



2022 Air Quality Annual Status Report (ASR)

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

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Information	City of York Council Details
Local Authority Officer	Andrew Gillah
Department	Place Directorate Public Protection
Address	City of York Council, Public Protection Hazel Court Eco Depot, James Street York, YO10 3DS
Telephone	(01904) 551525
E-mail	public.protection@york.gov.uk
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Executive Summary: Air Quality in Our Area

Air Quality in York

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

The mortality burden of air pollution within the UK is equivalent to 28,000 to 36,000 deaths at typical ages³, with a total estimated healthcare cost to the NHS and social care of £157 million in 2017⁴.

Through monitoring of air quality across the city, CYC has previously identified some areas of the city centre, around the inner ring road, where long term annual average nitrogen dioxide (NO₂) levels are above health based objective levels. These areas have been incorporated into an Air Quality Management Area (AQMA). Historically, AQMAs have also existed in Fulford (AQMA Order No.2) and on Salisbury Terrace (AQMA Order No.3). These AQMAs were revoked in 2020 and 2017 respectively due to improvements in air quality in these areas of the city. Current and historical AQMAs declared by City of York Council can be viewed at [List of York AQMAs](#) and are discussed in City of York Council's previous Annual Status Reports available on the [JorAir website](#).

CYC has a statutory duty to try to reduce NO₂ concentrations within the remaining city centre AQMA and additional obligations in relation to the protection of public health and reduction of greenhouse gas emissions. The main air pollutants of concern in York are NO₂ and particulate matter (PM). Typically, transport sources are responsible for around

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

50-70% of the total NO₂ at any particular location in the city, although the exact amount varies according to proximity to roads and other emission sources.

The Covid-19 lockdowns in 2020 provided an unexpected and unique opportunity to study York's air quality in the absence of normal traffic levels. Widespread improvements in air quality were observed in York in 2020 compared with previous years, primarily due to a reduction in emissions from vehicles on the York road network caused by work from home directions and non-essential retail being closed. The reduced number of vehicles on the roads, combined with guidance to exercise outside the home once a day resulted in an increase in active forms of travel such as walking and cycling.

Whilst the annual average air quality objective for NO₂ (40µg/m³) was met at all monitored relevant locations in York during 2020 (including all sites within the current Air Quality Management Area), the latest air pollution monitoring data for 2021, summarised in this report, indicates that NO₂ concentrations in the AQMA have increased during the pandemic recovery period. The highest concentration of NO₂ recorded at a location representative of long term public exposure in 2021 was 47µg/m³ on Gillygate. This contrasts with levels of 40µg/m³ monitored in the same location in 2020.

Annual mean NO₂ concentrations monitored at all roadside continuous monitoring stations were higher in 2021, compared with levels monitored in 2020. Increases in NO₂ of between 4% (Heworth Green) and 19% (Nunnery Lane) were observed between 2020 and 2021 (average increase 9%). Annual mean background concentrations of NO₂ monitored at Bootham Hospital (City of York Council's urban background continuous monitoring site) varied by less than 1% between 2020 and 2021. This reflects the reduced impact of local traffic emissions on air quality in the vicinity of this background site.

Despite concentrations of NO₂ monitored in York throughout 2021 being higher than those monitored in 2020, they continue the general downward trend in NO₂ concentrations monitored across the city since 2012. Ongoing air quality monitoring in all locations will be fundamental to understanding the longer term environmental impacts of the pandemic and the magnitude of any changes due to increased sustained levels of walking and cycling and changes in public transport habits.

With respect to the city centre AQMA, exceedances of the health based annual mean NO₂ objective of 40µg/m³ were monitored at some locations on Gillygate, Bootham, St Leonards Place, Museum Street, Holgate Road, Blossom Street, Rougier Street and Bridge Street in 2021. Maximum annual mean concentrations of NO₂ monitored at relevant locations within the current AQMA 'technical breach' areas were 47.5µg/m³

(Gillygate), 40.5µg/m³ (George Hudson St / Rougier St), 43.5µg/m³ (Holgate / Blossom Street), 33.7µg/m³ (Lawrence St), 32.9µg/m³ (Fishergate / Paragon St), 32.8µg/m³ (Prices Lane/Nunnery Lane) and 31.8µg/m³ (Coppergate). Maximum concentrations of NO₂ recorded in these areas were on average 12.1% higher in 2021 than in 2020 and ranged from 1.9% higher on Coppergate to 24.5% higher on Holgate / Blossom Street.

