South Tyneside Council

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2022 Air Quality Annual Status Report (ASR)

In fulfilment of Part IV of the Environment Act 1995

Local Air Quality Management

Date: June, 2022

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Executive Summary: Air Quality in Our Area

Air Quality in South Tyneside Council

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, older population, 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[1,2].

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

South Tyneside Council adopts a collaborative, corporate-wide approach to air quality led by its Environment Services Team. Within Environment Services, the Environmental Health Unit is responsible for overseeing local air quality management, including air quality monitoring and reporting results to the Department of Environment, Food and Rural Affairs (Defra). Close working relationships with transport, public health and spatial planning colleagues are important to improve air quality as a consequence of transport and public health initiatives and also through routine planning applications that may impact upon air quality.

There are several principal air pollutants produced by industrial, domestic and traffic sources they include: sulphur dioxide; nitrogen oxide/ nitrogen dioxide (NO_2); PM_{10} and $PM_{2.5}$; ozone and volatile organic compounds; toxic organic micro pollutants; 1-3 butadiene; benzene; carbon monoxide; lead and heavy metals.

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[1] Public Health England. Air Quality: A Briefing for Directors of Public Health, 2017

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

[3] Defra. Air quality appraisal: damage cost guidance, July 2021

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

Historically, the main air pollutants have been high levels of smoke and sulphur dioxide emitted by combustion of sulphur containing fossil fuels i.e. coal, however currently the main air pollutant threat occurs from traffic emissions.

Nitrogen Dioxide (NO_2) and Nitric Oxide (NO) are both oxides of nitrogen, and are collectively referred to as nitrogen oxides (NOx). All combustion processes produce NOx emissions, largely in the form of nitric oxides, which is then converted to nitrogen dioxide (NO_2). Nitric oxide (NO) is mainly derived from road transport emissions and other combustion processes such as the electricity supply industry.

The principal source of Nitrogen Dioxide is road transport; combustion processes such as power generation and industrial processes also provide a significant contribution. The main contribution within South Tyneside is from road traffic.

South Tyneside Council ceased monitoring Sulphur Dioxide due to continued compliance during previous rounds of review and assessment.

Together, Environmental Health, Infrastructure and Transport, Sustainability and Public Health colleagues are striving to reduce pollutant levels throughout the Borough even further to improve air quality and the health and wellbeing of residents. Various initiatives are discussed within this report and further information can be found in the links provided.

We shall continue to undertake continuous and non-continuous monitoring; all monitoring results can be found within Appendix A.

Air quality is everyone's business and there are various ways that residents and businesses can improve local air quality.

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[5] sets out the case for action, with goals even more ambitious than EU requirements to reduce exposure to harmful pollutants. The Road to Zero[6] 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.

The Council has completed a number of significant strategic transport improvements to improve air quality, reduce congestion and promote public transport in recent years:

- Significant improvements along the A185, A194 and A19;
- Air Quality Grant Funding to improve junctions and active travel corridors
- Transforming Cities Investment Tranche 1 delivering: -
    - A19 Cycle Scheme
    - Follingsby Lane Carriageway Improvements
    - A185 Strategic Transport Corridor

The delivery of these strategic transport priorities has been resultant from positive relationships with external funding providers such as the Department for Transport, National Highways, Department for the Environment, Farming, Rural Affairs and regionally through Transport North East and the North East Local Enterprise Partnership. Added to this, is that South Tyneside Council has a strong reputation for delivery.

Over the next 5 years to support air quality and increase the uptake in active travel and public transport, the Council is set to embark on the following schemes: -

- A194 Strategic Transport Corridor
- Active Travel Improvements (depending on external funding)
- Intelligent Transport Solutions at traffic signalised junctions
- Healthier / Safer Metro Stations

[5] Defra. Clean Air Strategy, 2019

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

- Electric Vehicle Charging Points expansion
- Development of an Enhanced Bus Partnership for the North East region and Bus Service Improvement Plan
- White Mare Pool Interim Improvements (dependent on external funding bids)

In addition to the above, South Tyneside has worked closely with National Highways who are delivering specific junction improvements along the A19 corridor as part of the National Road Investment Study (RIS) process.

The A19 corridor is a key regional economic corridor and a fundamental transport link into the Borough and to wider employment opportunities. National Highways has implemented significant improvements at the A19 / A184 Testo's junction and at the A19 / A1290 Downhill Lane junction. Both schemes have improved road safety, reduced congestion and improved air quality, with the schemes being completed in March 2022.

Active Travel and Physical Activity

We know transportation plays an important role in supporting daily activities; However, we also know active travel (cycling, walking and use of public transport) can increase physical activity levels and improve health and mental wellbeing.

Prioritisation of active travel can also reduce over reliance on motorised transport, contributing to improved air quality and a reduction in road injuries. Re-allocation of road space to support walking and cycling; restricting motor vehicle access; introducing road-user charging and traffic calming schemes; and creating safe routes to schools. Such changes have prompted substantial shifts from car transport to walking and cycling.

The Council endorsed the Local Cycling and Walking Implementation Plan (LCWIP) at Cabinet in December 2021. This provides the Council with the mechanism to attract external investment from Central Government funding opportunities for active travel improvements. This is further expanded within the physical activity strategy for the borough which can be found: https://www.southtyneside.gov.uk/article/63722/Adult-Physical-Activity, it is bold in its commitments in that:

- Defined cycling and walking route improvements (subject to external investment);
- All of our children will achieve the early learning goal in physical activity;
- More children will travel to school by foot, bike, scoot, bus and metro than anywhere else in the region;

- We will ensure that physical activity forms part of quality GP and health professional conversations.

Environmental Sustainability

In July 2019 the Council declared a climate emergency pledging to take all necessary steps to become “carbon neutral by 2030”.

Following the declaration, the Council developed the ‘Sustainable South Tyneside’ Strategy and produced a 5-year action plan, which provides a platform of collective actions and a shared vision supporting an ambition of a cleaner, greener, low carbon and resilient future.

We have already taken actions to reduce Council emissions through a number of measures, including:

- The development of low-carbon heat networks
- A significant building rationalisation programme
- Building modernisation and retrofit improvements
- Purchase of new Refuse Collection Vehicles (RCV) meeting Euro 6 standards
- Route optimisation for RCVs
- Expansion of Electric Charging infrastructure
- Purchase of Electric vehicles (EVs)

The strategy contains 11 key themes that focus on key areas to support the target of carbon neutrality by 2030. The themes cover:

- Reducing Emissions from Council Buildings
- Streetlighting
- Transportation and Staff Travel
- Environment and Biodiversity
- Schools
- South Tyneside Homes (Operations)
- Procurement

- Policy
- Adaptation
- Cultural Change and Awareness
- Championing a Carbon Neutral Future

To achieve net zero, transportation emissions must be tackled and vehicle-related land use must be reviewed. This provides a further mandate to reduce the use of motorised vehicles (in particular, petrol and diesel) and to increase journeys by public transport and active travel methods.

To date, the Council has introduced a total of 18 electric vehicles to its fleet, as well as supporting the borough-wide transition to EVs by continuing to expand the charging point network. As of April 2022, there are 59 operational charging units in the Borough (46 public, 13 workplace). Of this total, 18 units were installed during 2021/22. Details of charging points across South Tyneside can be found: https://www.southtyneside.gov.uk/article/38159/Electric-car-charging-points

Tree planting is also an integral part of the Council's approach to sustainability, using nature-based solutions to sequester and store carbon emissions from the atmosphere and help clean the air. The Council strives towards the planting of **3,000 trees per annum.** In 2021/22, the Council planted 3000 whips and 830 large standard trees throughout the Borough. This year has also seen the successful launch of the North East Community Forest.

Conclusions and Priorities

South Tyneside Council is currently meeting local air quality objectives for NO_2 and PM_{10}.

No exceedances of the national objective levels have been recorded across the borough and we have not declared any new air quality management areas (AQMA's). Non continuous (diffusion tube) data collected in 2021 has not demonstrated any exceedances of the national annual average for nitrogen dioxide the data collected from continuous monitoring stations has not identified any exceedance of the national objective levels for NO_2 or PM_{10} over the last six years.

The diffusion tube data for 2021 shows a slight increase from 2020.

Lockdown restrictions led to less traffic and changing travel patterns and many people experienced better air quality.

The transport data provided below relates to the Lindisfarne Roundabout/ Leam Lane and Boldon Lane shows that traffic levels pre and post covid:

Traffic has so far increased by an average of 3% over pre-Covid levels in the area of the

Lindisfarne roundabout / Leam Lane AQMA:

- Pre-Covid (February 2020)
- Average Daily Flow (Total) = 21,617
- Average Daily Flow (Eastbound) = 10,727
- Average Daily Flow (Westbound) = 10,891
-
- Post-Covid (March 2022)
- Average Daily Flow (Total) = 22,336
- Average Daily Flow (Eastbound) = 11,307
- Average Daily Flow (Westbound) = 11,030

Traffic is at approximately the same level as pre-Covid levels in the area of the Boldon Lane AQMA:

- Pre-Covid (February 2020)
- Average Daily Flow (Total) = 14,241
- Average Daily Flow (Northbound) = 7,152
- Average Daily Flow (Southbound) = 7,089
-
- Post-Covid (March 2022)
- Average Daily Flow (Total) = 14,261
- Average Daily Flow (Northbound) = 7,266
- Average Daily Flow (Southbound) = 6,995

Although traffic flows have now returned to pre covid levels concentrations of NO2 and PM10 remain considerably lower in 2021 than 2019.

Defra's Local Air Quality Management technical guidance (TG16) states that an air quality management area can be revoked following a detailed assessment or if there is a robust evidence base including monitoring over a sufficient period i.e., several years to reflect national trends in emissions; Other factors such as works carried out as part of the action plan associated with the AQMA that may have had an effect on pollutant levels can also be taken into account.

A Screening Assessment relative to the Boldon Lane (AQMA 1) and Lindisfarne/ Leam Lane (AQMA 2) was completed in October 2021. In summary the report demonstrates that concentrations of NO_2 within both AQMA's remain below the annual objective level of 40

µg/m3 and that there is a predicted downward trend in background NO_2 concentrations at both sites from 2018 – 2030.

Consultation on a draft Air Quality Strategy and revocation of both Air Quality Management Areas was undertaken from the 28th February 2022 for 8 weeks, Statutory Consultees and members of the public were given the opportunity to comment on both proposals.

The Council intend to progress with the draft Air Quality Strategy taking onboard all responses from the consultation, with the aim of the strategy being signed off by Council by Autumn.
The screening assessment providing the evidence base for revocation of both AQMA's has been appended to this Annual Status report, Revocation of the AQMA's are subject to Defra review and completion of the corporate process.

Local Engagement and How to get Involved

A significant proportion of air pollution is a result of road traffic sources, the two main pollutants of concern being NO_2 and PM_{10}. Making changes to your daily life including walking short journeys, using public transport and car sharing when you can will ultimately reduce levels of NO_2 and PM_{10}.

South Tyneside Council works with public health and the sustainability teams to encourage the uptake of sustainable modes of transport. South Tyneside has continued to encourage residents to cycle, walk, and use alternative methods of transport.

Other measures that residents can undertake to improve air quality include:

- Purchasing low emission electric and/or hybrid vehicles;
- Working with schools on the importance of air quality and active travel;
- Upgrading boilers to the newest and most efficient gas condensing boilers with lowest NOx (and carbon) emissions.

Local Responsibilities and Commitment

This ASR was prepared by the Environmental Health Service of South Tyneside Council with the support and agreement of the following officers and services:

Trevor Male: Service Lead – Transport Services

Samantha Start: Senior Public Health Advanced Practitioner

Mary Fairfield: Public Health Practitioner

This ASR has been approved by:

Tom Hall (Director of Public Health)

Stuart Wright (Head of Environment)

This ASR has been signed off by a Director of Public Health.

If you have any comments on this ASR please send them to Samantha Jobson, Environmental Health Officer

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1 Local Air Quality Management

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

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

1 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.

A summary of AQMAs declared by South Tyneside Council can be found in Table 1.1. The table presents a description of the two AQMA(s) that are currently designated within South Tyneside Council .Appendix D: Map(s) of Monitoring Locations and AQMAs provides maps of AQMA(s) and also the air quality monitoring locations in relation to the AQMA(s). The air quality objectives pertinent to the current AQMA designation(s) are as follows:

- NO_2 annual mean;
- PM_{10} 24-hour mean;

South Tyneside Council propose to revoke both the Lindisfarne roundabout/ Leam Lane and Boldon Lane AQMA's (see Screening Assessment Appendix E). The screening assessment provides the evidence base for revocation of both AQMA's has been appended to this Annual Status report, Revocation of the AQMA's is subject to Defra review and completion of the corporate process.

South Tyneside Council have also prepared a Draft Air Quality Strategy with updated action plan. We went out to consultation on the strategy on the 28th February for 8 weeks. We are considering consultation responses, with a view to review the draft and undertake the corporate approval process of the strategy. Once complete the Air Quality Strategy will be published the Local Authority website and appended to next years report.

Table 1.1 – Declared Air Quality Management Areas

AQMA Name	Date of Declaration	Pollutants and Air Quality Objectives	One Line Description	Is air quality in the AQMA influenced by roads controlled by National Highways?	Level of Exceedance: Declaration	Level of Exceedance: Current Year	Name and Date of AQAP Publication	Web Link to AQAP
Lindisfarne Roundabout/ Leam Lane	1st March 2006	NO2 Annual Mean	A number of properties around Lindisfarne roundabout, extending along Leam Lane and the A19	NO	43 µg/m3	20 µg/m3	Under review as part of the Climate Change Strategy. Refer to broad measures in table 2.2	https://uk-air.defra.gov.uk/aqma/local-authorities?la_id=251
Boldon Lane/ Stanhope Road	1st March 2006	NO2 Annual Mean	Commercial properties with residential properties extending along Boldon Lane and Stanhope Road	NO	41 µg/m3	16 µg/m3	Under review as part of the Climate Change Strategy. Refer to broad measures in table 2.2	https://uk-air.defra.gov.uk/aqma/local-authorities?la_id=251

☒ **South Tyneside Council confirm the information on UK-Air regarding their AQMA(s) is up to date**

☒ **South Tyneside Council confirm that all current AQAPs have been submitted to Defra**

Progress and Impact of Measures to address Air Quality in South Tyneside

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

When undertaking an annualisation factor it was noted that South Tyneside Council had used 1 urban traffic site and 1 urban background site. It was advised that 2 – 4 background sites within 50 miles are selected. We will endeavour to apply sites that are background within 50 miles where possible.

Figures have been provided illustrating the location of AQMAs and monitoring locations. However, they do not appear to be consistent with the information in Tables A.1 and A.2, regarding column "In AQMA?". For example, DT17 appears to be located within the Lindisfarne AQMA, but is not listed as so in Table A.2. This should be clarified. We have provided clarification as to monitoring locations within the AQMA.

South Tyneside Council has taken forward a number of direct measures during the current reporting year of 2022 in pursuit of improving local air quality. Details of all measures completed, in progress or planned are set out in Table 1.2. 22 measures are included within Table 1.2, with the type of measure and the progress South Tyneside Council have made during the reporting year of 2022 presented. Where there have been, or continue to be, barriers restricting the implementation of the measure, these are also presented within Table 1.2.

More detail on these measures can be found in their respective Action Plans.

Key completed measures include:

- Monkton Lane / Mill Lane Junction Improvements
- Testo's and Downhill Lane Junction Improvements (National Highways)
- A184 Cycle Lane (completed in part by National Highways)
- Sea Lane and Lukes Lane Active Travel corridors

The Council will continue to invest in the following schemes in the coming years:

- **A194 Strategic Transport Corridor**

Following a successful external funding bid to the National Productivity Investment fund, the Council will deliver targeted improvements to reduce congestion, improve air quality and lead to economic growth.

The following will be delivered over a 3-year delivery programme from 2022-2025.

