 annual objective level in the shortest possible time.

No other exceedances in nitrogen dioxide or particulate were identified within the rest of the borough and the Council will continue to have no requirement to declare an Air Quality Management Areas. The Council will aim to minimise emission of particulates through the provision of an Air Quality Strategy due to be adopted towards the end of 2018.

North Tyneside Council will continue to monitor emissions of nitrogen dioxide and particulates during 2018 utilising the real time continuous monitoring stations at Wallsend and East Howden, and the 26 passive nitrogen dioxide diffusion tube sites located at sensitive receptors and the 5 new locations positioned on the A1058 Coast Road to monitor NO_2 levels within the exceedance area.

North Tyneside Council will continue to work with local interest groups and local schools with a view to engaging the public on air quality issues.

Local Engagement and How to get Involved

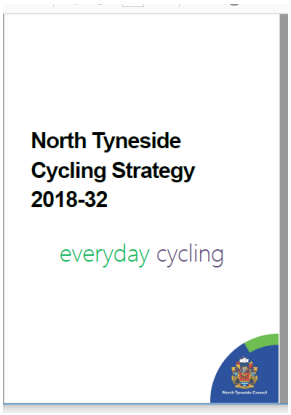
North Tyneside continues to engage with the public and other interested parties including The Whitley Bay Friends of the Earth . The air quality strategy to be adopted 2018/ 2019 will highlight air quality in decision making for all new developments and is incorporated into the Local plan.

Air quality issues are promoted on the Councils own 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 given.

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 Councils 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 Councils 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. Further information about cycle and bridleways can be found using the following links ; http://my.northtyneside.gov.uk/category/138/cycling for cycling and bridleway information.



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

Http://my.northtyneside.gov.uk/category/539/sustainability.

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

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1 Local Air Quality Management

This report provides an overview of air quality in North Tyneside during 2017. 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 Council to improve air quality and any progress that has been made.

The statutory air quality objectives applicable to LAQM in England can be found in Table E.1 in Appendix E.

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 must prepare an Air Quality Action Plan (AQAP) within 12-18 months setting out measures it intends to put in place in pursuit of compliance with the objectives.

North Tyneside currently does not have any AQMAs. The provision of an Air Quality Strategy is in progress and is anticipated to be introduced during 2018. For reference, a map of North Tyneside Council's monitoring locations is available in Appendix D.

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

Defra's appraisal of last year's ASR concluded that the report was well structured, detailed and provided the information specified in the Guidance. The following comments were made by Defra:

- The inclusion of a trend graph for measured PM10 concentrations would be useful.
- The development of KPI's to include in Table 2.1 (Progress on Measures to Improve Air Quality) in order to assess progress with measures to improve AQ would be useful.

The comments have been taken into consideration and a trend graph for PM_{10} has been included in this year's report. KPI's have not been included in Table 2.1 of this year's report but are being developed as part of the Air Quality Strategy and will be included upon adoption of the Strategy.

North Tyneside has taken forward a number of measures during the current reporting year of 2018 in pursuit of improving local air quality as part of local transport improvements. Details of all measures completed, in progress or planned are set out in Table 2.1. These measures all relate to 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.

The provision of an Air Quality Strategy is in progress and is anticipated to be introduced 2018/ 2019. The strategy will focus on measures to address air quality improvements within the Borough including measures that will mitigate $PM_{2.5}$ impacts.

The Local Plan was adopted during 2017. This plan provides an important tool to help the Council protect open spaces and the Boroughs attractive environment and character. The Local Plan is there to assist developers to ensure future development needs are met in accordance to the plan. The Local Plan directs developers to the

Air Quality Strategy to ensure development proposals are not detrimental to air quality in the borough and that where there may be detrimental impacts, an air quality assessment must be provided as part of the application and the policy guidance provides details on mitigation measures that can be incorporated into the new build.

North Tyneside Council expects the following measures to be completed over the course of the next reporting year:

- Feasibility work for NO2 exceedance area.
- Adoption of the Councils Air Quality Strategy.
- Implementation of the promotional air quality work within local schools.
- Completion of transport management schemes for Salters Lane A189 Infrastructure improvement works. This will involve the provision of off-road cycle ways and introduction of full time traffic signals to include bus prioritisation and control crossings for pedestrians and cyclists. The scheme is also designed to reduce traffic congestion and improve cycle routes to promote alternative means of transport to key employment sites within North Tyneside and Newcastle.

Table 2.1 – Progress on Measures to Improve Air Quality

Measure No.	Measure	EU Category	EU Classification	Organisations involved and Funding Source	Planning Phase	Implementation Phase	Key Performance Indicator	Reduction in Pollutant / Emission from Measure	Progress to Date	Estimated / Actual Completion Date	Comments / Barriers to implementation
1	Cobalt Car Share Scheme	Alternatives to private vehicle use	Car & lift sharing schemes	Cobalt Travel Team	N/A	2015	N/A	N/A	Ongoing		NA
2	Cycle Strategy	Promoting travel Alternatives	Promotion of Cycling	North Tyneside Council	N/A	N/A	NA	NA	ongoing		NA
3	Salters Lane A189 Improvement Scheme	Traffic Management	Strategic highway improvements, Re-prioritising road space away from cars, including Access management, Selective vehicle priority, bus priority, high vehicle occupancy lane	North Tyneside Council	N/A	N/A	N/A	N/A	2018	2019	NA
4	Coast Road Cycle Route Cobalt Cycle Route A19 NMU Crossing Feasibility Study	Transport Planning and Infrastructure	Cycle Network	North Tyneside Council	N/A	N/A	N/A	N/A	Ongoing		NA
5	Retrofitting of buses with SCRT	Vehicle and Fleet Efficiency	Vehicle Retrofitting Programme	North Tyneside Council/Bus Operators	2017	2018	NA	NO2/Particulates	2018	2019	NA
6	Compliance Charge for Part B processes	Environmental Permits	increase of environment charges through permit systems and economic instruments	North Tyneside Council	N/A	N/A	N/A	N/A	Ongoing		NA

2.3 $PM_{2.5}$ – 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 $PM_{2.5}$ (particulate matter with an aerodynamic diameter of 2.5µm or less). There is clear evidence that $PM_{2.5}$ has a significant impact on human health, including premature mortality, allergic reactions, and cardiovascular diseases.