Due to the differences in air pollution observed across the city throughout the period 2019 – 2021 and uncertainties around the longer-term impacts of the pandemic on traffic and emissions, it is not considered appropriate to reduce the size of the city centre AQMA at this time. In line with DEFRA's LAQM guidance, before revoking an AQMA on the basis of measured pollutant concentrations, a local authority needs to be reasonably certain that any future exceedences of air quality objectives are unlikely. For this reason, it is expected that local authorities will need to consider measurements carried out over several years or more, national trends in emissions, as well as local factors that may affect the AQMA. The AQMA boundary will be reviewed as part of City of York Council's next Annual Status Report (due June 2023) when the longer term impacts of the pandemic on traffic may be clearer.

Concentrations of NO₂ monitored in the former Fulford Road AQMA in 2021 continue to be well below the annual mean objective of 40µg/m³. The highest recorded levels of NO₂ in this area were monitored on Fulford Main Street and were 25.4µg/m³. This supports the decision to revoke the Fulford Road AQMA, as discussed in City of York Council's previous Annual Status Reports and implemented in February 2020.

Concentrations of NO₂ monitored in the former Salisbury Terrace / Leeman Road AQMA in 2021 were also all well below the annual mean objective of 40µg/m³. The highest recorded levels of NO₂ in this area were monitored on Salisbury Terrace and were 29.2µg/m³. This confirms that the decision to revoke this AQMA in December 2017 was appropriate.

In December 2018, the boundary of the city centre AQMA was extended to include the full length of Coppergate and the buildings either side of the road, due to monitored concentrations of NO₂ above the annual mean objective for this pollutant. Concentrations of NO₂ monitored along Coppergate in 2021 were marginally higher than those monitored in 2020 (1.9%), but still significantly lower than those monitored pre-pandemic in 2019, with the highest concentration in 2021 observed at site D56 (Three Tuns Pub, 12 Coppergate). This site recorded an annual mean NO₂ concentration of 31.8µg/m³ in 2021 which is well below the annual mean objective for this pollutant and still represents a 16.8% reduction in NO₂ compared with concentrations monitored at this site in 2019. The

new AQMA Order also removed the reference to breaches of the short-term hourly objective along George Hudson Street / Rougier Street / Bridge Street based on monitoring results in this area. The latest 2021 monitoring results for this area of the city indicate that this short-term objective is still being met.

City of York Council monitors particulate (PM₁₀) at 4 sites in the city (Bootham, Fishergate, Holgate Road and Plantation Drive) and ultra-fine particulate (PM_{2.5}) at 3 sites (Bootham, Fishergate and Gillygate). National air quality objectives for PM₁₀ and PM_{2.5} are currently met in York. The highest annual mean levels of PM₁₀ and PM_{2.5} monitored in York during 2021 were 17.2µg/m³ and 8.4µg/m³ respectively. Along with most areas of the UK, these concentrations are above World Health Organisation (WHO) guidelines for these pollutants, which have recently been strengthened to 15µg/m³ (PM₁₀) and 10µg/m³ (PM_{2.5}). Concentrations monitored in 2021 are below maximum levels of 19.2µg/m³ (PM₁₀) and 8.6µg/m³ (PM_{2.5}) monitored in 2020.

The Covid-19 pandemic has meant that the ongoing impact of CYC's Air Quality Action Plan (AQAP3), including major air quality improvement measures implemented in recent years such as the impact of the York Clean Air Zone (introduced January 2020) and a new all electric bus fleet, have been difficult to quantify. The true impacts of such measures may only be apparent over the next couple of years, as traffic levels and behaviour return to 'normal' and the air quality impact of such interventions can be verified via ongoing longer term air quality trends. If York can sustain some of the improvements in walking and cycling levels that arose during lockdown and many people continue to work at home, there may be an opportunity to improve air quality beyond that previously possible with only AQAP3 in place.

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 Strategy⁵ sets out the case for action, with goals to reduce exposure to harmful pollutants. The Road to Zero⁶ 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.

City of York Council previously produced two Air Quality Action Plans (AQAPs) in 2004 and 2006. These previous plans were primarily modal shift and congestion reduction based plans, with emphasis on reducing vehicle trips across the city.