- **Healthier / Safer Metro Stations**

  As with the above, South Tyneside will invest in both the Chichester and Tyne Dock metro stations in terms of sustainable transport links and improved security. The funding will come from the Transforming Cities Fund, with the schemes promoting sustainable transport options in an area close to the Boldon Lane Air Quality Management Area. This will be delivered over a period from 2022 to 2024.

- **Intelligent Transport Corridors**

  Again, as part of the successful Transforming Cities Fund bid, the Council will work with the Regional Traffic Signals team to deliver intelligent transport corridors using new technology and undertaking traffic signal upgrades.

  These upgrades will see improved traffic flows which will assist in reducing pollutants from stationary vehicles at the junctions. This will be delivered over a year delivery programme from 2022-2023.

- **Active Travel Funding**

  As part of a 20/21 successful bid for Active Travel Funding, South Tyneside is to bring forward sustainable transport initiatives on schemes highlighted in our consultation work undertaken as part of the Local Cycling and Walking Investment Plan. Works will be constructed over 22/23.

- **IAMP Highway and Accessibility Improvements**

  The International Advanced Manufacturing Park (IAMP) being constructed in land adjacent to the Nissan Manufacturing Plant in Sunderland requires a significant amount of highway infrastructure to enable the development to come forward.

  Measures include the construction of a road bridge, the dualling of the A1290 carriageway along with the internal road network to facilitate the development.

  The required highway infrastructure within South Tyneside will come forward as part of a separate planning application.

- **Ultra-Low Emission Charging Points roll-out**

South Tyneside has been successful in bidding for on-street charging point funding through Central Government. This will allow the local authority to further expand the EV charging point network over the course of the 2022/23 period.

South Tyneside Council anticipates that the measures stated above and in Table 1.2 will help to continue to achieve compliance in Lindisfarne/Leam Lane and Boldon Lane AQMA's

Table 1.2 – 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	North East Freight Quality Partnership	Freight and Delivery Management	Delivery and Service plans	North East Combined Authority (NECA)	Ongoing	North East Combined Authority (NECA)	n/a	n/a	n/a	n/a		No direct improvement	Measures to assist freight movements including freight consolidation centres	Ongoing	http://www.northeastfreightpartnership.info/
2	North East Freight Maps	Freight and Delivery Management	Route Management Plans/ Strategic routing strategy for HGV's	NECA	Ongoing	NECA	n/a	n/a	n/a	n/a		No direct improvement	Limiting freight movements to the strategic routes around the region	Ongoing	http://www.northeastfreightpartnership.info/
3	Set up a multi-disciplinary air quality steering group to drive forward STC clean air agenda	Policy Guidance and Development Control	Regional Group co-ordinating programmes to develop area wide strategies t educe emission and improve air quality	STC	Ongoing	STC	n/a	n/a	n/a	n/a		No direct improvement	Ensure that all external funding opportunities are considered	Ongoing	Quarterly meeting undertaken
4	Set Up a Regional Air Quality Group	Policy Guidance and Development Control	Regional Group co-ordinating programmes to develop area wide strategies t educe emission and improve air quality	NECA	Ongoing	NECA	n/a	n/a	n/a	n/a		No direct improvement	Ensure that air quality is considered in a trans boundary manner, maximise funding opportunities for combined authority bids	Ongoing	Regular meetings
5	Local Air Quality Strategy	Policy Guidance and Development Control	Air Quality Planning and Policy Guidance	STC	Oct 2021	STC	n/a	n/a	n/a	n/a		No Direct Improvement		Oct 2021	
6	Ensure Air Quality is considered at pre application stage to allow effective use of planning conditions	Policy Guidance and Development Control	Air Quality Planning and Policy Guidance	STC	Ongoing	STC	n/a	n/a	n/a	n/a		No Direct Improvement	Ensure all planning applications comply with requirements to ensure air quality is not adversely affected by development	Ongoing	
7	Completion of the Local Delivery Plan and Infrastructure delivery plan	Policy Guidance and Development Control	Air Quality Planning and Policy Guidance	STC	2023	STC	n/a	n/a	n/a	n/a	Yearly Service Delivery plans	No Direct Improvement	All new development will adhere to the prescribed guidance in the LDP and IDP to ensure	2022	

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
													that developments are compliant		
8	Ensure new developments have adequate travel plans that are continuously reviewed and updated	Policy Guidance and Development Control	Air Quality Planning and Policy Guidance	STC	Ongoing	STC	n/a	n/a	n/a	n/a	Ongoing	No Direct Improvement	Increase the number of travel plans within the borough	Ongoing	
9	North East Air Quality Strategy	Policy Guidance and Development	Air Quality Strategy	NECA	2018	Transport North East / NECA	n/a	n/a	n/a	n/a	Ongoing	No direct improvement	Reduced CO_2 emissions	2018	North East Combined Authority Leading on this
10	North East Combined Authority Sustainable Transport Group	Policy Guidance and Development	Regional Groups to develop Area wide Strategies to reduce emissions	NECA	2018	Transport North East / NECA	n/a	n/a	n/a	n/a	Ongoing	No direct improvement	Air Quality Improvements	2018	Regular Meetings undertaken
11	STC promoting electric vehicles through an employer car lease scheme	Promoting Low Emission Transport	Company Vehicle Procurement - Prioritising uptake of low emission vehicles	STC	Ongoing	STC	n/a	n/a	n/a	n/a	Final Draft for Approval	No direct improvement	Reduced emissions	Ongoing	
12	Investment in Electric Charging Infrastructure	Promoting Low Emission Transport	Priority parking for LEV's	STC	Ongoing	STC	OLEV	n/a			Ongoing	No direct improvement	Reduced emissions, Improved air quality	Ongoing	15 additional charging points will be implemented in 2021 (May onwards).
13	Council Fleet to investigate options for electric fleet including Taxi's	Promoting Low Emission Transport	Prioritising uptake of low emission vehicles	STC	Ongoing, with STH fleet taking ownership of EV vans	STC	OLEV	n/a	n/a	n/a	Draft of LDP and IDP paused for a review of the Spatial Strategy	No direct improvement	Reduced emissions, improved air quality	Ongoing, with STH fleet taking ownership of EV vans	
14	Council have installed EV Charging Points	Promoting Low Emission Transport	Prioritising uptake of low emission vehicles,	STC	Ongoing	STC	OLEV	n/a	Yearly bids	£100k per annum	Ongoing	No direct improvement	Reduced emissions, improved air quality	Ongoing	
15	Travel Planning through Planning Process	Promoting Travel Alternatives	Intensive active travel campaign & infrastructure	NECA & STC	Ongoing	Transport North East / NECA / STC	n/a	n/a	n/a	n/a	complete	Limited improvements	Reduced emissions, Improved air quality,	Ongoing	
16	A19 Testos and Downhill lane junction improvements	Transport Planning and Infrastructure	Public transport improvements- interchanges stations and services	National Highways	Testo's open to traffic June 2021, Downhill	Highways England	Highways England RIS	n/a	n/a	£125m	Ongoing	Improved Air Quality	Providing a safe and serviceable road network	Testo's open to traffic June 2021, Downhill Lane	http://www.highways.gov.uk/roads/road-projects/a19-testos-junction-improvements/

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
					Lane in 2022									expected in 2022	
17	STC Active Travel Work stream	Vehicle Fleet Efficiency	Driver training and ECO driving aids	**NECA**	Ongoing	**Transport North East / NECA / STC**	n/a	n/a	n/a	n/a	Ongoing	Limited improvements	Reduced emissions, Improved air quality,	Ongoing	
18	Travel Information through the UTMC centre	Traffic planning and management	UTC, Congestio management, traffic reduction	NECA / **STC**	Ongoing	**Transport North East / NECA / STC**	n/a	n/a	n/a	n/a	Ongoing	Yes	Reduced emissions, Improved air quality,	Ongoing	
19	Junction Improvements within the borough	Traffic Planning and Management	UTC, Congestio management, traffic reduction	STC	Ongoing	**STC**	Local Growth Funding	n/a	n/a	n/a	Ongoing	Yes	Reduced emissions, Improved air quality,	Ongoing	
20	Intelligent Transport Solutions at Key Junctions	Traffic Planning and Management	UTC, Congestio management, traffic reduction	STC	Ongoing	**STC**	n/a	n/a	n/a	n/a	Ongoing	Yes	Reduced emissions, Improved air quality,	Ongoing	
21	Working with Bus Operators to deliver against Enhanced Bus Partnership	Promoting Travel Alternatives	Public transport improvements-interchanges stations and services	STC	Delivered	**STC / Nexus / Bus Operators**	Clean Bus Funding	n/a	n/a	n/a	Ongoing	Yes	Reduced emissions, Improved air quality,	Delivered	
22	Delivery of the Council's Strategic Transport Priorities	Traffic Planning and Management	Congestion management, traffic reduction	STC	Ongoing	**STC**	Various Central Government	n/a	n/a	various	Ongoing	Yes	Reduced emissions, Improved air quality	Ongoing	

$PM_{2.5}$ – 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.

Impacts on Health Outcomes

The Office of National Statistics consistently reports that residents of South Tyneside have a significantly lower life expectancy than the England average.

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Life Expectancy at Birth – 2020

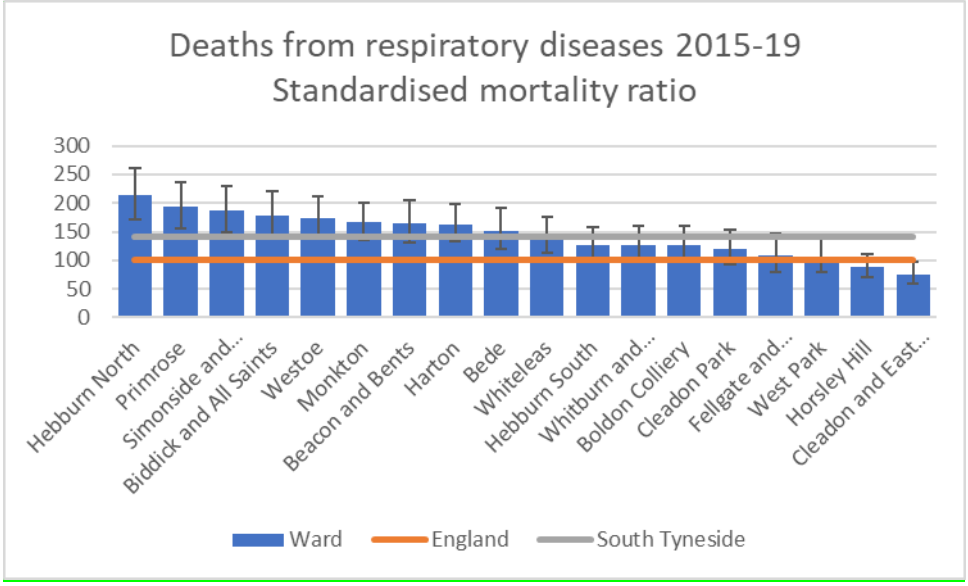
	Male	Female
South Tyneside	76.0 years	80.3 years
National Average	78.7 years	82.6 years

There is evidence to suggest that long term exposure to poor air quality increases the risk of premature mortality from cardiovascular and respiratory diseases. The premature mortality rates for cardiovascular, respiratory diseases and cancer are given below. It is important to note that other lifestyle factors such as smoking, etc. do influence these figures.

- Premature (under 75 years) mortality rates from all cardiovascular disease of 87.7 per 100,000 as compared to 73.8 per 100,000 for England; of this 35.1 per 100,000 were considered preventable.
- Premature (under 75 years) mortality rates from respiratory disease of 46.4 per 100,000 as compared to 29.4 per 100,000 for England; of this 28.8 per 100,000 were preventable.
- Premature (under 75 years) mortality rates from cancer of 166.1 per 100,000 as compared to 125.1 per 100,000 for England; of this 84.2 per 100,000 were preventable.

The mortality rates for respiratory disease can be broken down further into South Tyneside Ward areas as shown in the table below (2015-2019), benchmarked against England and South Tyneside as a whole.

Chart 2.3. Deaths from respiratory diseases, all ages, standardised mortality ratio, by Ward 2015-2019:



To note two of these wards (Biddick & All Saints, Bede) include air quality management areas.

Additional data shows in

- In 19/20 Emergency admissions for chronic obstructive pulmonary disease is significantly worse in South Tyneside at 740 per 100,000 population in comparison to England at 415 per 100,000[7].
- In 20/21 Hospital admissions for asthma in children (birth to 9 years) are 89.0 per 100,000 as opposed to the England rate of 91 per 100,000.[8]

[7] Emergency hospital admissions for COPD South Tyneside

[8] https://fingertips.phe.org.uk/indicator-list/view/9WQAF8L3WU#page/4/gid/1/pat/15/ati/402/are/E08000023/iid/92481/age/288/sex/4/cat/-1/ctp/-1/yrr/1/cid/4/tbm/1

3. https://fingertips.phe.org.uk/search/asthma#page/4/gid/1/pat/6/ati/402/are/E08000023/iid/92624/age/249/sex/4/cat/-1/ctp/-1/yrr/1/cid/4/tbm/1

- In 20/21 The hospital admission rates for young people with asthma aged 10 -18 is 67.1 per 100,000, significantly higher than the England rate of 54.8.

It is worth noting that variations that are statistically significant do not in themselves establish a causal relationship and that a wide range of factors affect mortality rates and associated hospital admissions, including rates of smoking, general health, deprivation and historic industrial exposures.

Nonetheless, diseases that can be worsened by poor air quality emphasises the importance of continued monitoring of air quality to reduce the impact of air pollution on the health of our residents.

South Tyneside Council are taking the following measures to address $PM_{2.5}$:

Undertaking the measures detailed in the executive summary and detailed in table 2.2. These measures will have a positive effect in reducing NO_2 and PM_{10} and would have similar effect upon levels of $PM_{2.5}$.

From an operational point of view, South Tyneside Council Public Health are supporting South Tyneside and Sunderland NHS Foundation Trust with their work around active travel and healthy environments as part of their Employee Wellbeing Strategy, and wider businesses via the North East Better Health at Work Award. Public Health has also appointed a new practitioner to lead on healthy weight and physical activity, who is supporting some of this wider work including re-energising the local Physical Activity Strategy, local work linked to the national Obesity Strategy, and our South Tyneside Cycling and Walking Investment Plan, all of which will support outcomes around improving air quality through increased physical activity and green exercise, and less reliance on motorised transport.

COVID-19 has made people more aware of the benefits of improving air quality especially indoors.

Allowing fresh air into indoor areas such as workplaces and schools can help remove air that contains virus particles and prevent the spread of COVID-19 and other respiratory infections such as flu. Good ventilation has also been linked to health benefits such as

better concentration, and schools nationally were provided with carbon dioxide monitors to help staff identify whether ventilation needed to be improved.

Within South Tyneside, schools and businesses were also supported with advice on the importance of opening windows and advice on where to place the CO2 monitors.

With people returning to work the importance of good ventilation as well as the need for through hand washing techniques continues to be promoted.

THE AIR QUALITY (DOMESTIC SOLID FUELS STANDARDS) (ENGLAND) REGULATIONS 2020

A major source of PM2.5 particles is from burning at home, particularly with traditional house coal or wet wood.

Restrictions on the sale of coal, wet wood and manufactured solid fuels for burning in the home came into force on the 1st May, 2021

People with log burners and open fires can still use them, but will be required to buy cleaner alternative fuels – if they are not already – such as dry wood and manufactured solid fuels which produce less smoke. Both of these cleaner options are just as easy to source and more efficient to burn, making them more cost effective. Burning dry wood also produces more heat and less soot than wet wood and can reduce emissions by up to 50%.

The restrictions that mean that:

- Sales of bagged traditional house coal and wet wood in units under 2m3 are now unlawful.
- Wet wood in larger volumes must be sold with advice on how to dry it before burning.
- All manufactured solid fuels must now have a low sulphur content and only emit a small amount of smoke.
- In addition, a new certification scheme will see products certified and labelled by suppliers to ensure that they can be easily identified, and retail outlets will only able to sell fuel that is accompanied by the correct label.