North Tyneside Council is taking the following measures to address $PM_{2.5}$:

North Tyneside Council will maintain its financial commitment to monitor air quality for particulates and nitrogen dioxide. There has been no exceedance of the annual mean objective for fine particulates of 10 µm at the real time monitoring locations. It is North Tyneside Councils aim to reduce particulate levels in the borough. Monitoring of the key pollutants will continue to enable the identification of the long term pollution trends to aid in the assessment of the Councils action plan performance.

North Tyneside Council aims to adopt an Air Quality Strategy to address the measures taken to reducing $PM_{2.5}$ in the borough. This strategy will be initiated and progressed through the use of 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 will detail the actions necessary to help improve and promote air quality and thereby have the overall benefit of contributing to reducing $PM_{2.5}$.

It is considered that North Tyneside Council is taking the following measures to address $PM_{2.5}$ by:

- Use of an Air Quality steering group to prioritise actions and measures to tackle PM2.5. The membership consists of all relevant partners including transport planners, public health team, planning, climate change team and environmental health. Other relevant partners will be encouraged to attend including the North East Combined Authority that is responsible for strategic transport across all seven local authority areas in the North East.
- Adoption of the Air Quality Strategy in 2018 that will include for the air quality actions and measures, for example:
    - Traffic management measures such as introduction of bus lanes, cycle lanes, traffic light sequencing measures to ensure traffic runs smoothly.
    - 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.
    - Reduce emissions from road transport; this includes encouraging alternatives to the car, reducing emissions from vehicles on the road and encouraging the uptake of alternative 'low emission' vehicles. Other measures to consider include the introduction of electric charging points, parking charges, reducing of engines idling etc.
    - Promotion of alternative modes of travel e.g. public transport, cycling initiatives, car sharing schemes, introduction of green travel plans. A draft cycling strategy was prepared in 2017 and adopted in 2018 to promote 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 will continue to provide information to residents on air pollution, promote advice to the public on doing their bit for the environment, and health issues by maintaining an up to date webpage. Local residents will be encouraged to compost garden waste rather than burn it in bonfires.

- North Tyneside Council is to adopt an Air Quality Strategy in 2018 / 2019. The Strategy will incorporate actions to address air quality improvements. It will reference to other relevant policies that influence air quality improvements such as the Local Transport Plan and the Climate Change Strategy.
- Consider the application of the Tyne and Wear Air Quality Strategy for regional wide improvements.
- North Tyneside Council has 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 to be retrofitted with SCR technology operate along the Coast Road A1058 and are those that operate within the 800m NO2 exceedance area.
- Promote 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 during lighting up when kindling may be used and to direct residents via the councils 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 permitted air pollution industrial process . Planned inspections to ensure the compliance with the permitted processes will be carried out in accordance with DEFRA guidance on the risk based inspection. The regulation of processes will ensure that emissions from small industrial processes (Part B 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

3.1 Summary of Monitoring Undertaken

3.1.1 Automatic Monitoring Sites

This section sets out what monitoring has taken place and how it compares with objectives.

North Tyneside Council undertook automatic (continuous) monitoring at 2 sites during 2017. Table A.1 in Appendix A shows the details of the sites.

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

North Tyneside Council undertook non- automatic (passive) monitoring of NO_2 at 26 sites during 2018, Table A.2 in Appendix A shows the details of the sites.

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

3.2 Individual Pollutants

The air quality monitoring results presented in this section are, where relevant, adjusted for bias, “annualisation” and distance correction. Further details on adjustments are provided in Appendix C.

3.2.1 Nitrogen Dioxide (NO_2)

Table A.3 in Appendix A compares the ratified and adjusted monitored NO_2 annual mean concentrations for the past 5 years with the air quality objective of 40µg/m^3.

For diffusion tubes, the full 2017 dataset of monthly mean values is provided in Appendix B.

Table A.4 in Appendix A compares the ratified continuous monitored NO_2 hourly mean concentrations for the past 5 years with the air quality objective of 200µg/m^3, not to be exceeded more than 18 times per year.

The annual mean real time monitoring NO_2 results of Table A.3 indicates minor fluctuations in concentration with a slight decrease in 2017 compared with 2016. Year on year concentrations only show slight variations in the annual mean concentrations with none of the sites exceeding the annual mean objective of 40 µg/m^3. The short term 1 hour mean concentrations for NO_2 at both real time monitoring sites as shown in Table A.4 have consistently monitored levels below the objective of 200µg/m^3 for the last five years.

The annual mean values derived from the 26 passive diffusion tube monitoring sites show no exceedance of the annual mean objective. Comparison between 2013 and 2017 of the results shows no trends in decreasing levels of nitrogen dioxide. The long term trend chart in Figure A.1 shows a decrease in concentrations for one of the long term sites but an increase in 2017 at the other 4 sites. However, there is no likelihood of an exceedance of one hour mean, which may occur if the annual mean exceeded 60µg/m^3.