Despite the introduction of two AQAPs, air quality in York continued to deteriorate between 2004 and 2010. In response, York adopted an overarching Low Emission Strategy (LES) in 2012 to tackle the issue. This document was the first of its kind in the UK and set out a new approach to local air quality management based on reducing emissions from all sources, including tailpipe emissions from individual vehicles and encouraging the uptake of alternative fuels and low emission vehicle technologies. The Low Emission Strategy has proved particularly effective at tackling emissions from essential service vehicles such as buses and taxis, which fall outside the scope of trip reduction based modal shift measures.

Modal shift and congestion reduction measures remain fundamental to the delivery of air quality improvement and emission reduction in York. The primary local delivery programmes for these measures are the Local Transport Plan and the iTravel York programme (see [iTravel York Website](#)). Existing programmes and those such as Government Active Travel Funding encourage the uptake of walking, cycling, and public transport in the city. They are supported by planning policies that ensure that sustainable travel solutions are embedded into all new developments in York.

Work progressed on CYC's updated Local Transport Plan (LTP4) in 2021. LTP4 sets the vision, objectives and targets for York's transport strategy for the next generation and complements strategies developed for York's Economic Recovery and Carbon Reduction. LTP4 concentrates on a 15 year period, aligning with the city's Local Plan, with a proposed review at each five year milestone. At the heart of LTP4's development was a city-wide

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

conversation ([Our Big Conversation](#)) that ran during the summer of 2021 and considered experience of and priorities for transport, air quality and carbon reduction, journeys and the economy. CYC also worked with partners at York Civic Trust to contribute to policy research and emerging findings throughout the period of engagement.

CYC's third [Air Quality Action Plan \(AQAP3\)](#) currently sets out how York intends to continue to deliver its ambitious and pioneering overarching Low Emission Strategy (LES) and to continue to work towards becoming an internationally recognised ultra-low emission city.

York's LES has already changed the way York delivers public transport and plans for future transport trips. Since publication of the LES, CYC has:

- Delivered a fully electric Park & Ride (P&R)

site at Poppleton Bar and introduced electric buses across other P&R sites.

CYC was awarded £3.3m from DfT's Low Emission Bus Scheme in 2018 to support delivery of high capacity, fully electric buses and to support charging



infrastructure at York's P&R sites. Further new all-electric double decker buses entered service in 2020/21 and expanded the fully electric fleet on the York P&R service to 33 buses, one of the largest fleets of electric double decker buses outside London. In March 2022, CYC was awarded £8.4m through DfT's ZEBRA fund to buy an additional 44 new electric buses. This will be matched by a further £10 million investment by First. Once in operation, this will expand the York bus fleet to 77 all-electric buses, which will run more than half the bus-miles operated in the city. The new buses will be used on First's routes 1, 4, 5 and 6, for the York Hospital shuttle bus and on Park&Ride route 2, reducing carbon emissions in York by 2,300 tonnes per year as well as reducing NO_x and particulate emissions across the city. In April 2022, CYC was awarded an additional £17m to support the development of key schemes and initiatives in line with [York's Bus Service Improvement Plan](#), including wider electrification of the urban bus fleet.

- Launched a Clean Air Zone (CAZ) for buses (introduced 31st January 2020). Buses making 5 or more entrances to the city centre CAZ per day are now required to be Ultra Low Emission Buses (ULEB) (Euro VI diesel or electric). A total of £1.65m has been allocated by CYC to 5 bus operators to help replace/retrofit 93 buses to CAZ

compliant standards. In addition to grant supported vehicles, operators have either converted or replaced approximately 40 additional buses to ensure compliance with the CAZ requirements. From the end of January 2021, York's CAZ for buses was fully operational and applied to all high frequency services using the city centre.

- Promoted its local 'Kick the Habit' anti-idling campaign. The campaign sets out to encourage people to think about the importance of clean air and the impact that this has on them, their health and those around them. The campaign is designed to change the way people feel about idling and encourage them to 'kick the habit' by highlighting idling as socially unacceptable and plays on the negative stigmas already associated with smoking to deliver a powerful message about the impact of vehicle emissions on health. In November 2021, CYC supported the University of York Law School to promote the scheme across campus and rolled out additional signage in the city to support the campaign. For Clean Air Day in June 2021, additional signage was erected outside 19 additional local primary schools, York District Hospital and York Railway Station. Work in 2021 reinforces action in previous years, including the erection of permanent signage in all CYC owned car parks, at most city centre bus stops, multiple taxi ranks and at other key locations across the city. Further information about the campaign can be found on CYC's [Kick the Habit Webpage](#).