The Environment Act 2021

Schedule 12 amends the Clean Air Act 1993 to allow local authorities to impose financial penalties in smoke control areas. Domestic stoves/fires are known to contribute significantly to PM2.5 levels. The existing criminal offence of emitting smoke from a chimney in a smoke

control area is replaced with a civil penalty regime, which should enable a quicker and simpler style of enforcement for emissions of smoke in these areas.

Existing offences relating to the sale of certain solid fuels in smoke control areas are also enhanced by removing the financial limit on the potential fine that can be imposed, and requiring retailers to notify customers that it is illegal to buy unapproved fuel for use in a smoke control area, unless it will be burned in an approved appliance.

Schedule 12 also amends the Environmental Protection Act 1990 to remove an existing exemption, the effect of which is that smoke from a dwelling in a smoke control area could be actioned as a statutory nuisance. Smoke from chimneys in a smoke control area could therefore in future be the subject of a local authority abatement notice, breach of which is a criminal offence.

South Tyneside Council will ensure that our regulatory process is adapted to include these changes.

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

This section sets out the monitoring undertaken within 2021 by South Tyneside 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

2.1.1 Automatic Monitoring Sites

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

South Tyneside Council undertook automatic (continuous) monitoring at 3 sites during 2020. Table A.1 in Appendix A shows the details of the 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. National monitoring results are available at https://uk-air.defra.gov.uk/

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.

There are no exceedances of the Annual Air Quality Objective of 40µg/m^3

2.1.2 Non-Automatic Monitoring Sites

South Tyneside Council undertook non- automatic (i.e. passive) monitoring of NO_2 at 43 sites during 2020. 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

https://drive.google.com/open?id=1mRyjjoiCBuFuU7S8XqtGZsfKXJUso-q3&usp=sharing

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.

2.1.3 Nitrogen Dioxide (NO_2)

Table A.3 and Table A.4 in Appendix A compare the ratified and adjusted monitored NO_2 annual mean concentrations for the past five years with the air quality objective of 40µg/m^3. Note that the concentration data presented represents the concentration at the location of the monitoring site, following the application of bias adjustment and annualisation, as required (i.e. the values are exclusive of any consideration to fall-off with distance adjustment).

For diffusion tubes, the full 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_2 hourly mean concentrations for the past five years with the air quality objective of 200µg/m^3, not to be exceeded more than 18 times per year.

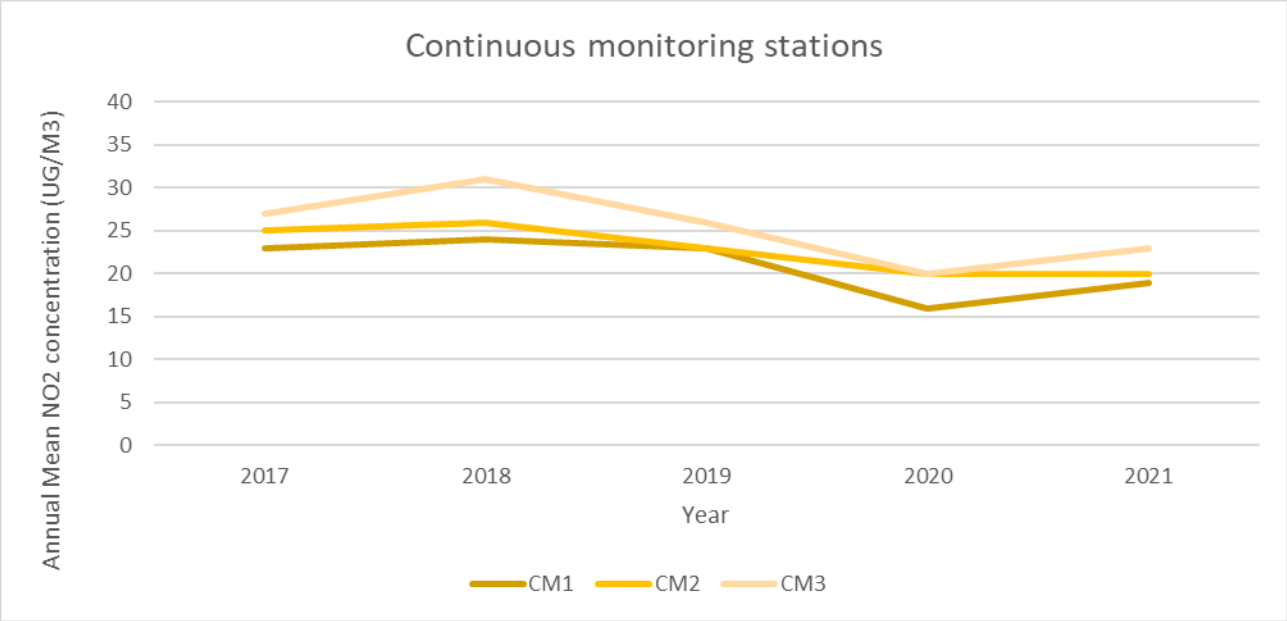
There have been no changes to the non-automatic monitoring network in 2021.

There are no monitored exceedances of the statutory air quality objectives.

Trend graphs for diffusion tubes are provided in Appendix A.

As no diffusion tubes have a concentration of over 60 µg/m³, this indicates that the hourly objective of 200 µg/m3 not to be exceeded more than 18 times a year has not been breached.

The graph below shows the annual average mean NO_2 levels at the three continuous monitoring stations in South Tyneside. There has been a small increase in levels at CM1 and CM3, whilst the level at CM2 is the same as 2020. These increases can likely be attributable to an increase in road traffic as a result of people returning to work, however levels are still well under the annual air quality objective.



2.1.4 Particulate Matter (PM_{10})

Table A.6 in Appendix A: Monitoring Results compares the ratified and adjusted monitored PM_{10} annual mean concentrations for the past five years with the air quality objective of 40µg/m^3. There are no exceedances of the Air Quality Objective for the annual mean at the two continuous monitoring sites in South Tyneside.

Table A.7 in Appendix A compares the ratified continuous monitored PM_{10} daily mean concentrations for the past five years with the air quality objective of 50µg/m^3, not to be exceeded more than 35 times per year. There was 1 exceedance of the annual mean at CM2

2.1.5 Particulate Matter ($PM_{2.5}$)

Table A.8 in Appendix A presents the ratified and adjusted monitored $PM_{2.5}$ annual mean concentrations for the past five years.

Local authorities are not legally obliged to monitor $PM_{2.5}$. South Tyneside started to report on $PM_{2.5}$ in 2016. As detailed in Policy Guidance LAQM.PG16 (Chapter 7) $PM_{2.5}$ levels can be estimated from PM_{10} levels by using a nationally derived correction ratio of 0.7. Table A.7 provides $PM_{2.5}$ data converted using the correction ratio with PM_{10} data collected in 2020

The last 5 years worth of monitoring shows that the $PM_{2.5}$ has remained fairly constant and below that target value. There are no exceedances of the annual objective for $PM_{2.5}$

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) (1)	Distance to kerb of nearest road (m) (2)	Inlet Height (m)
CM1	Boldon Lane, South Shields	Roadside	435,949	564,468	NO2	YES (Boldon Lane/ Stanhope Road)	Chemiluminescent	15	3	1.5
CM2	Lindisfarne Roundabout, Jarrow	Roadside	434,068	563,695	NO2; PM10	YES (Lindisfarne Roundabout/ Leam Lane	Chemiluminescent TEOM	27	1	2
CM3	Tyne Dock South Shields	Roadside	435,565	565,040	NO2; PM10	No	Chemiluminescent TEOM	12	14	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) (1)	Distance to kerb of nearest road (m) (2)	Tube Co-located with a Continuous Analyser?	Tube Height (m)
DT1	Sunderland Road Jolly Sailor Whitburn	Roadside	440,820	561,821	NO2	NO	9.3	1.7	NO	2.3
DT2	Sunderland Road Cleadon	Roadside	438,542	562,321	NO2	NO	8.3	1.5	NO	2.65
DT3	Front Street Cleadon Café	Roadside	438,539	562,329	NO2	NO	0	2.5	NO	2.7
DT4	Station Road East Boldon	Roadside	437,053	561,418	NO2	NO	5	1.5	NO	2.5
DT5	Front Street / Grange Terrace	Kerbside	436,524	561,275	NO2	NO	4	<1	NO	2.3
DT6	Front Street/ Boker Lane	Roadside	436,021	561,368	NO2	NO	11.5	1.5	NO	2.5
DT7	Arnold Street	Roadside	434,623	561,746	NO2	NO	0	1.5	NO	2.5
DT8	Holland Park Drive (A19)	Roadside	433,883	562,644	NO2	NO	0	30	NO	2
DT9	Southlands (A19)	Roadside	433,739	562,070	NO2	NO	19	40	NO	2.9
DT10	Mill Lane/ A185 Junction	Roadside	430,469	563,040	NO2	NO	3	28	NO	2.5
DT11	Victoria Road	Roadside	430,538	563,420	NO2	NO	1.6	20	NO	2
DT12	Victoria Road West /South Street	Roadside	430,587	563,671	NO2	NO	3	9	NO	2
DT13	Station Road Hebburn -PJ's Hairdressers	Roadside	430,976	564,378	NO2	NO	0	3.8	NO	2.6
DT14	Victoria Road East - Junction with Park Road	Kerbside	432,169	564,962	NO2	NO	12.5	<1	NO	2.5

DT15	Ellison Street roundabout - Pizza Addict	Kerbside	432,676	565,443	NO2	NO	16.2	2.2	NO	2.5
DT16	Epinay Walk	Roadside	433,093	564,998	NO2	NO	8	28	NO	2
DT17	Hadrian Road	Roadside	433,658	563,497	NO2	NO	2	5	NO	2.5
DT18	Lindisfarne Road (55)	Roadside	433,698	563,825	NO2	NO	10	8	NO	2.5
DT19	Hadrian Road / Finchale Terrace Junction	Roadside	433,780	563,692	NO2	NO	3	13.5	NO	3
DT20	Edinburgh Road Monitoring Station	Roadside	434,068	563,695	NO2	YES	30	<1	Yes	2.9
DT21	Edinburgh Road Monitoring Station	Roadside	434,068	563,695	NO2	YES	30	<1	Yes	2.9
DT22	Edinburgh Road Monitoring Station	Roadside	434,068	563,695	NO2	YES	30	<1	Yes	2.9
DT23	John Reid Road, Junction with Stirling Ave	Roadside	433,232	565,006	NO2	NO	19.2	1.8	NO	2.85
DT24	Opposite 173 Hadrian Road	Roadside	434,313	563,963	NO2	NO	25	3.5	NO	2.35
DT25	Opposite 237 Newcastle Road	Roadside	434,402	563,976	NO2	NO	32	3.2	NO	2.4
DT26	Stanhope Road/ Newcastle Road	Roadside	434,303	563,977	NO2	NO	18	22	NO	2.5
DT27	A194 Arches Roundabout	Kerbside	435,330	564,846	NO2	NO	15	<1	NO	2.2
DT28	Commercial Road	Roadside	435,565	565,221	NO2	NO	3.8	1.5	NO	2.6
DT29	Corner of Boldon Lane/ Stanhope Road	Kerbside	435,930	564,600	NO2	YES	6.5	1	NO	2.4
DT30	Stanhope Road	Kerbside	435,980	564,641	NO2	YES	1	4	NO	2.5
DT31	Boldon Lane	Roadside	435,965	564,329	NO2	NO	2	1.7	NO	2.3

DT32	King George Road	Roadside	437,438	564,391	NO2	NO	4	13	NO	2.5
DT33	Sunderland Road/ next to the Cranny	Roadside	437,816	564,338	NO2	NO	7	2	NO	2.3
DT34	Westoe Road	Roadside	436,981	565,906	NO2	NO	7	2	NO	2.35
DT35	Imeary Street/ The Glebe	Roadside	436,729	566,375	NO2	NO	14	4	NO	2.7
DT36	Chichester Metro	Kerbside	436,483	565,887	NO2	NO	18.9	<1	NO	2.25
DT37	Western Approach Laygate Flats	Roadside	436,220	566,620	NO2	NO	11.5	2.5	NO	2.5
DT38	Alice Street (A194)	Kerbside	436,168	565,875	NO2	NO	<1	27	NO	2.5
DT40	Anderson Street	Roadside	436,595	567,298	NO2	NO	10	2	NO	2.5
DT41	Campell Park Road	Kerbside	431,432	564,498	NO2	NO	25	6.5	NO	2.5
DT42	West Park Roundabout	Kerbside	436,370	565,000	NO2	NO	5	1.5	NO	2.5
DT43	Redhead Park	Kerbside	437,165	565,576	NO2	NO	10	2.5	NO	2.5
DT44	Imeary Street	Roadside	436,923	565,966	NO2	NO	<1	2	NO	2.5

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_2 Monitoring Results: Automatic Monitoring (µg/m^3)

Site ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2021 (%) (2)	2017	2018	2019	2020	2021
CM1	435,949	564,456	Roadside	Automatic	97.7	23	24	23	16	19
CM2	434,068	563,695	Roadside	Automatic	99.9	25	26	23	20	20
CM3	435,565	565,040	Roadside	Automatic	98.9	27	31	26	20	23

☒ **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^3.

Exceedances of the NO_2 annual mean objective of 40µg/m^3 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_2 Monitoring Results: Non-Automatic Monitoring (µg/m^3)

Diffusion Tube ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2021 (%) (2)	2017	2018	2019	2020	2021
DT1	440820	561821	Roadside	90.4	90.4	25.9	24.3	24.9	20.9	21.7
DT2	438542	562321	Roadside	100.0	100.0	31.7	28.8	30.6	23.8	24.4
DT3	438412	562368	Roadside	92.3	92.3	21.5	20.3	19.7	13.5	15.8
DT4	437053	561418	Roadside	100.0	100.0	20.5	19.5	19.8	14.7	14.5
DT5	436528	561280	Kerbside	100.0	100.0	24.1	23.9	23.7	18.1	18.3
DT6	436021	561368	Roadside	100.0	100.0	31.9	34.3	34.2	21.8	24.8
DT7	434623	561746	Roadside	92.3	92.3	24.6	24.1	23.1	17.4	21.1
DT8	433883	562644	Roadside	100.0	100.0	18.3	21.0	21.1	16.2	15.9
DT9	433739	562070	Roadside	92.3	92.3	21.7	21.3	19.4	12.7	16.1
DT10	430489	563058	Roadside	92.3	92.3	27.9	27.3	27.9	20.9	21.9
DT11	430540	563425	Roadside	92.3	92.3	24.0	29.1	23.3	15.2	18.1
DT12	430582	563663	Roadside	84.6	84.6	18.9	22.5	21.0	15.1	15.6
DT13	430976	564378	Roadside	100.0	100.0	23.4	24.2	25.1	18.3	22.0

Diffusion Tube ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2021 (%) (2)	2017	2018	2019	2020	2021
DT14	432393	564994	Kerbside	100.0	100.0	30.0	26.2	26.3	21.8	19.8
DT15	432682	565456	Roadside	100.0	100.0	22.4	24.8	23.8	23.7	22.3
DT16	433088	565007	Roadside	100.0	100.0	24.4	24.6	26.2	18.2	19.8
DT17	433658	563497	Roadside	92.3	92.3	27.6	30.6	31.4	23.2	25.0
DT18	433698	563825	Roadside	92.3	92.3	23.4	25.3	24.0	19.4	21.3
DT19	433780	563692	Roadside	100.0	100.0	33.4	30.1	29.5	21.4	24.2
DT20	434068	563695	kerbside	100.0	100.0					23.2
DT21	434068	563695	Kerbside	90.4	90.4					21.6
DT22	434068	563695	kerbside	92.3	92.3					21.4
DT23	434326	563728	kerbside	90.4	90.4	24.2	27.5	27.7	21.1	24.7
DT24	434297	563934	Roadside	92.3	92.3	32.8	35.3	32.3	24.6	25.9
DT25	434376	563955	kerbside	100.0	100.0	28.4	30.7	29.3	22.4	25.0
DT26	434298	563970	Roadside	57.7	57.7	28.0	29.0	28.8	22.6	24.0
DT27	435321	564843	Kerbside	100.0	100.0	39.0	38.8	38.1	26.2	29.2

Diffusion Tube ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) [1]	Valid Data Capture 2021 (%) [2]	2017	2018	2019	2020	2021
DT28	435605	565290	Roadside	100.0	100.0	27.7	28.6	29.0	25.0	23.9
DT29	435926	564596	Kerbside	100.0	100.0	32.2	34.5	29.8	21.3	25.9
DT30	435987	564647	Kerbside	92.3	92.3	22.6	33.9	32.6	22.1	27.8
DT31	435959	564470	Kerbside	84.6	84.6	29.4	30.6	30.7	22.8	26.5
DT32	437540	564355	Kerbside	100.0	100.0	27.0	25.8	24.1	19.0	19.8
DT33	437819	564335	Kerbside	100.0	100.0	28.3	28.2	26.9	19.5	22.8
DT34	437010	565873	Roadside	100.0	100.0	36.6	32.7	30.4	23.3	26.0
DT35	436923	565967	Roadside	100.0	100.0	25.9	26.7	23.9	19.2	22.5
DT36	436727	566374	Kerbside	100.0	100.0	29.2	29.2	30.1	19.9	23.4
DT37	436216	566216	Roadside	100.0	100.0	32.8	34.0	32.6	20.8	31.9
DT38	436169	565876	Roadside	92.3	92.3	22.6	21.2	18.9	17.6	17.9
DT39	436098	565902	Roadside			25.7	24.1	27.5	-	-
DT40	436597	567308	Roadside	100.0	100.0	27.7	26.7	22.9	19.9	22.3
DT41	431428	564493	Kerbside	100.0	100.0		27.5	24.8	19.2	20.2

Diffusion Tube ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2021 (%) (2)	2017	2018	2019	2020	2021
DT42	436396	565012	Roadside	100.0	100.0		34.7	30.8	23.3	26.0
DT43	437161	565572	Roadside	100.0	100.0		28.6	26.9	20.7	22.0
DT44	436923	565967	Kerbside	100.0	100.0		29.1	24.3	19.7	21.6

☒ **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 µg/m^3.