It is concluded that the NO_2 monitoring results show consistent results well below the NO_2 objective and are showing no deterioration in air quality. NO_2 levels have been consistent with no indication that the annual and 1 hour mean objectives are likely to be breached and therefore there is no requirement to proceed to declare an air quality management area.

3.2.2 Particulate Matter (PM_{10})

Table A.5 in Appendix A compares the ratified and adjusted monitored PM_{10} annual mean concentrations for the past 5 years with the air quality objective of 40µg/m^3.

Table A.6 in Appendix A compares the ratified continuous monitored PM_{10} daily mean concentrations for the past 5 years with the air quality objective of 50µg/m^3, not to be exceeded more than 35 times per year.

Table A.6 of 24 mean PM_{10} results indicate that there has been 1 exceedance of the 24 hour mean objective at the Northumbrian Water, East Howdon site and also 1 exceedance at the Fixed Wallsend site. However 35 exceedances are permitted over a year and all stations meet the overall objective. The exeedances at both stations

occurred on the same day, which was the 1st May 2017. The PM_{10} 1 hourly concentrations on the 30th April were also elevated but did not breach the 24 hour mean objective. Historically, the East Howdon location has experienced occasional exceedances of the 24 hour mean objective, although the results show improvements on 2015, when there were 6 exceedances of the 24 hour mean objective. It is believed that this may have been influenced by the completion of the construction works at the Northumbrian Water site. This monitoring location is also in close proximity to a Part A bio-digesting plant and a Part B cement batching plant. The Howdon site is influenced by dusts from the external storage compounds at the adjacent cement batching plant. However, the numbers of exceedances of the 24 hour mean objective annually is still well below the 35 exceedances that are permitted. There is no indication that the continuous monitoring sites at Wallsend and East Howdon will exceed the annual mean objective and therefore no requirement to proceed to declare any air quality management areas.

Appendix A: Monitoring Results

Table A.1 – Details of Automatic Monitoring Sites

Site ID	Site Name	Site Type	X OS Grid Ref	Y OS Grid Ref	Pollutants Monitored	In AQMA?	Monitoring Technique	Distance to Relevant Exposure (m) (1)	Distance to kerb of nearest road (m) (2)	Inlet Height (m)
Fixed	High Street East, Wallsend	Roadside	430222	566476	NO2, PM10	NO	Eberline	4	2	2
NTMobile 1	Northumbrian Water, East Howdon	Industrial	433289	566313	NO2, PM10	NO	Eberline	NA	NA	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

Site ID	Site Name	Site Type	X OS Grid Ref	Y OS Grid Ref	Pollutants Monitored	In AQMA?	Distance to Relevant Exposure (m) (1)	Distance to kerb of nearest road (m) (2)	Tube collocated with a Continuous Analyser?	Height (m)
BM1	Park Lane, Shiremoor	Roadside	413743	570649	NO2	NO	5	1	NO	3
BP1	Balliol Primary School	Urban Background	426865	568591	NO2	NO	2	40	NO	3
CH1	Norham Road/Rothbury Terrace	Kerbside	433580	567865	NO2	NO	N/A	N/A	NO	3
CH3	West Side, Norham Road/Formica, Chirton	Roadside	433097	569066	NO2		2	2	NO	3
CH5	Front Street, Chirton	Kerbside	434461	568278	NO2	NO	1	1	NO	3
FA1	Firetrees Avenue, Wallsend	Kerbside	432876	567249	NO2	NO	6	1	NO	3
FH3	Glebe road/Great Lime Road	Kerbside	427529	570379	NO2	NO	10	2	NO	3
FH4	Station Road, Forest Hall	Roadside	427756	569387	NO2	NO	0	5	NO	3
FR1	Farringdon Road, Whitley Bay	Kerbside	435671	571019	NO2	NO	5	1	NO	3
FS1	Front Street, Monkseaton	Kerbside	434064	571727	NO2	NO	4	1	NO	3
HR1	Bewicke road, Willington Quay	Roadside	432664	566413	NO2	NO	5	1	NO	3
HR2	Point Pleasant Terrace,	Roadside	431445	566574	NO2	NO	1	1	NO	3

	Wallsend									
HW3	Meldon Street, East Howdon	Suburban	433194	566418	NO2	NO	2	1	NO	3
LB1	West Farm Avenue/Benton Road, Longbenton	Kerbside	426813	568778	NO2	NO	6	1	NO	3
LB2	Front Street/Benton road, Longbenton	Roadside	427071	568375	NO2	NO	2	2	NO	3
LH7	Battlehill Drive, Wallsend	Kerbside	430714	567967	NO2	NO	4	1	NO	3
NS10	Queen Alexandra Road, North Shields	Roadside	434096	569100	NO2	NO	3	1	NO	3
NW1	Northumberland Dock Road, East Howdon	Industrial	433289	566313	NO2	NO	N/A	15	YES	3
NW2	Northumberland Dock Road, East Howdon	Industrial	433289	566313	NO2	NO	N/A	15	YES	3
NW3	Northumberland Dock Road, East Howdon	Industrial	433289	566313	NO2	NO	N/A	15	YES	3
PG2	North Road/Preston Road, Preston Grange	Roadside	435069	569861	NO2	NO	10	1	NO	3
SP1	Holystone Way, Holystone	Roadside	430444	570242	NO2	NO	10	2	NO	3
TR1	Tynemouth Road, Rosehill	Kerbside	431854	566961	NO2	NO	3	1	NO	3
TY1	Front Street, Tynemouth	Kerbside	437016	569377	NO2	NO	2	1	NO	3