- Continued rollout of the DEFRA funded Low Emission Taxi Grant scheme throughout 2021 and welcomed York's first fully electric taxi. An additional wheelchair accessible electric taxi joined the fleet in November 2021 and has since been followed by other EVs. The scheme offers financial support for eligible CYC registered taxi drivers to upgrade to low emission vehicles and will have the direct effect of reducing emissions of NO_x/NO₂ and particulate matter across the city. The use of low emission taxis will also contribute to CYC's net carbon neutral target by 2030, following the declaration of a climate emergency in March 2019. The current taxi grant scheme builds on previous taxi incentive schemes that have



facilitated the conversion of over 30% of the York taxi fleet to using electric and hybrid vehicles (figure correct as of March 2022). Further information about the scheme can be viewed at [Low Emission Taxi Grant Scheme](#). In 2021, further amendments were proposed to CYC's Taxi Licensing Policy with regards to the type of hackney carriage and private hire vehicles that will be licensed in the future. Changes proposed will ensure a more environmentally-friendly and modern hackney carriage and private hire fleet in the city in response to the declared climate emergency and continuing desire to improve air quality. Following a recommendation to CYC's Executive, this work is expected to progress in 2022 following a further period of consultation with the trade and other relevant parties.

- Implemented an extensive 'pay as you go' fast, rapid and ultra-rapid charge public electric vehicle recharging network. CYC's Executive have also endorsed the ambition that a minimum of 5% of bays in council owned car parks will be charging bays by 2023 (subject to funding). Further upgrades to CYC's charging estate were progressed throughout 2021. Once complete, CYC's new charging network will consist of 350 fast charging spaces, 19 rapid chargers, and 12 ultra-rapid chargers providing different charging options depending on an EV driver's requirements. CYC has previously been awarded £816k from the Office of Low Emission Vehicles (OLEV) after becoming the only Yorkshire location out of eight in the country to achieve 'Go Ultra Low' city status. The funding has been used to fund a network of charging [HyperHubs](#), providing ultra-fast, reliable and convenient electrical charging. CYC has since secured further European funding to allow the delivery of a solar canopy/battery storage solution. CYC's charging network is complemented by a number of commercial providers and charger options available in different parts of the city are shown on [ZapMap](#).
- Reduced 'grey fleet' trips and worked in partnership with Enterprise Car Club to provide a range of pool vehicles at various locations near West Offices (Main CYC HQ), Hazel Court and across the city which can be booked online and accessed via a smart membership card. A number of diesel pool cars have been replaced with the very latest petrol hybrid technology as part of the car club initiative and are now regularly used across various CYC services. In mid-2021, CYC implemented a Masternaut telematics system for fleet vehicles to improve safety, reduce emissions and improve vehicle and driver efficiency. Officers are currently working on the transition to an electric fleet for all vehicles under 3.5 tonnes as part of a four-year programme and exploring options for vehicles over 3.5 tonnes to move away from fossil fuels such as diesel.

- Developed Low Emission Planning guidance to accompany policy ENV1 'Air Quality' of the Local Plan. This guidance outlines City of York Council's design and mitigation expectations for all new developments in the city, including EV charging. It aims to assist developers to improve air quality, reduce exposure and lower transport emissions associated with new developments. This note is currently being used by CYC's Public Protection team to ensure that air quality impacts of new developments in the city are appraised and mitigated appropriately. An overview of planning applications reviewed by Public Protection during 2021 is provided in this ASR.
- Obtained DEFRA AQ Grant funding in March 2021 to carry out a feasibility study and subsequent pilot scheme to reduce emissions relating to freight deliveries travelling in to and out of York. The initial feasibility work aimed to more precisely quantify the emission / air quality impact of freight deliveries in the city and identify suitable sustainable alternatives, utilising low emission modes, including EVs and e-cargo bikes. As part of this work, CYC has engaged with businesses, including delivery companies, on the initial feasibility work and options for a pilot scheme.
- Obtained DEFRA AQ Grant funding and has been working alongside Bradford Metropolitan District Council, Lancaster City Council and Mid Devon District Council in development of a new air quality hub. Focused on information exchange between local authority professionals, the Hub features a range of content areas related to air quality improvement measures that local authorities can adopt, as well as more specific practitioner advice notes that focus on various aspects of local air quality management, planning, monitoring and enforcement. The Hub also includes a growing library of relevant case studies and a forum to facilitate discussion and information exchange. Following a successful launch at the end of 2020, the membership base has grown significantly throughout 2021, covering local authorities across the UK.