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

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

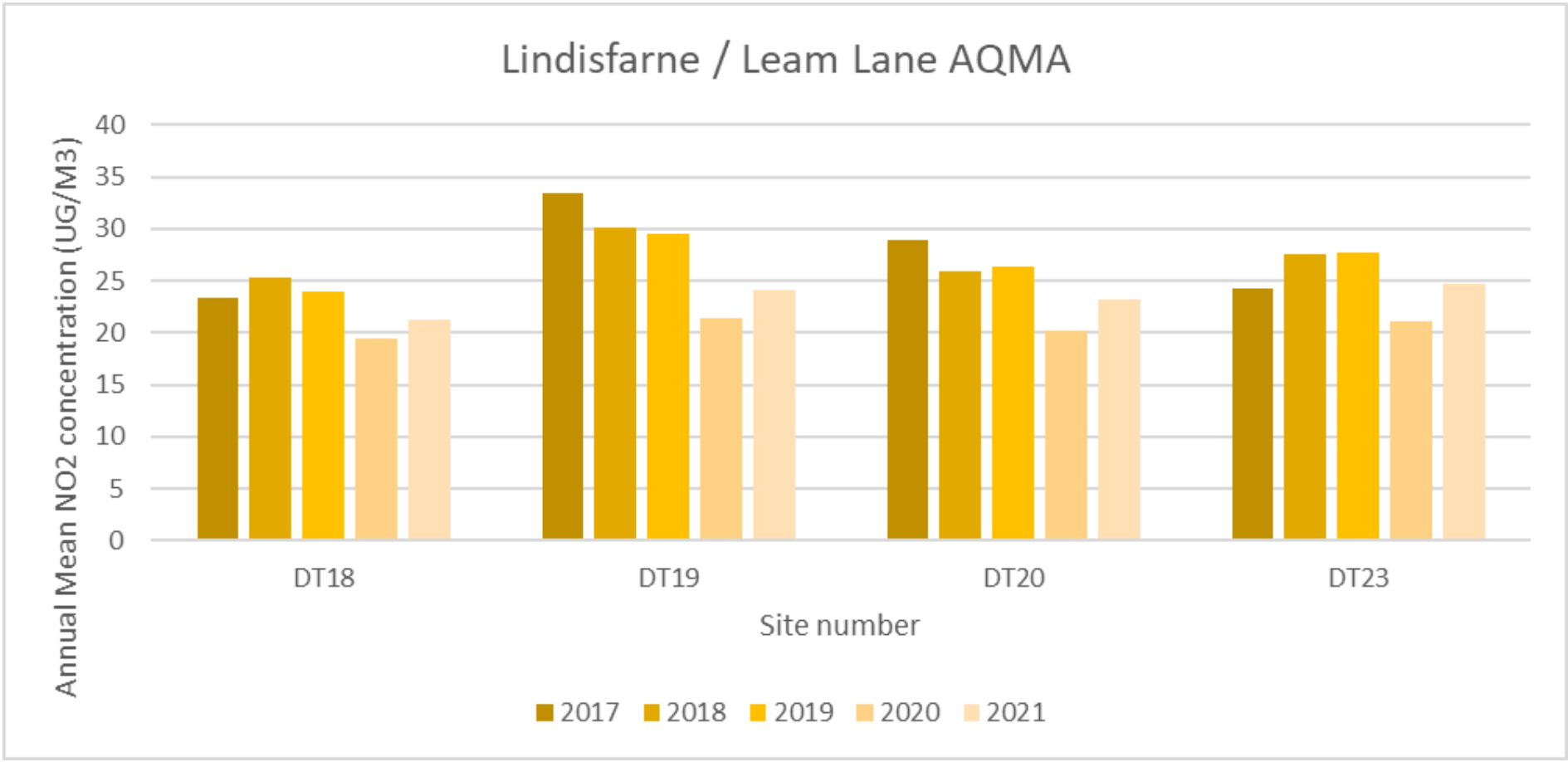
Means for diffusion tubes have been corrected for bias. All means have been "annualised" as per LAQM.TG16 if valid data capture for the full calendar year is less than 75%. See Appendix C for details.

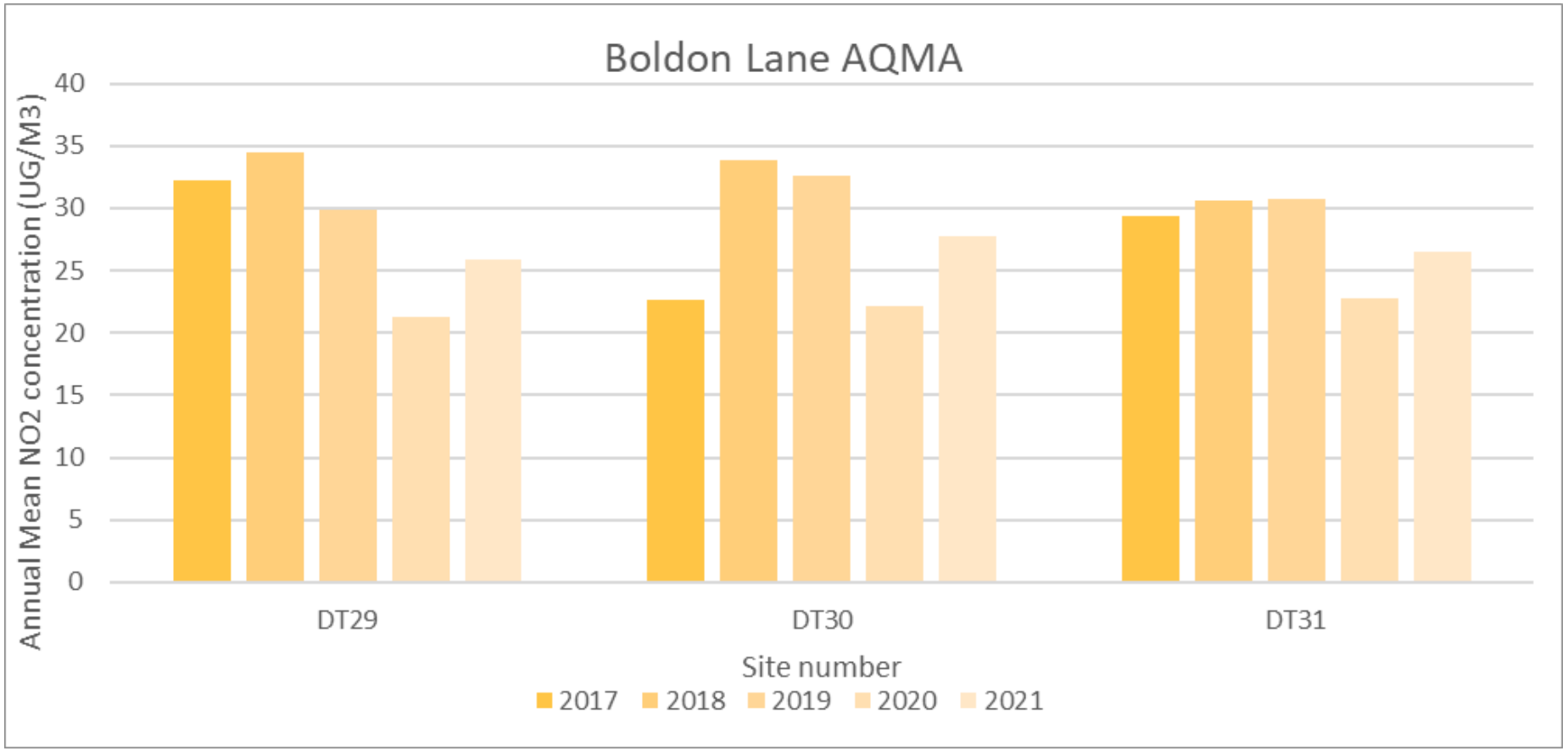
Concentrations are those at the location of monitoring and not those following any fall-off with distance adjustment.

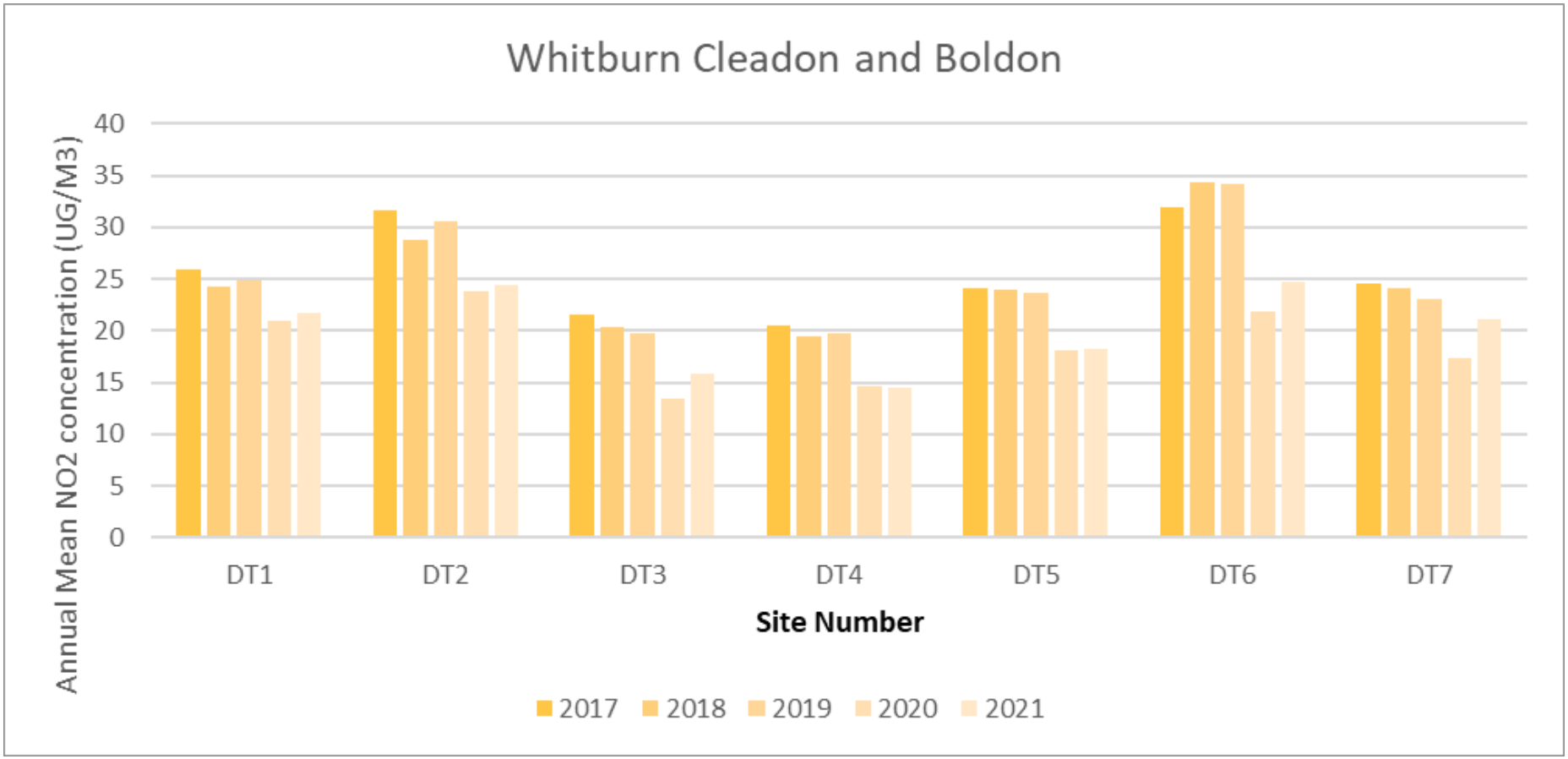
(1) Data capture for the monitoring period, in cases where monitoring was only carried out for part of the year.

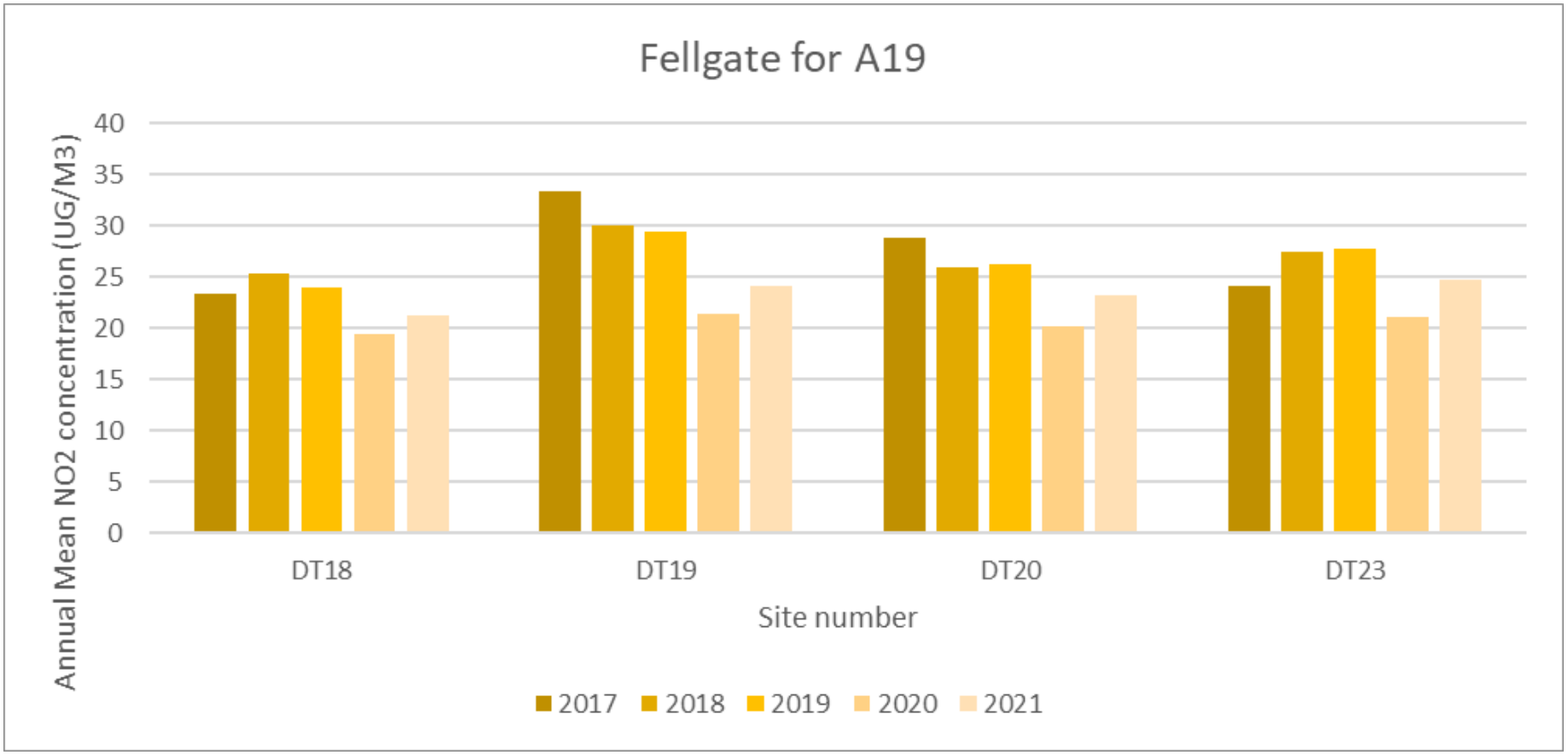
(2) Data capture for the full calendar year (e.g. if monitoring was carried out for 6 months, the maximum data capture for the full calendar year is 50%).