W10	Coast Road, Wallsend	Roadside	429316	567391	NO2	NO	3	2	NO	3
W12	Kings Road North/Coast Road	Roadside	429262	567378	NO2	NO	1	2	NO	3
W15	Station Road, Wallsend	Roadside	429750	566600	NO2	NO	3	1	NO	3
W17	Hotspur Road, Wallsend	Roadside	429663	568223	NO2	NO	5	1	NO	3
WB9	Morrisons Petrol Station, Whitley Bay	Industrial	435205	571823	NO2	NO	N/A	2	NO	3
WB18	Grosvenor Drive, Whitley Bay	Kerbside	435390	571977	NO2	NO	4	N/A	NO	3
WB20	Grosvenor Drive/Norham Road, Whitley Bay	Kerbside	434955	572041	NO2	NO	5	1	NO	3

Notes:

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

(2) N/A if not applicable.

Table A.3 – Annual Mean NO_2 Monitoring Results

Site ID	Site Type	Monitoring Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2017 (%) (2)	NO_2 Annual Mean Concentration ($\mu g/m^3$) (3)				
					2013	2014	2015	2016	2017
Fixed	Roadside	Automatic	86.7	86.7	22.17	19.35	19.45	24.02	20.1
NT Mobile	Industrial	Automatic	98.9	98.9	20.05	18.5	18.93	22.9	17.7
BM1	Roadside	Diffusion Tube	83	83	22.3	24.7	19.95	26.51	24.16
BP1	Urban Background	Diffusion Tube	83	83	NA	NA	NA	NA	15.99
CH1	Kerbside	Diffusion Tube	92	92	32.6	32.3	28.95	25.6	24.87
CH3	Roadside	Diffusion Tube	92	92	21.7	25.8	20.52	33.24	22.89
CH5	Kerbside	Diffusion Tube	92	92	NA	NA	21.19	27.84	26.99
FA1	Kerbside	Diffusion Tube	92	92	NA	25.6	22.61	30.88	27.62
FR1	Kerbside	Diffusion Tube	83	83	NA	21.4	19.69	21.46	19.93
FS1	Kerbside	Diffusion Tube	83	83	23.9	26.1	21.29	23.49	21.85
HR1	Roadside	Diffusion Tube	92	92	NA	25.2	20.34	22.12	26.26
HR2	Roadside	Diffusion Tube	92	92	NA	25.7	18.14	21.9	23.88
HW3	Suburban	Diffusion Tube	92	92	24.9	25.7	18.14	24.22	21.29
LB1	Urban Centre	Diffusion Tube	92	92	NA	NA	NA	NA	31.86
LB2	Roadside	Diffusion Tube	92	92	NA	NA	NA	NA	35.09

Site ID	Site Type	Monitoring Type	Valid Data Capture for Monitoring Period (%) [1]	Valid Data Capture 2017 (%) [2]	NO_2 Annual Mean Concentration ($\mu g/m^3$) [3]				
					2013	2014	2015	2016	2017
LH7	Kerbside	Diffusion Tube	92	92	NA	NA	NA	NA	26.19
NS10	Roadside	Diffusion Tube	92	92	27.5	31.8	27.09	28.68	29.58
NW1	Industrial	Diffusion Tube	92	92	19.7	22.6	19.3	20.89	20.3
NW2	Industrial	Diffusion Tube	92	92	20.5	23.9	18.15	21.73	20.05
NW3	Industrial	Diffusion Tube	92	92	21	21.9	18.89	23.11	22.88
PG2	Roadside	Diffusion Tube	92	92	21.9	23.7	32.2	34.22	29.14
SP1	Roadside	Diffusion Tube	83	83	27	31.2	25.64	27.52	27.38
TR1	Kerbside	Diffusion Tube	92	92	36.3	34	29.61	33.9	27.17
TY1	Kerbside	Diffusion Tube	83	83	NA	NA	24.34	28.89	30.68
W10	Roadside	Diffusion Tube	92	92	34.5	34.6	30.76	32.24	27.11
W12	Roadside	Diffusion Tube	92	92	32.2	32.3	28.42	26.57	26.52
W15	Roadside	Diffusion Tube	83	83	28.4	28.5	24.84	23.23	23.26
W17	Roadside	Diffusion Tube	92	92	NA	21.5	19.3	29.5	24.12
WB9	Industrial	Diffusion Tube	83	83	23.8	27.9	22.74	25.28	21.69
WB18	Kerbside	Diffusion Tube	83	83	17.8	19.8	17.27	19.95	18.14
WB20	Kerbside	Diffusion Tube	83	83	NA	NA	NA	NA	16.74

- ✓ **Diffusion tube data has been bias corrected**
- ✓ **Annualisation has been conducted where data capture is <75%**

Notes:

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

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

(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%).

(3) Means for diffusion tubes have been corrected for bias. All means have been "annualised" as per Boxes 7.9 and 7.10 in LAQM.TG16 if valid data capture for the full calendar year is less than 75%. See Appendix C for details.