- Undertaken promotion (October 2021) of the rules around smoke control areas and issued advice and guidance to residents on the use of appropriate fuels and maintenance of appliances in line with the Government's national Burn Better campaign. In December 2021, Public



Protection commenced a programme of compliance checks across petrol filling stations within CYC's area to ensure that all solid fuels being sold were certified as 'Ready to Burn' in line with the [Air Quality \(Domestic Solid Fuels Standards\) \(England\) Regulations 2020](#).

In addition to the above, York continues to deliver on walking, cycling and public transport improvements, maintaining its national reputation as a leader in sustainable transport.

Throughout 2021:

- CYC implemented a range of temporary measures to support active travel throughout the pandemic. New, permanent infrastructure that will enable more convenient and safer walking and cycling across the city of York is now proposed. CYC have provisionally allocated around £3.3million to support active travel schemes to be implemented by 2023. The Active Travel Programme is part of the Council's overall Transport Capital Programme and highlights upcoming projects and proposed schemes (some projects are subject to successful bids) to be implemented by the end of 2023. Further information about walking and cycling projects being developed through the programme can be found at [CYC's Active Travel Programme](#).
- CYC continued the rental trial of E-Scooters in partnership with leading European operator TIER. E-Scooters provide a safe and sustainable way of getting around the city. Renting an e-scooter in York cost riders £1 to unlock the scooter and 15p per minute travelled. People can pick up the e-scooters at several locations and ride them along a number of cycle and road routes, offering an environmentally friendly zero emission mode of transport.
- CYC secured £133,040 of DfT funding for a new scheme enabling cyclists to borrow and e-cycle and trial it for 7 days with no obligation to buy it. Once their trial was complete, participants were eligible for £300 discount should they decide to purchase the bike.

- CYC encouraged students of all ages to cycle as part of Bike to School week 2021 (27th Sept – 1st Oct 2021). Bikeability training is offered to all primary and secondary schools in York, with 98% uptake from the schools and over 2,000 training places delivered annually. The training offers children and young people the confidence and skills to make their journey to school by bicycle and they are encouraged to continue cycling on a regular basis once the training is completed. In addition, 5,867 pupils at 23 of York's primary schools took part in Walk to School Week in autumn 2021, which ran from 11th to 15th October 2021. The annual awareness-raising event aims to encourage children and their families to walk, cycle or scoot to and from school, rather than travelling by car.

Complementary air quality initiatives delivered in 2021 through CYC's carbon reduction work programmes included:

- Hosting the first ever York Net Zero Building Solutions event in November 2021 to connect solution providers with local businesses, home owners and property managers interested in retrofitting their buildings/homes to build a cleaner, greener city for York. The event featured businesses, service providers and industry specialists covering renewable energy generation, low carbon heating, battery storage and energy flexibility, solutions for heritage assets, lighting upgrades and energy efficient appliances.
- Trialling a new lower carbon solution for resurfacing roads, with a view to roll out across further projects in the city. The solution incorporates a 'crumb' of recycled rubber tyres and is able to be applied at a lower temperature, thus reducing carbon emissions in comparison to standard materials. The materials properties can also create a quieter road surface and one that causes less wear on the tyres of the vehicles that pass over it. In addition, the recycled rubber can prevent water from getting into the surface of the road, reducing damage from freezing.
- Successfully bid for grants from 3 energy efficiency funds during 2021. The £5 million funding, which is 3 times the average per capita award across the country, will support works to make over 600 homes in York and the sub-region more energy efficient. This will reduce carbon emissions, create warmer and healthier homes and reduce fuel bills for residents. The works will benefit a variety of homes including council homes, housing association, privately rented and privately owned homes. The work includes internal and external wall insulation and under floor insulation, air source heat pumps and solar panels.

- Planting the first trees at the new Community Woodland. Representatives from CYC and Forestry England were joined by seven local school children to commemorate the planting. York Community Woodland will be planted on 194 acres of land to the West of York near the village of Knapton. This first planting is paving the way for over 100,000 trees and shrubs at the woodland to be planted over the next few years.