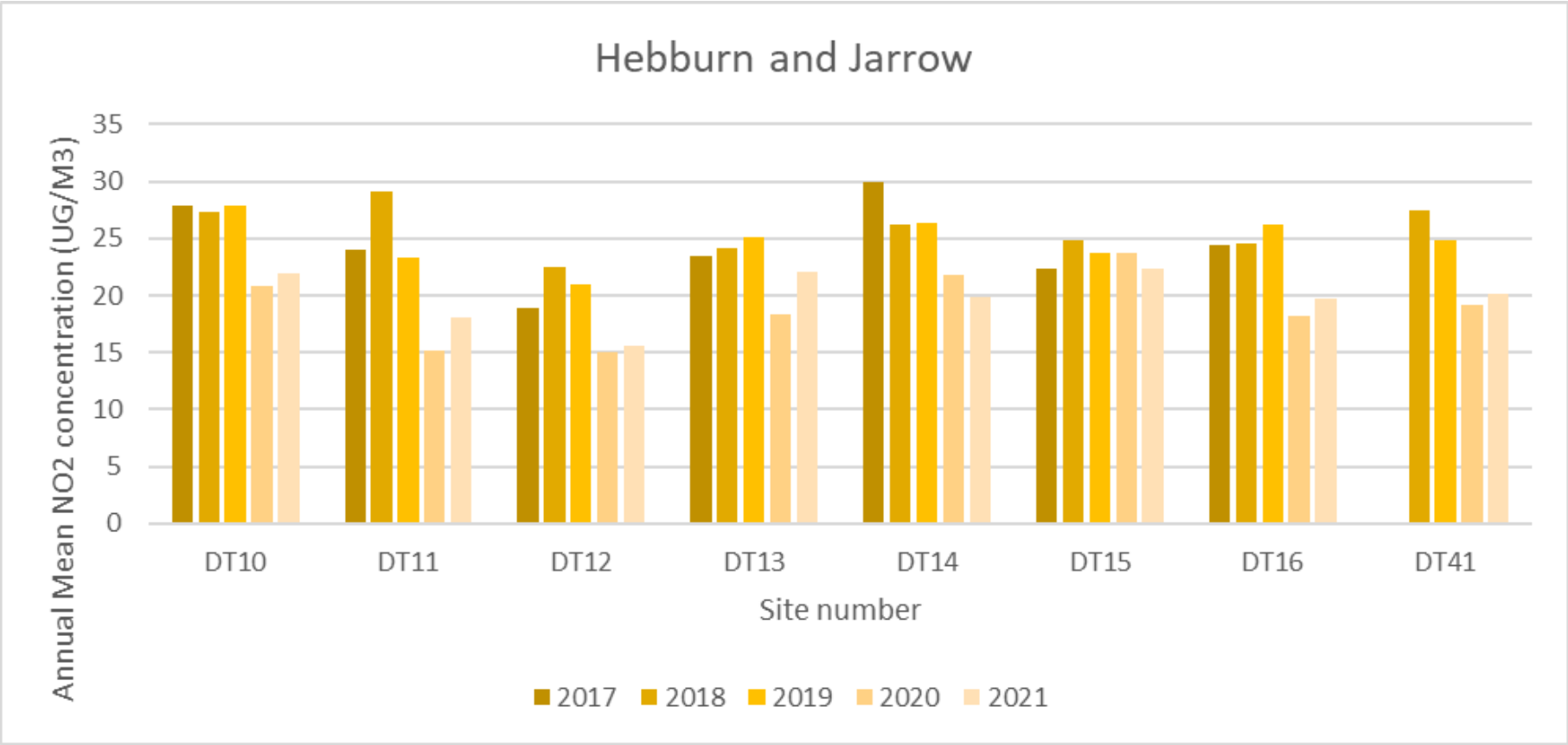
Figure A.1 – Trends in Annual Mean NO_2 Concentrations

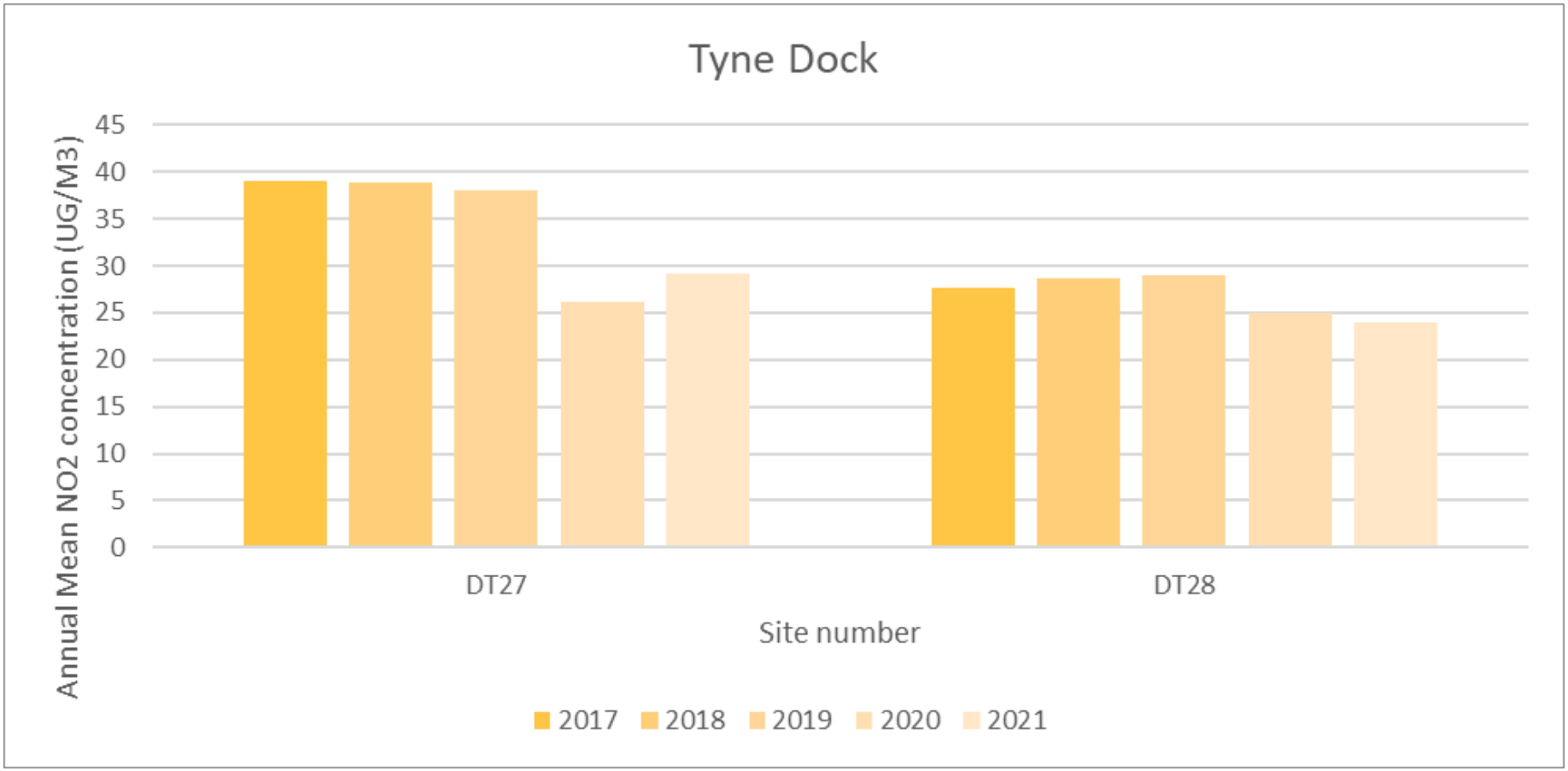


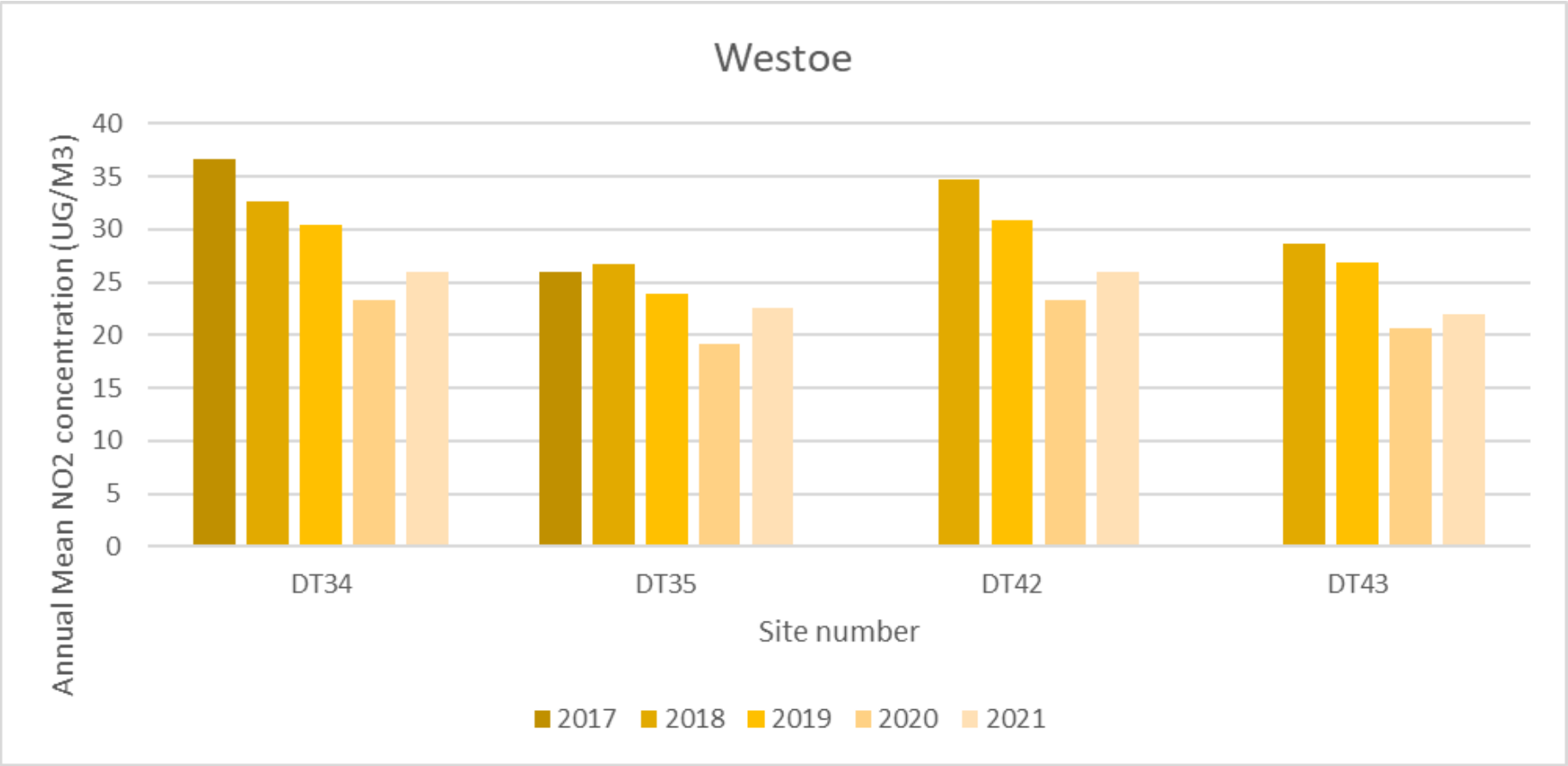

Boldon Lane AQMA
Annual Mean NO2 concentration (UG/M3)
40
35
30
25
20
15
10
5
0
DT29
DT30
DT31
Site number
2017
2018
2019
2020
2021


Whitburn Cleadon and Boldon
Annual Mean NO2 concentration (UG/M3)
40
35
30
25
20
15
10
5
0
DT1
DT2
DT3
DT4
DT5
DT6
DT7
Site Number
2017
2018
2019
2020
2021


Fellgate for A19
Annual Mean NO2 concentration (UG/M3)
40
35
30
25
20
15
10
5
0
DT18
DT19
DT20
DT23
Site number
2017
2018
2019
2020
2021


Hebburn and Jarrow
Annual Mean NO2 concentration (UG/M3)
35
30
25
20
15
10
5
0
DT10
DT11
DT12
DT13
DT14
DT15
DT16
DT41
Site number
2017
2018
2019
2020
2021


Tyne Dock
Annual Mean NO2 concentration (UG/M3)
45
40
35
30
25
20
15
10
5
0
DT27
DT28
Site number
2017
2018
2019
2020
2021


Westoe
Annual Mean NO2 concentration (UG/M3)
40
35
30
25
20
15
10
5
0
DT34
DT35
DT42
DT43
Site number
2017
2018
2019
2020
2021