Figure A.1 – Trends in Annual Mean NO_2 Concentrations

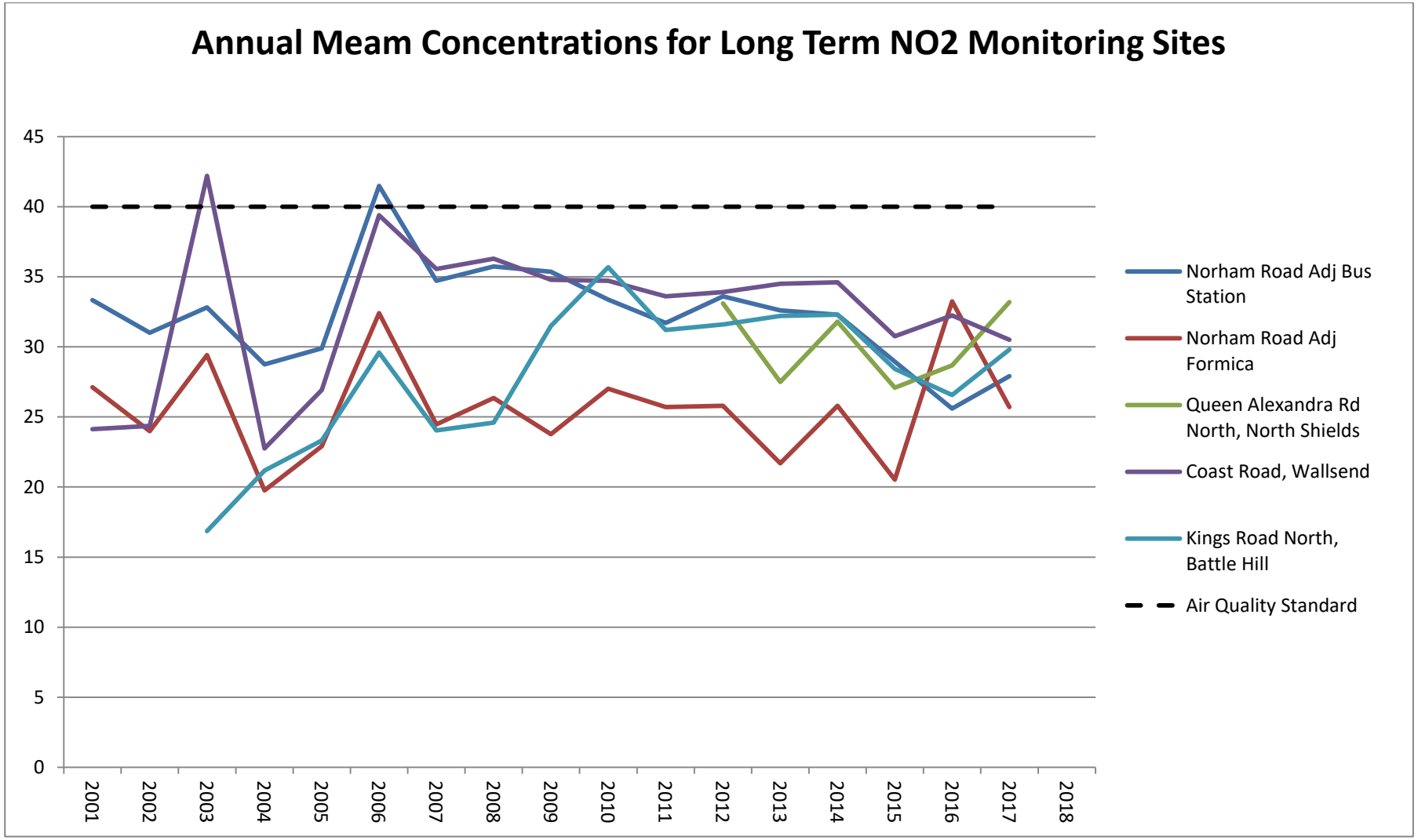


Table A.4 – 1-Hour Mean NO_2 Monitoring Results

Site ID	Site Type	Monitoring Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2017 (%) (2)	NO_2 1-Hour Means > 200µg/m^3 (3)				
					2013	2014	2015	2016	2017
Fixed	Roadside	Automatic	86.7	86.7	0	0	0	**0 (126.9)**	0
NTMobile 1	Industrial	Automatic	98.9	98.9	0	0	0	**0 (139.1)**	0

Notes:

Exceedances of the NO_2 1-hour mean objective (200µg/m^3 not to be exceeded more than 18 times/year) are shown in **bold.**

(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%).

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

Table A.5 – Annual Mean PM_{10} Monitoring Results

Site ID	Site Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2017 (%) (2)	PM_{10} Annual Mean Concentration ($\mu g/m^3$) (3)				
				2013	2014	2015	2016	2017
Fixed	Roadside	75.07	75.07	16.8	15.7	17.72	18.34	18.88
NTMobile 1	Industrial	89.1	89.1	17.8	13.6	18.29	18.83	17.78

✓ **Annualisation has been conducted where data capture is <75%**

Notes:

Exceedances of the PM_{10} annual mean objective of 40$\mu g/m^3$ are shown in **bold.**

(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%).

(3) All means have been "annualised" as per Boxes 7.9 and 7.10 in LAQM.TG16, valid data capture for the full calendar year is less than 75%. See Appendix C for details.