York already has much to celebrate in relation to reducing emissions and protecting and improving the health of its residents. However, with an increasing population and further development, preventing emission growth and improving air quality remain significant and difficult challenges for the foreseeable future.

Measures in AQAP3 are intended to build upon (but not replace) the modal shift based measures included in previous AQAPs, and are intended to support other emission reduction measures across other CYC strategies such as the Local Transport Plan and proposed in the Climate Change Strategy.

In CYC's 2021 Annual Status Report, it was reported that CYC's original intention was to publish an updated AQAP within 12 months. In line with this original timescale, further feasibility work has been progressed throughout 2021. Work undertaken to date includes a feasibility study to consider options for reducing city centre freight movements and further survey work in relation to the prevalence of domestic solid fuel burning across York.

Timescales for production of a revised AQAP have now been extended to allow consideration of additional air quality monitoring results during the pandemic 'recovery' period and new DEFRA LAQM policy guidance around action to reduce fine particulate matter (in line with the Environment Act 2021). Further updates on CYC's AQAP update will be provided in CYC's next Annual Status Report, due June 2023.

Conclusions and Priorities

Key findings and conclusions from this year's Annual Status Report:

- The annual average air quality objective for NO₂ (40µg/m³) was exceeded at some monitoring sites within the current Air Quality Management Area in York in 2021. The highest concentration of NO₂ recorded at a 'relevant location' was 47.5µg/m³ on Gillygate.
- Annual mean NO₂ concentrations monitored at all roadside real-time monitoring stations were higher in 2021, compared with levels monitored in 2020. Increases in NO₂ of between 4% (Heworth Green) and 19% (Nunnery Lane) were observed

between 2020 and 2021 (average increase 9%). Annual mean background concentrations of NO₂ monitored at Bootham Hospital (City of York Council's urban background continuous monitoring site) varied by less than 1% between 2020 and 2021.

- With respect to the city centre AQMA, exceedances of the health based annual mean NO₂ objective of 40µg/m³ were monitored at some locations on Gillygate / Bootham / St Leonards Place / Museum Street, on Holgate Road / Blossom Street and on Rougier Street / Bridge Street in 2021. Maximum annual mean concentrations of NO₂ monitored at relevant locations within the current AQMA 'technical breach' areas were 47.5µg/m³ (Gillygate), 40.5µg/m³ (George Hudson St / Rougier St), 43.5µg/m³ (Holgate / Blossom Street), 33.7µg/m³ (Lawrence St), 32.9µg/m³ (Fishergate / Paragon St), 32.8µg/m³ (Prices Lane/Nunnery Lane) and 31.8µg/m³ (Coppergate). Maximum concentrations of NO₂ recorded in these areas were on average 12.1% higher in 2021 than in 2020 and ranged from 1.9% higher on Coppergate to 24.5% higher on Holgate / Blossom Street.
- Concentrations of NO₂ monitored in York throughout 2021, although higher than 2020, continue the long term general downward trend in NO₂ concentrations monitored across the city since 2012. However, due to the differences in air pollution observed across the city throughout the period 2019 – 2021 (especially the increases observed between 2020 and 2021) and uncertainties around the longer-term impacts of the pandemic on traffic and emissions, it is not considered appropriate to reduce the size of the city centre AQMA at this time. Ongoing air quality monitoring in all locations will be fundamental to understanding the longer-term environmental impacts of the pandemic.
- Maximum concentrations of NO₂ monitored in the former Fulford Road and Salisbury Terrace / Leeman Road AQMAs in 2021 continue to be well below the annual mean objective.
- Concentrations of NO₂ monitored along Coppergate in 2021 were higher than those monitored in 2020, but still significantly lower than those monitored pre-pandemic in 2019. Site D56 (Three Tuns Pub, 12 Coppergate) has consistently monitored the highest concentrations of NO₂ on this street in recent years but is currently monitoring concentrations below the annual mean objective.
- Monitoring of NO₂ in 2021 has not indicated any potential breaches of the short-term hourly NO₂ objective in the city.

- National air quality objectives for PM₁₀ and PM_{2.5} are currently met in York. The highest annual mean levels of PM₁₀ and PM_{2.5} monitored in York during 2021 were 17.8µg/m³ and 8.4µg/m³ respectively. This compares with maximum levels of 19.2µg/m³ (PM₁₀) and 8.6µg/m³ (PM_{2.5}) monitored in 2020. Concentrations of PM₁₀ and PM_{2.5} in 2021 exceeded the latest WHO Guidelines (significantly more stringent than current UK AQ Objectives).