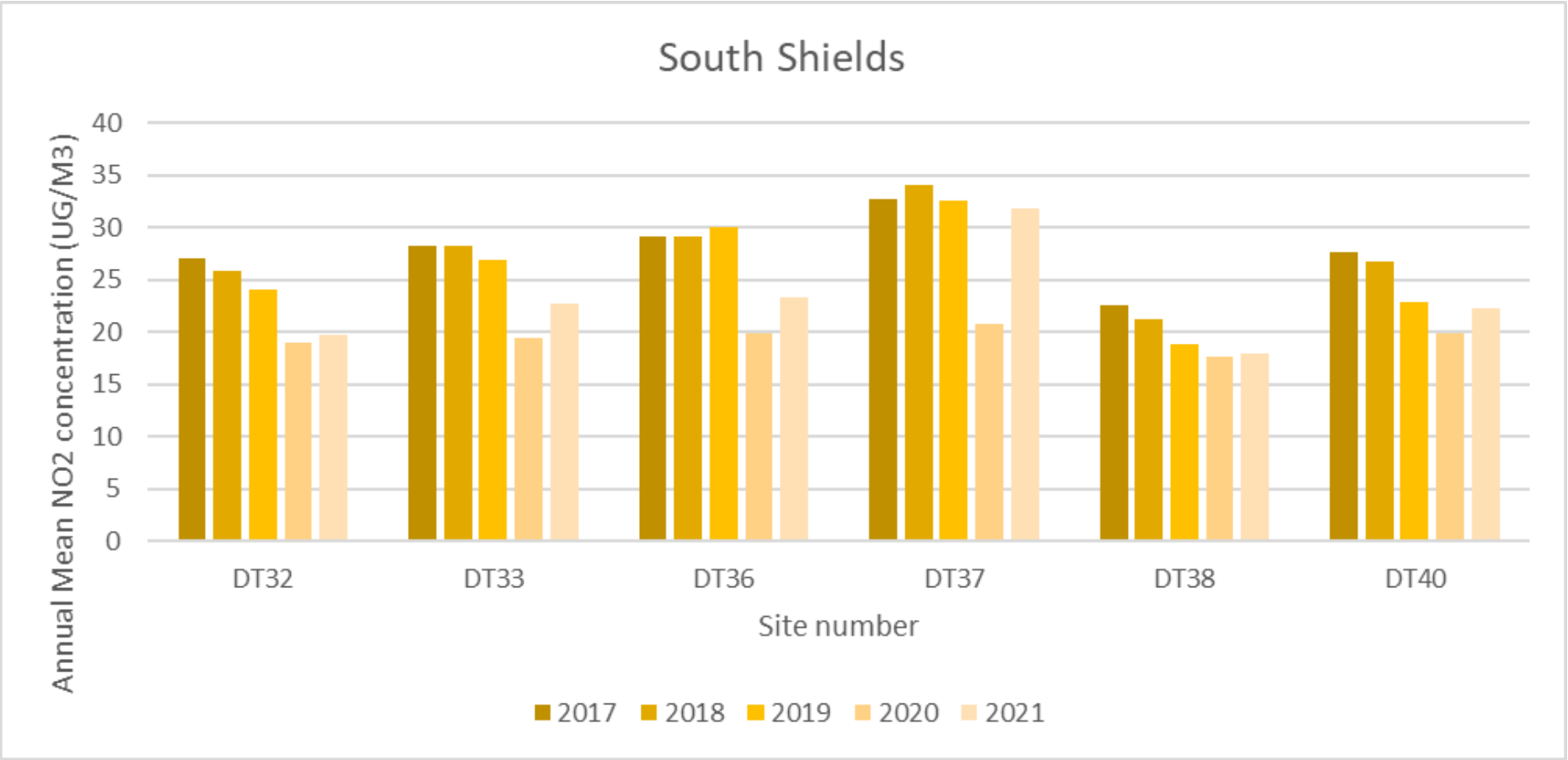

South Shields
Annual Mean NO2 concentration (UG/M3)
40
35
30
25
20
15
10
5
0
DT32
DT33
DT36
DT37
DT38
DT40
Site number
2017
2018
2019
2020
2021

Table A.5 – 1-Hour Mean NO_2 Monitoring Results, Number of 1-Hour Means > 200µg/m^3

Site ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2021 (%) (2)	2017	2018	2019	2020	2021
CM1	435,949	564,456	Roadside	Automatic	99.6	0	0	0	0	0
CM2	434,068	563,695	Roadside	Automatic	99.9	0	0	0	0	0
CM3	435,565	565,040	Roadside	Automatic	98.9	**3 (268)**	0	0	0	0

Notes:

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

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**.

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_{10} Monitoring Results ($\mu g/m^3$)

Site ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2021 (%) (2)	2017	2018	2019	2020	2021
CM2	434,068	563,695	Roadside	99.6	94.6	15	18	19	18	17
CM3	435,565	565,040	Roadside	99.9	99.1	18	19	19	14	16

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

Notes:

The annual mean concentrations are presented as $\mu g/m^3$.

Exceedances of the PM_{10} annual mean objective of 40$\mu g/m^3$ 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%).

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

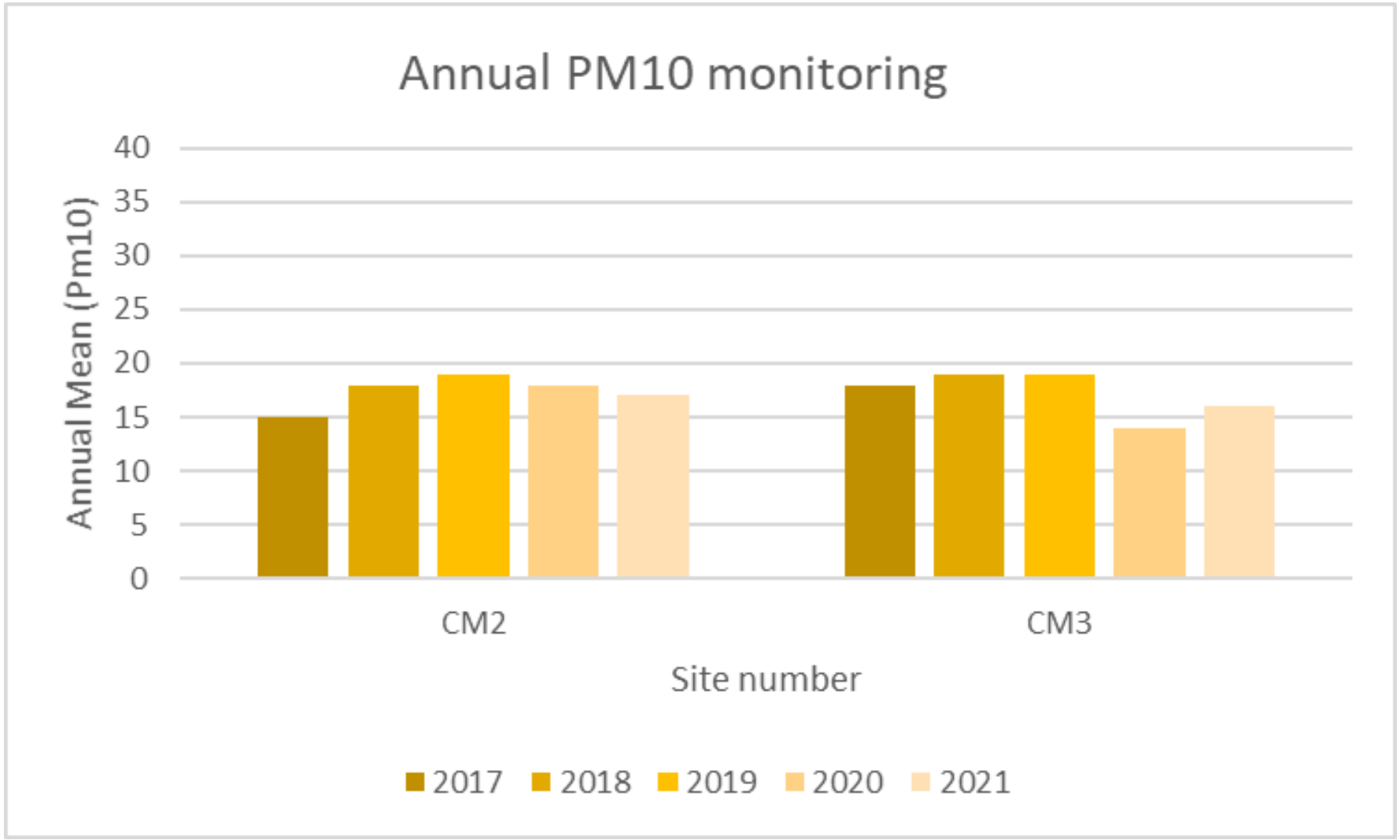


Table A.7 – 24-Hour Mean PM_{10} Monitoring Results, Number of PM_{10} 24-Hour Means > 50µg/m^3

Site ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2021 (%) (2)	2017	2018	2019	2020	2021
CM2	434,068	563,695	Roadside	99.6	99.6	1	**2 (67)**	**2(69)**	**4(67)**	**1 (56)**
CM3	435,565	565,040	Roadside	99.9	99.9	3	**3 (64)**	**4(70)**	0	0

Notes:

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

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**.

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 $PM_{2.5}$ Monitoring Results (µg/m^3)

Site ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2021 (%) (2)	2017	2018	2019	2020	2021
CM2	434,068	563,695	Roadside	99.6	99.6	10.5	12.6	13.3	12.6	11.9
CM3	435,565	565,040	Roadside	99.9	99.9	12.6	13.3	13.3	9.8	11.2

Notes:

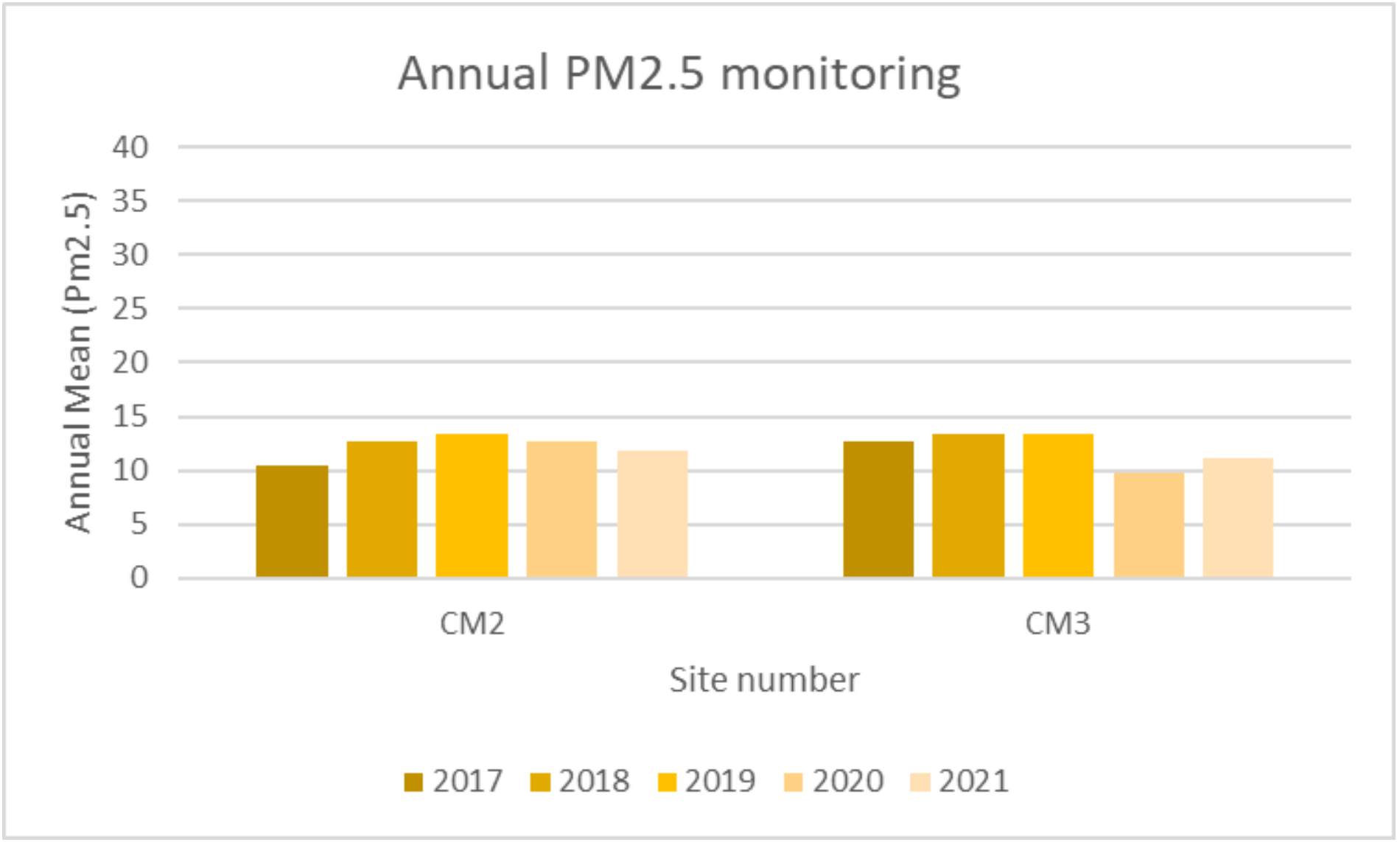
The annual mean concentrations are presented as µg/m^3.

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%).

Figure A.3 – Trends in Annual Mean $PM_{2.5}$ Concentration



Appendix B: Full Monthly Diffusion Tube Results for 2021

Table B.1 – NO_2 2021 Diffusion Tube Results (µg/m^3)

DT ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean: Raw Data	Annual Mean: Annualised and Bias Adjusted (x.x)	Annual Mean: Distance Corrected to Nearest Exposure	Comment
DT1	440820	561821	30.8	27.7	21.6	26.4	21.7	21.9		24.8	23.6	31.6	27.8	26.3	25.8	21.7	-	
DT2	438542	562321	37.8	30.6	27.0	26.5	25.6	20.5	24.9	25.4	32.9	32.5	35.0	29.5	29.0	24.4	-	
DT3	438412	562368	26.9	18.8	17.8	20.1	14.0	13.9	15.7	16.4	19.3	20.6		23.1	18.8	15.8	-	
DT4	437053	561418	24.4	19.1	16.9	17.8	12.0	11.4	14.7	13.8	18.3	20.5	17.9	21.1	17.3	14.5	-	
DT5	436528	561280	29.8	24.3	18.0	18.6	17.7	14.6	19.1	17.0	23.8	24.5	25.7	27.8	21.7	18.3	-	
DT6	436021	561368	38.7	29.9	30.0	31.0	15.8	16.8	30.6	30.1	32.7	34.0	30.5	33.7	29.5	24.8	-	
DT7	434623	561746	34.7	20.8	44.9	23.1	17.8		17.7	18.3	23.3	24.5	25.2	25.6	25.1	21.1	-	
DT8	433883	562644	28.1	19.4	17.5	20.8	15.9	14.0	15.9	16.3	19.4	14.3	22.0	23.9	18.9	15.9	-	
DT9	433739	562070	26.3	30.4	16.1	19.1	13.3		16.2	14.4	18.0	14.2	17.8	25.5	19.2	16.1	-	
DT10	430489	563058	36.0		23.2	23.6	22.0	20.3	23.5	22.0	27.9	29.6	29.5	29.2	26.1	21.9	-	
DT11	430540	563425	31.8	27.0	14.3	19.5	16.1	14.5	19.5	18.5	23.3	25.8		27.3	21.6	18.1	-	
DT12	430582	563663			17.1	20.2	12.4	13.2	16.0	16.6	21.6	23.4	21.5	23.9	18.6	15.6	-	
DT13	430976	564378	30.8	25.2	21.6	29.4	23.1	22.0	27.7	25.5	26.9	28.5	25.6	28.3	26.2	22.0	-	
DT14	432393	564994	30.6	24.3	18.8	19.4	16.0	16.8	21.5	22.4	28.0	29.3	30.1	26.1	23.6	19.8	-	
DT15	432682	565456	35.3	31.0	26.1	25.0	18.8	18.3	19.5	21.0	27.3	34.4	29.5	32.7	26.6	22.3	-	
DT16	433088	565007	34.2	24.3	20.2	25.7	18.6	17.2	22.4	19.7	23.1	24.1	26.2	26.6	23.5	19.8	-	
DT17	433658	563497	36.5	36.8	25.5	30.7	28.1	21.9	27.7	27.4	32.8	30.0		29.7	29.7	25.0	-	
DT18	433698	563825	32.4	29.0		40.0	23.0	19.3	26.4	24.9	26.0	22.3	10.1	25.5	25.4	21.3	-	