Figure A.2 – Trends in Annual Mean PM_{10} Concentrations

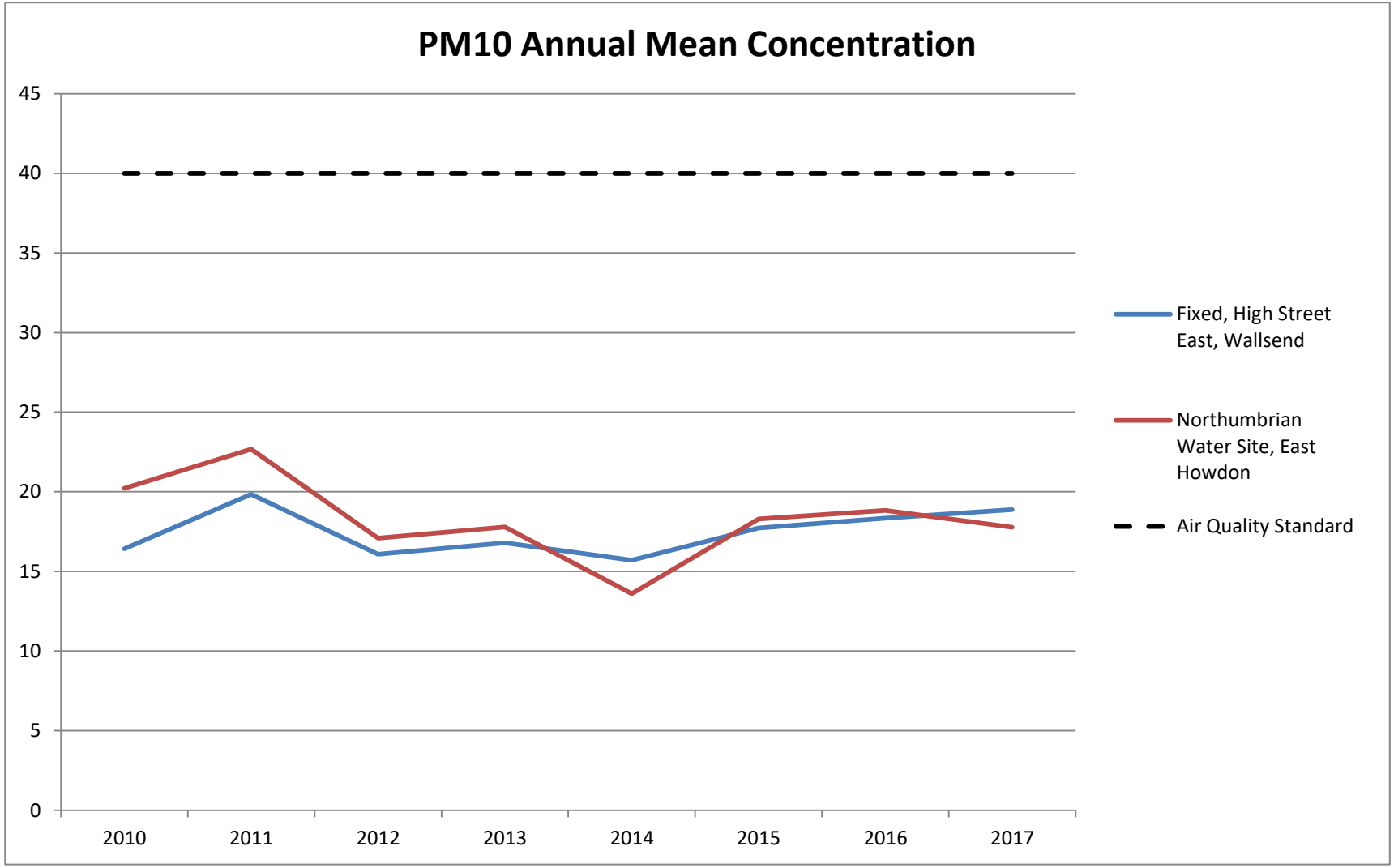


Table A.6 – 24-Hour Mean PM_{10} Monitoring Results

Site ID	Site Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2017 (%) (2)	PM_{10} 24-Hour Means > 50µg/m^3 (3)				
				2013	2014	2015	2016	2017
Fixed	Roadside	90.9	90.9	**1**	0	**3 (24.4)**	**0 (23.82)**	**1**
NTMobile 1	Industrial	94.5	94.5	**3**	**3**	**6**	**1**	**1**

Notes:

Exceedances of the PM_{10} 24-hour mean objective (50µg/m^3 not to be exceeded more than 35 times/year) are shown in **bold.**

(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%).

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

Appendix B: Full Monthly Diffusion Tube Results for 2017

Table B.1 – NO_2 Monthly Diffusion Tube Results - 2017

Site ID	NO_2 Mean Concentrations (µg/m^3)														
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean		
													Raw Data	Bias Adjusted (0.89) and Annualised (1)	Distance Corrected to Nearest Exposure (2)
BM1	NA	36	37.56	18.77	37.56	NA	16.52	20.91	23.62	20.79	27.69	32.05	27.2	24.2	24.2
BP1	NA	26.41	26.81	9.67	26.81	15.94	11.22	15.78	18.26	13.85	14.89	NA	18.0	16.0	16.0
CH1	NA	30.79	30.45	29.51	30.45	24.33	27.39	24.03	26.5	25.9	30.15	27.89	27.9	24.9	24.9
CH3	NA	30.72	37.23	19.95	37.23	25.4	14.29	15.96	18.08	20.09	32.67	31.28	25.7	22.9	22.9
CH5	NA	31.41	36.78	24.53	36.78	37.02	24.15	25.49	28.26	27.29	23.49	38.41	30.3	27.0	27.0
FA1	NA	29.61	32.71	36.72	32.71	30.96	18.31	18.09	23.13	32.4	43.85	42.88	31.0	27.6	27.6
FR1	NA	22.83	28.72	16.1	28.72	NA	14.31	15.52	18.46	19.78	33.05	26.5	22.4	19.9	19.9
FS1	NA	26.63	32.34	17.56	32.34	NA	19.62	13.48	20.74	21.95	28.91	31.95	24.6	21.9	21.9
HR1	NA	38.18	40.52	18.45	40.52	19.03	29.34	25.47	32.01	20.83	28.4	31.84	29.5	26.3	26.3
HR2	NA	25.31	29.5	27.08	29.5	21.86	19.8	19.77	23.6	24.5	35.81	37.82	26.8	23.8	23.8
HW3	NA	26.29	26.88	20.9	26.88	16.38	18.93	22.33	24.45	21.19	29.92	28.99	23.9	21.3	21.3
LB1	NA	34.7	46.39	28.85	46.39	28.23	29.69	32.17	33.63	32.94	42.1	38.64	35.8	31.9	31.9
LB2	NA	48.57	42.5	30.63	42.5	33.36	34.06	35.21	36.85	34.14	48.29	47.64	39.4	35.1	35.1
LH7	NA	44.62	47.49	19.77	47.49	22.34	21.78	20.51	22.16	23.15	28.05	26.36	29.4	26.2	26.2
NS10	NA	40.99	51.29	20.26	51.29	24.27	20.74	24.66	27.61	29.61	38.37	36.45	33.2	29.6	29.6