City of York Council's priorities for the coming year are:

- **Develop an evidence base in relation to revision of CYC's AQAP** – CYC's next AQAP update will include measures to further reduce nitrogen oxides and particulates from all sources and will support and complement CYC's economic strategy, Local Plan, fourth Local Transport Plan (LTP4) and Climate Change Strategy. We will continue to develop the evidence base for this update throughout 2022, taking into account updated DEFRA LAQM policy guidance. CYC will keep abreast of emerging national legislation, ensuring any new measures to reduce emissions are adequately resourced and implemented in York.
- **Clean Air Zone (CAZ) and Zero Emission Buses** - CYC will continue to work with bus operators to ensure that the CAZ requirements are fully adhered to and idling events are minimised both within and outside the CAZ area. It remains a CYC ambition to pursue an all-electric bus fleet, becoming Britain's first fully electric bus town where all buses are capable of operating in electric zero-tailpipe emission mode in key locations. CYC has recently been awarded funding of £8.4m (DfT's ZEBRA scheme) and £17m (Bus Service Improvement Plan allocation from DfT) for wider electrification of the urban bus fleet over the next few years.
- **Anti-idling Measures** – CYC will continue to investigate complaints of vehicle idling in the city and undertake further promotion of the 'Kick the Habit' anti-idling campaign throughout 2022.
- **Continue to reduce emissions from taxis** – We will undertake further consultation with the trade in relation to updates to our Taxi Licensing Policy. Anticipated changes to the policy will see a gradual change in the operational taxi fleet, as vehicle licenses are renewed and as vehicles become too old to operate in the city. We will continue to roll out our DEFRA funded Low Emission Taxi Grant Scheme to support CYC licensed taxi drivers with vehicle upgrades throughout 2022.

- **Continued delivery of strategic EV charging network** – we will continue upgrading our existing charging estate in accordance with our current programme (as outlined in our EV Charging Strategy). CYC are moving to a new EV charge point management system in 2022 which will provide further information about charging episodes for publicly owned EVs and electric buses. We will also continue to explore options for on-street charging and facilities for charging electric taxis. We will progress the development of a third Hyper Hub site in the city centre.
- **Reduce emissions from new development** – we will ensure development related emissions are appropriately assessed and mitigated in line with CYC and national Low Emission Planning guidance and regulation.
- **Reducing emissions from CYC’s fleet** – by switching from diesel to low and zero emission alternatives wherever practical. CYC’s Executive agreed to commence the transition to an electric fleet for all vehicles under 3.5 tonnes as part of a four-year programme. CYC aims to replace 153 vehicles from its current fleet during the next three years, reducing CO₂ emissions by a third. To facilitate these changes, CYC will progress electrical infrastructure upgrades at key sites in 2022.
- **Continued modal shift and network improvement measures** – via both the LTP capital programme and i-Travel York sustainable travel programme. This will include delivering initiatives to promote walking, cycling and the use of public transport.
- **Further controls to address fine particulate emissions** – we will consider further opportunities to tackle fine particulate emissions, building on feasibility work around domestic solid fuel burning undertaken in 2021/22. We will continue compliance checks across key distribution outlets within CYC’s area to ensure that solid fuels being sold are certified as ‘Ready to Burn’ in line with the [Air Quality \(Domestic Solid Fuels Standards\) \(England\) Regulations 2020](#).
- **Reducing emissions associated with deliveries of light goods** – we will continue to work with partners to evaluate low emission delivery modes that could replace journeys by conventionally fuelled HGVs/LGVs and progress a pilot ‘micro-consolidation’ scheme using DEFRA Air Quality Grant funding.