DT ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean: Raw Data	Annual Mean: Annualised and Bias Adjusted (x.x)	Annual Mean: Distance Corrected to Nearest Exposure	Comment
DT19	433780	563692	35.9	35.1	27.8	23.8	21.3	20.3	21.0	24.0	31.9	37.0	33.1	34.2	28.8	24.2	-	
DT20	434068	563695	34.8	25.3	26.4	25.4	40.0	22.2	24.0	23.1	25.0	27.1	28.4	28.9	27.6	23.2	-	
DT21	434068	563695	34.2	24.3	25.0		18.5	21.1	22.4	22.7	24.8	28.3	30.8	30.2	25.7	21.6	-	
DT22	434068	563695	33.0	24.7	27.7	28.1	18.9	22.1	22.9	23.1	25.7	25.9		27.9	25.5	21.4	-	
DT23	434326	563728	36.2	25.3	25.7	29.4	22.5	23.7	27.8	25.1	27.7		50.7	29.5	29.4	24.7	-	
DT24	434297	563934	29.5	34.0	35.5	28.8	25.4	26.3	27.4	27.3		36.1	35.1	34.0	30.8	25.9	-	
DT25	434376	563955	37.1	26.5	27.4	27.4	18.3	21.5	19.5	23.4	29.4	67.1	29.3	30.8	29.8	25.0	-	
DT26	434298	563970	44.6	30.4	27.2	23.9	22.5	18.4	24.3						27.3	24.0	-	
DT27	435321	564843	44.7	41.4	34.4	34.3	29.9	29.6	29.1	29.5	36.2	38.5	28.7	41.0	34.8	29.2	-	
DT28	435605	565290	36.4	33.4	22.4	28.4	24.0	24.7	27.7	25.4	27.0	29.0	31.7	32.2	28.5	23.9	-	
DT29	435926	564596	42.5	33.6	29.1	29.9	22.4	24.3	24.6	24.6	32.2	36.4	34.5	35.3	30.8	25.9	-	
DT30	435987	564647	44.9	37.2	33.3	30.8	26.9	26.0	29.1	29.4	32.4	37.1		36.5	33.1	27.8	-	
DT31	435959	564470			29.3	33.6	26.4	26.8	33.3	30.6	35.4	33.3	31.6	35.4	31.5	26.5	-	
DT32	437540	564355	33.5	24.5	24.2	21.0	17.1	15.3	16.7	18.6	24.3	27.8	30.1	29.3	23.5	19.8	-	
DT33	437819	564335	35.0	27.6	27.1	22.6	20.6	21.1	21.5	23.0	29.0	34.1	29.4	34.2	27.1	22.8	-	
DT34	437010	565873	40.5	29.7	33.5	25.1	20.9	24.9	23.5	24.8	32.0	37.6	37.4	41.2	30.9	26.0	-	
DT35	436923	565967	34.1	27.6	28.0	25.6	21.5	24.0	22.6	22.9	25.8	28.3	30.3	30.7	26.8	22.5	-	
DT36	436727	566374	40.5	29.9	26.2	27.2	24.5	19.9	27.3	24.5	25.9	27.7	25.6	34.6	27.8	23.4	-	
DT37	436216	566216	87.7	35.5	32.1	34.6	30.8	13.5	52.9	32.7	33.5	38.2	29.2	34.6	37.9	31.9	-	
DT38	436169	565876	30.1	21.5	21.5	19.4	14.7		16.0	16.7	19.0	22.9	26.7	26.4	21.3	17.9	-	
DT39	436098	565902														-	-	

DT ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean: Raw Data	Annual Mean: Annualised and Bias Adjusted (x.x)	Annual Mean: Distance Corrected to Nearest Exposure	Comment
DT40	436597	567308	38.2	29.6	28.1	20.5	17.3	18.8	16.5	17.9	25.9	31.7	36.4	37.4	26.5	22.3	-	
DT41	431428	564493	32.1	27.5	21.0	24.9	20.2	15.1	21.2	19.2	23.7	26.4	26.5	30.7	24.0	20.2	-	
DT42	436396	565012	41.8	32.7	32.9	32.2	23.5	24.6	29.2	23.2	30.0	33.0	36.0	32.9	31.0	26.0	-	
DT43	437161	565572	36.3	26.5	27.3	25.2	22.5	21.1	25.6	23.5	23.9	28.0	26.2	28.4	26.2	22.0	-	
DT44	436923	565967	37.9	29.1	25.6	23.9	19.8	15.3	18.7	20.1	25.5	28.7	31.7	31.7	25.7	21.6	-	

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

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

☐ **Local bias adjustment factor used**

☒ **National bias adjustment factor used**

☒ South Tyneside Council **confirm that all 2021 diffusion tube data has been uploaded to the Diffusion Tube Data Entry System**

Notes:

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

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

See Appendix C for details on bias adjustment and annualisation.

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

New or Changed Sources Identified Within South Tyneside Council During 2021

The second phase of the IAMP scheme 'IAMP two' is currently going through the planning process and a planning application has been submitted in 2021, with a view to bringing forward the further development.

Additional Air Quality Works Undertaken South Tyneside Council during 2021

Completion of the draft local air quality strategy, with consultation undertaken. We will be reviewing consultation response before completing the corporate process to adopt the strategy. The strategy sets our strategic objectives, provides new focus and joined working with an invigorated action plan that will be reviewed on an annual basis.

A Screening Assessment relative to the Boldon Lane (AQMA 1) and Lindisfarne/ Leam Lane (AQMA 2) was completed in October 2021. In summary the report demonstrates that concentrations of NO_2 within both AQMA's remain below the annual objective level of 40 µg/m3 and that there is a predicted downward trend in background NO_2 concentrations at both sites from 2018 – 2030.

Consultation on a draft Air Quality Strategy and revocation of both Air Quality Management Areas was undertaken from the 28th February 2022 for 8 weeks, Statutory Consultees and members of the public were given the opportunity to comment on both proposals.

The Council intend to progress with the draft Air Quality Strategy taking onboard all responses from the consultation, with the aim of the strategy being signed off by Council by Autumn.

QA/QC of Diffusion Tube Monitoring

Diffusion tubes are supplied and analysed by Gradko International Ltd, Winchester, Hampshire. The preparation method used is 20% TEA and acetone.

Gradko has full U.K.A.S. accreditation for compliance with ISO-IEC 17025 for laboratory management system. The accuracy and consistency of analytical methods is regularly monitored using external proficiency schemes such as

- Workplace analysis scheme for proficiency (W.A.S.P.)
- Laboratory Environmental Analysis Proficiency (L.E.A.P.)

Gradko follow the procedures set out by the DEFRA Harmonisation Practical Guidance.

Gradko participate in Air-PT analysis schemes and the most recent results are available on request.

Diffusion Tube Annualisation

For those sites with a data capture of less than 75%, annualisation is required to calculate the annual mean. The sites requiring this calculation are:

DT26

Table C.2 below shows the calculation method that is used as per LAQM TG.16.

Four local sites which are part of the national Automatic Urban and Rural monitoring network have been identified, however data capture at Sunderland Silksworth is not sufficient to be included in the calculation methodology, three sites are appropriate according to guidance.

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_x/NO_2 continuous analysers. Alternatively, the national database of diffusion tube co-location surveys provides bias factors for the relevant laboratory and preparation method.

South 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 South Tyneside over the past five years is presented in Table C.1.

The national bias adjustment has been derived from table 03/22 of the national spreadsheet for bias adjustment which includes 32 studies.

The local bias adjustment has also been calculated using the Diffusion tube processing tool. Diffusion Tubes DT20,21 and 22 are co located with CM2 which allows for local bias adjustment to be defined. The Local Bias adjustment factor 0.75 was calculated. However, South Tyneside Council have taken the worst case scenario approach of using the national bias adjustment factor to produce 2021 diffusion tube results.

Table C.1 – Bias Adjustment Factor

Monitoring Year	Local or National	If National, Version of National Spreadsheet	Adjustment Factor
2021	National	03/22	0.84
2020	Local	-	0.85
2019	National	03/20	0.93
2018	National	03/19	0.93
2017	National	03/18	0.87

NO_2 Fall-off with Distance from the Road

Wherever possible, monitoring locations are representative of exposure. However, where this is not possible, the NO_2 concentration at the nearest location relevant for exposure has been estimated using the Diffusion Tube Data Processing Tool/NO_2 fall-off with distance calculator available on the LAQM Support website. Where appropriate, non-automatic annual mean NO_2 concentrations corrected for distance are presented in Table B.1.

No diffusion tube NO_2 monitoring locations within South Tyneside required distance correction during 2021

QA/QC of Automatic Monitoring

The QA/QC procedures of South Tyneside Council are based on the AUN Site Operator's manual along with training received from our original equipment suppliers, Casella Group.

Maintenance / Calibration of equipment:

- A qualified engineer services automatic analysers every 6 months under a contracted service agreement. The analysers are calibrated during service visits.
- Matt's Monitors Ltd are under contract to maintain the stations, staff visit each monitoring station at least once every 4 weeks to ensure all of the equipment is working within normal parameters and to conduct zero and span checks of the equipment. The filters at each site are changed during these visits.
- If a problem is noted with any of the stations, a call-out is initiated and a service engineer will visit the site within 2 days to correct the fault.

PM_{10} and $PM_{2.5}$ Monitoring Adjustment

The type of PM10 monitor(s) utilised within South Tyneside Council do not require the application of a correction factor.

Automatic Monitoring Annualisation

All automatic monitoring locations within South Tyneside Council 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 33% do not require annualisation.

NO_2 Fall-off with Distance from the Road

Wherever possible, local authorities should ensure that monitoring locations are representative of exposure. However, where this is not possible, the NO_2 concentration at the nearest location relevant for exposure should be estimated using the NO_2 fall-off with distance calculator available on the LAQM Support website. Where appropriate, non-automatic annual mean NO_2 concentrations corrected for distance are presented in Table B.1.

No automatic NO_2 monitoring locations within South Tyneside Council required distance correction during 2020.

Table C.2 – Annualisation Summary (concentrations presented in µg/m^3)

Site ID	Annualisation Factor Newcastle Centre	Annualisation Factor Newcastle Cradlewell	Annualisation Factor Site 3 Name	Annualisation Factor Sudnerland Wessington Way	Average Annualisation Factor	Raw Data Annual Mean	Annualised Annual Mean
DT26	1.0307	1.0744		1.0380	1.0477	27.3	28.6

Table C.3 – Local Bias Adjustment Calculation

	Local Bias Adjustment Input 1	Local Bias Adjustment Input 2	Local Bias Adjustment Input 3	Local Bias Adjustment Input 4	Local Bias Adjustment Input 5
Periods used to calculate bias	11				
Bias Factor A	0.75 (0.62 - 0.95)				
Bias Factor B	33% (6% - 60%)				
Diffusion Tube Mean (µg/m^3)	26.4				
Mean CV (Precision)	3.7%				
Automatic Mean (µg/m^3)	19.9				
Data Capture	99%				
Adjusted Tube Mean (µg/m^3)	20 (16 - 25)				

Notes:

A single local bias adjustment factor has been used to bias adjust the 2021 diffusion tube results.

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

Figure D.1 – Map of Non-Automatic Monitoring Sites – Boldon Lane AQMA

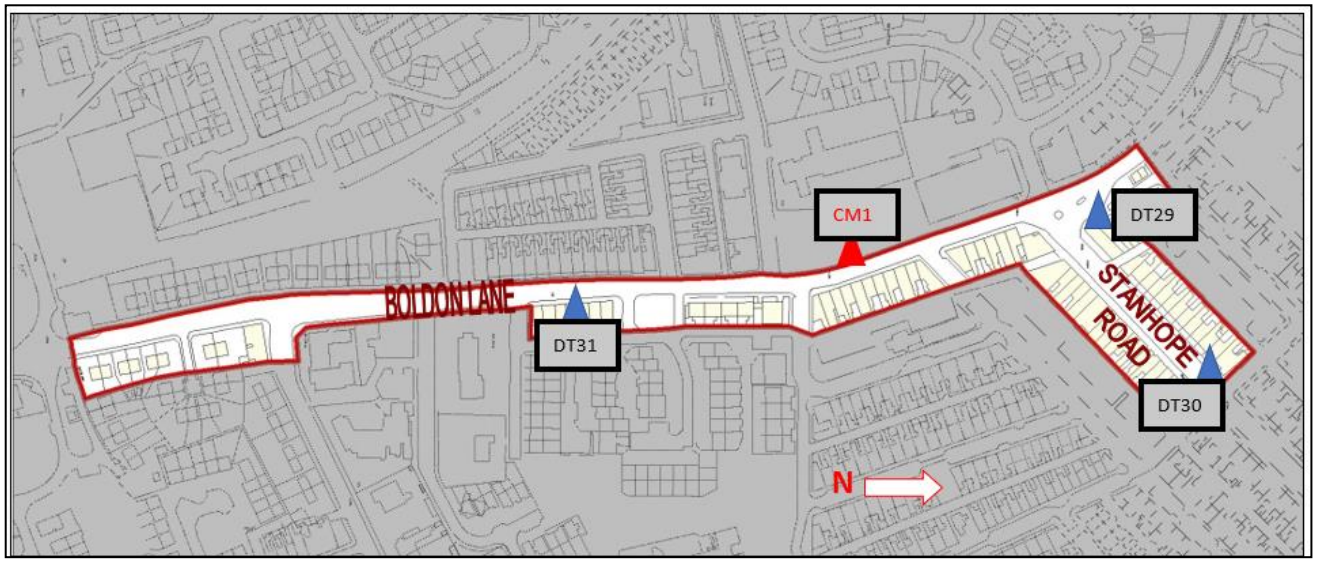
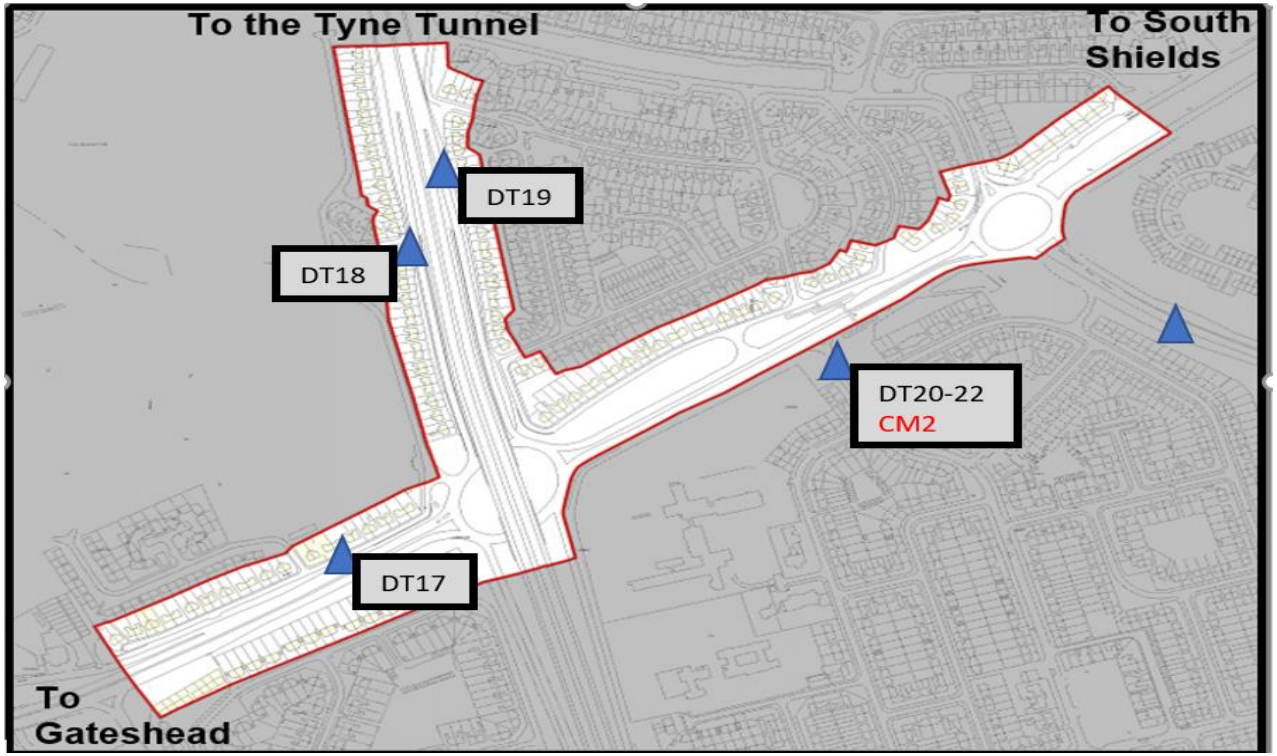
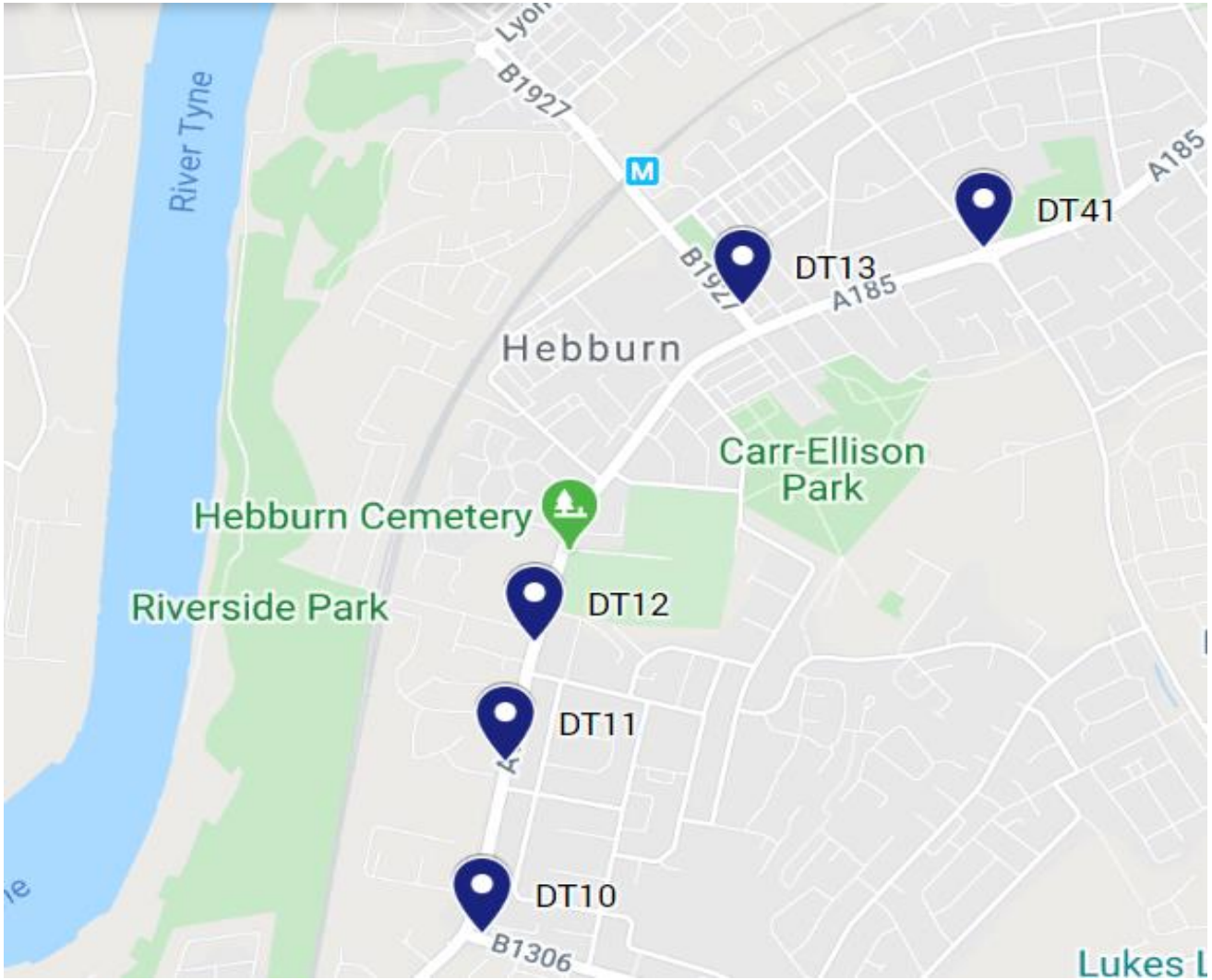