	NO_2 Mean Concentrations (µg/m^3)												Annual Mean		
Site ID	Jan	Feb	Mar	April	May	June	July	Aug	Sept	Oct	Nov	Dec	Raw Data	**Bias Adjusted (0,.89) and Annualised (1)**	**Distance Corrected to Nearest Exposure (2)**
NW1	NA	26.34	25.58	19.31	25.58	17.1	14.9	15.67	21.8	20.07	35.32	29.22	22.8	20.3	20.3
NW2	NA	24.11	27.33	17.29	27.33	26.04	14.42	14.67	21.13	19.47	28.91	27.17	22.5	20.1	20.1
NW3	NA	40.58	42.62	20.84	42.62	16.31	14	15.21	18.8	17.69	26.28	27.89	25.7	22.9	22.9
PG2	NA	33.86	36.89	44.39	36.89	14.75	28.24	24.74	27.82	30.59	39.7	42.26	32.7	29.1	29.1
SP1	NA	38.59	40.03	24.27	40.03	NA	25.88	26.57	29.4	23.59	29.48	29.84	30.8	27.4	27.4
TR1	NA	41.74	43.22	20.86	43.22	18.46	28.36	27.14	36.3	21.69	25.99	28.86	30.5	27.2	27.2
TY1	NA	43.87	52.94	27.43	52.94	NA	20.96	21.84	21.68	25.67	43.14	34.28	34.5	30.7	30.7
W10	NA	34.74	33.36	30.84	33.36	28.9	27.06	20.17	24.02	27.07	36.86	38.74	30.5	27.1	27.1
W12	NA	33.19	33.5	24.95	33.5	21.3	26.29	30.27	31.22	28.55	32.17	32.86	29.8	26.5	26.5
W15	NA	33.19	33.5	20.86	27.12	26.1	NA	20.17	24.02	21.69	25.99	26.86	26.1	23.3	23.3
W17	NA	38.31	39.56	16.51	39.56	25.11	13.76	27.08	25.38	19.72	24.21	28.84	27.1	24.1	24.1
WB9	NA	30.49	32.03	21.35	32.03	NA	18.98	18.91	11.25	16.52	29.4	32.75	24.4	21.7	21.7
WB18	NA	23.29	25.54	14.41	25.54	NA	13.94	14.67	15.6	2053	25.77	24.59	20.4	18.1	18.1
WB20	NA	22.26	25.98	15.1	25.98	NA	13.97	12.84	15.47	8.31	21.8	26.35	18.8	16.7	16.7

✓ **National bias adjustment factor used**

✓ **Annualisation has been conducted where data capture is <75%**

✓ **Where applicable, data has been distance corrected for relevant exposure**

Notes:

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

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

(1) See Appendix C for details on bias adjustment and annualisation.

(2) Distance corrected to nearest relevant public exposure.

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

Significant Changes to Sources

Five new NO2 monitoring locations were established within the Borough of North Tyneside, with five of the existing sites discontinued, this was to ensure the locations of all monitoring sites are representative of exposure within the borough. Two real time monitoring location were supported during 2017, with the real time monitoring site at Sandy Lane, Wide Open decommissioned in June 2016. It is considered that the background levels of NO_2 and PM_{10} have been consistently very low and there is no indication that background levels will increase in future years to warrant continuing with real time monitoring in this location.

QA/QC Data

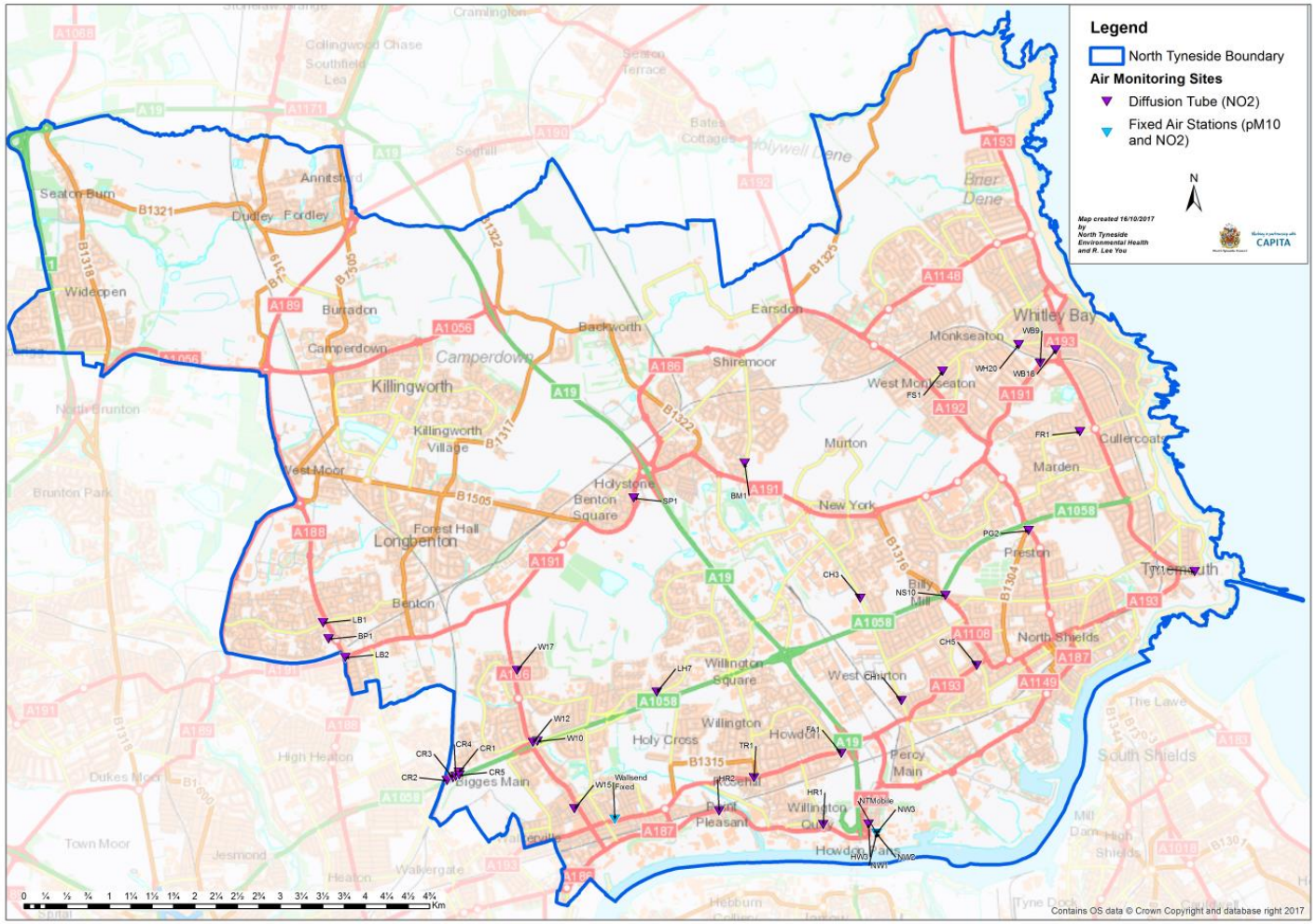
Automatic Sites:

North Tyneside Council carries out routine manual calibrations on a fortnightly basis and also undertakes the ratification of the data. Invalid data are removed from the data set; such as spurious results that indicate possible equipment malfunction. The supplier Horiba carries out maintenance and independent calibration on the equipment every six months. PM_{10} data is monitored using Eberline analysers which consists of a Beta monitor. A correction factor of 1.3 is applied.

Non-Automatic Sites

North Tyneside Council has one co-location study site at the Northumbrian Water, East Howdon site. The co-location site has not been used for the precision and accuracy of the diffusion tube monitoring data due to the low data capture rate at this monitoring location. North Tyneside Council has therefore reviewed the national bias adjustment figures for the laboratory it contracts to supply and analyse the results. The supplier is Gradko. The bias adjustment factor for the supplier for 2017 is 0.89, based on 20% triethanolamine (TEA) in water and is calculated from 34 studies. The version of the spreadsheet number is 03/18.

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



Appendix E: Summary of Air Quality Objectives in England

Table E.1 – Air Quality Objectives in England

Pollutant	Air Quality Objective[4]	
	Concentration	Measured as
Nitrogen Dioxide (NO_2)	200 µg/m^3 not to be exceeded more than 18 times a year	1-hour mean
	40 µg/m^3	Annual mean
Particulate Matter (PM_{10})	50 µg/m^3, not to be exceeded more than 35 times a year	24-hour mean
	40 µg/m^3	Annual mean
Sulphur Dioxide (SO_2)	350 µg/m^3, not to be exceeded more than 24 times a year	1-hour mean
	125 µg/m^3, not to be exceeded more than 3 times a year	24-hour mean
	266 µg/m^3, not to be exceeded more than 35 times a year	15-minute mean

[4] The units are in microgrammes of pollutant per cubic metre of air (µg/m^3).

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	Air quality Annual Status Report
Defra	Department for Environment, Food and Rural Affairs
DMRB	Design Manual for Roads and Bridges – Air quality screening tool produced by Highways England
EU	European Union
FDMS	Filter Dynamics Measurement System
LAQM	Local Air Quality Management
NO_2	Nitrogen Dioxide
NO_x	Nitrogen Oxides
PM_{10}	Airborne particulate matter with an aerodynamic diameter of 10µm (micrometres or microns) or less
$PM_{2.5}$	Airborne particulate matter with an aerodynamic diameter of 2.5µm or less
QA/QC	Quality Assurance and Quality Control
SO_2	Sulphur Dioxide

References

Department for Environment food and Rural Affairs, Local Air Quality Management Technical Guidance (TG16), April 2016.

North Tyneside Cycle Strategy 2018-2032, NTC website:

https://my.northtyneside.gov.uk/sites/default/files/web-page-related-files/North%20Tyneside%20Cycling%20Strategy.pdf

LAQM Support Website:

https://laqm.defra.gov.uk/review-and-assessment/report-templates.html