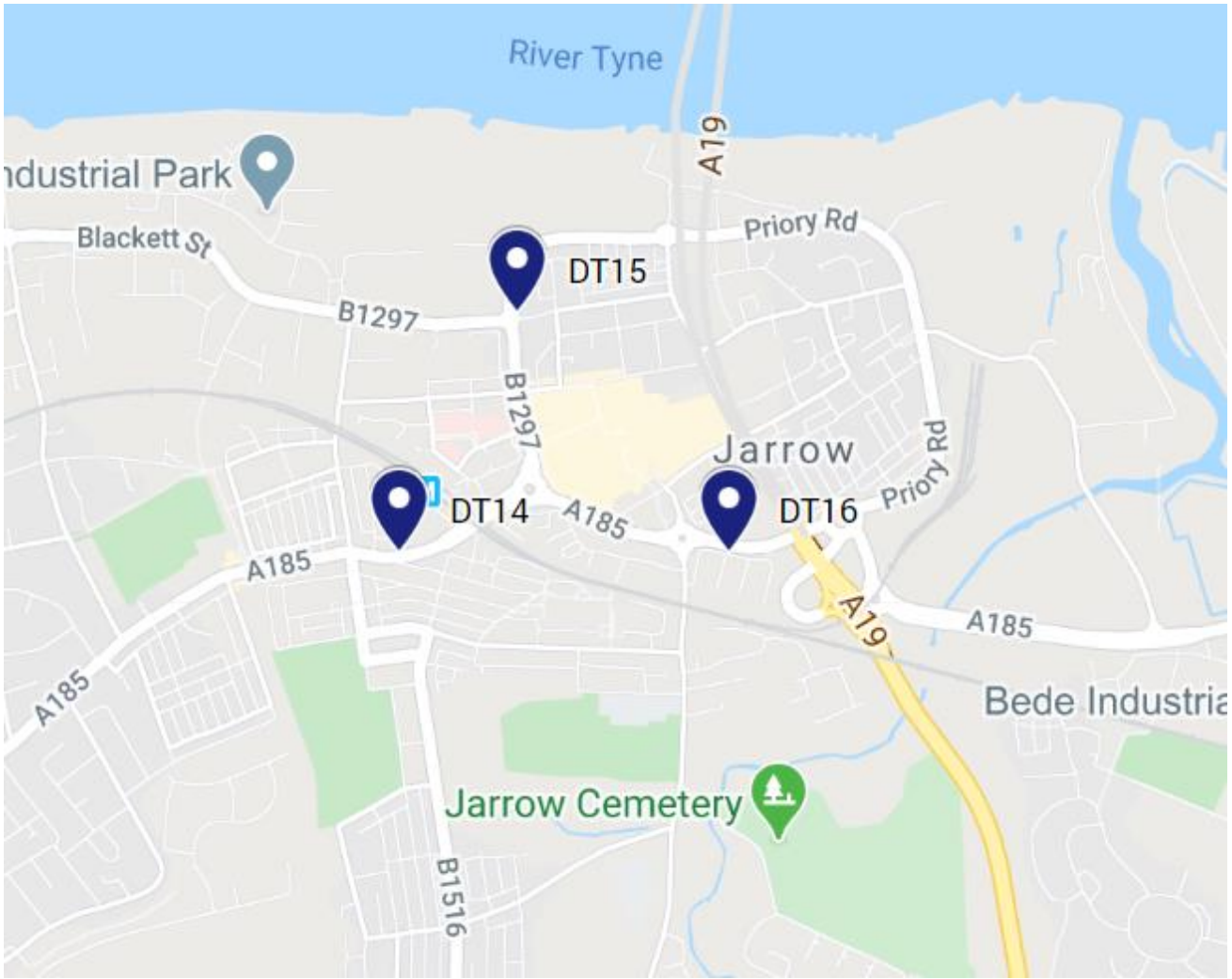
Figure D.2 – Map of Non-Automatic Monitoring Sites – Lindisfarne roundabout/Leam Lane AQMA



Non-Automatic monitoring sites - Hebburn



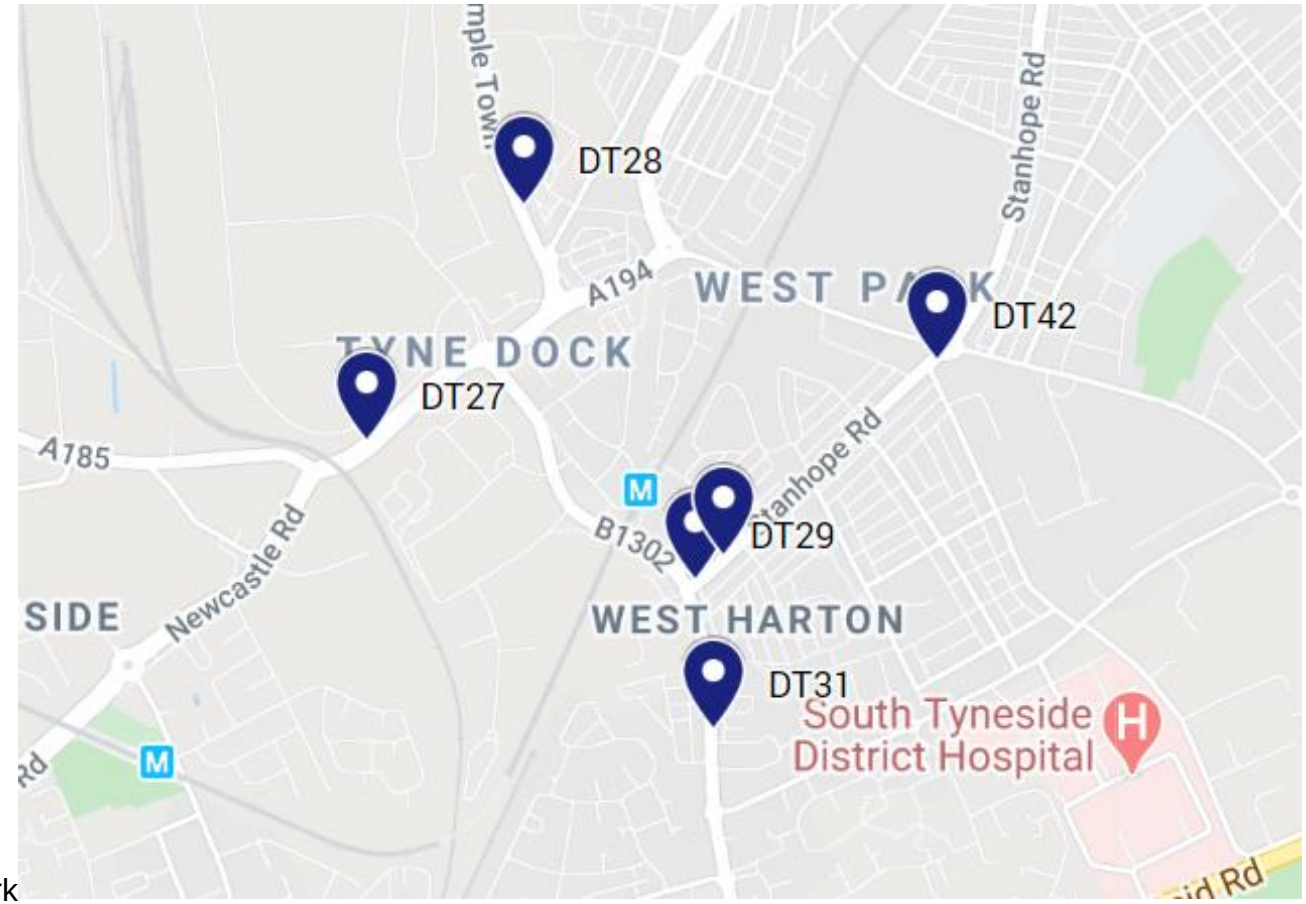
Non-Automatic monitoring sites - Jarrow



Non-Automatic monitoring sites – Boldon and A19

Non-Automatic monitoring sites Location Map – Cleadon and Whitburn

Non-Automatic monitoring sites Location Map – Tyne Dock and West

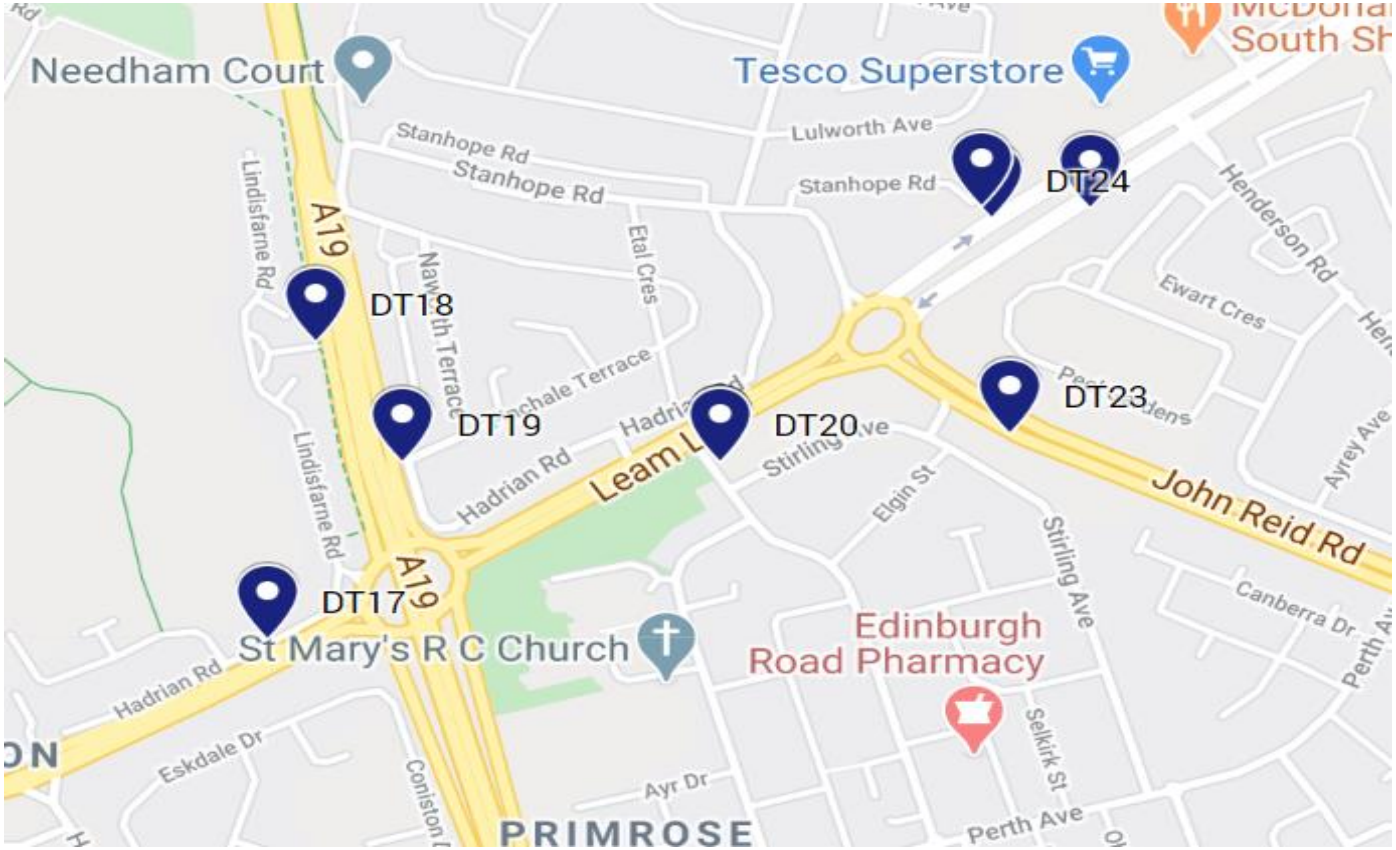


Park

Non-Automatic monitoring sites Location Maps – Harton


DT32
DT33
Centenary Ave
Prince Edward Rd
THE NOOK
South Shields Golf Club
Cleadon Park
King George Rd

Non-Automatic monitoring sites Location Map – Lindisfarne, Jarrow



Non-Automatic monitoring sites Location Map – South Shields

Appendix E: Summary of Air Quality Objectives in England

Table E.1 – Air Quality Objectives in England[9]

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

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

References

- Local Air Quality Management Technical Guidance LAQM.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.