Challenges faced by City of York Council

There are a number of challenges faced by CYC, and indeed the UK, with respect to air quality improvement measures and the ability of local authorities to meet health-based air quality objectives in their areas. These include:

- The ability of current vehicle emission standards to deliver reductions in NO_x emissions. There is still uncertainty about the on-road performance of some Euro VI diesel vehicles.
- The number of diesel vehicles in York (which have increased primary emission of NO₂ and diesel particulate).
- Development related 'emissions creep' through the cumulative impact of increased development in the city.
- Unnecessary vehicle idling in the city, particularly amongst heavy diesel vehicles. CYC has made significant headway in reducing idling events in the city over the last 2-3 years, via promotion of its local 'Kick the Habit' anti-idling campaign.
- Uncertainties with respect to future travel behaviour, particularly around confidence in the use of public transport during the pandemic recovery period (and possible subsequent increases in private car journeys). If CYC can sustain the improvements in walking and cycling levels that arose during lockdown and many people continue to work at home, there may be opportunities to improve local air quality beyond that previously predicted.

Despite longer term improvements seen in air quality across CYC's area in recent years, the above factors are anticipated to remain challenges for CYC in the future and are considered to be the main reasons for the current AQMA designation.

Local Engagement and How to get Involved

Further information about air quality and previous consultations can be obtained from the air quality pages of CYC's main website at [City of York Council's Air Quality Webpages](#) , or from CYC's dedicated air quality website at [JorAir Air Quality Website](#).

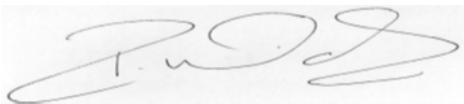
Residents, businesses and other interested parties are encouraged to participate in future consultations relating to air quality. These are advertised online at: [City of York Council Consultations](#).

Local Responsibilities and Commitment

This ASR was prepared by the Public Protection Department of City of York Council. Updates on Air Quality Action Plan measures have been obtained from various teams across the council including Transport Planning, Highways, Parking Services, Carbon Reduction and Education.

This ASR has been approved by Councillor Paula Widdowson, Executive Member for Environment and Climate Change:


Councillor Paula Widdowson



This ASR has been signed off by Sharon Stoltz, Director of Public Health and James Gilchrist, Director of Transport, Environment and Planning.

Sharon Stoltz

James Gilchrist



If you have any comments on this ASR please send them to Public Protection at:

Email: public.protection@york.gov.uk

Phone: 01904 551525

Write to: City of York Council, Public Protection (Air Quality), Hazel Court
Eco Depot, James Street, York, YO10 3DS

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1 Local Air Quality Management

This report provides an overview of air quality in City of York Council's area 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 City of York Council to improve air quality and any progress that has been made.

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

2 Actions to Improve Air Quality

2.1 Air Quality Management Areas

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

A summary of AQMAs declared by City of York Council can be found in Table 2.1. The table presents a description of the AQMA that is currently designated within York.

Appendix D: Map(s) of Monitoring Locations and AQMAs provides a map of the AQMA and also the air quality monitoring locations in relation to the AQMA. The air quality objectives pertinent to the current AQMA designation are as follows:

- NO₂ annual mean;

Table 2.1 – Declared Air Quality Management Areas

AQMA Name	Date of Declaration	Pollutants and Air Quality Objectives	One Line Description	Is air quality in the AQMA influenced by roads controlled by National Highways?	Level of Exceedance: Declaration	Level of Exceedance: Current Year	Name and Date of AQAP Publication	Web Link to AQAP
City Centre AQMA (AQMA Order No.5)	December 2018 (supercedes AQMA Order No. 4 declared Sept 2012)	NO ₂ Annual Mean	Inner ring road and properties included within 7 areas of technical breach	NO	62µg/m ³	47µg/m ³	AQAP3 published Sept 2015	Visit the AQAP for AQMA Order No.5

- City of York Council confirm the information on UK-Air regarding their AQMA(s) is up to date.
- City of York Council confirm that all current AQAPs have been submitted to Defra

2.2 Progress and Impact of Measures to address Air Quality in York

Defra's appraisal of last year's ASR supported the outlined measures to improve air quality across the city and accepted the conclusions reached for all sources and pollutants.

Key comments made by DEFRA for CYC to address in the 2022 ASR were as follows:

- **A recommendation to include additional 'zoomed in' maps to show precise locations of diffusion tubes.** Due to the number of tubes operated by City of York Council, an [interactive diffusion tube map](#) showing tube reference numbers has been made available online to accompany the ASR. Zoomed in maps showing the locations of all diffusion tubes in relation to the AQMA are also shown in Appendix D.
- **Undertake distance correction for all monitoring locations that exceeded the NO₂ annual mean objective.** In line with DEFRA guidance, distance correction has been undertaken at monitoring sites where the annual mean concentration is greater than 36µg/m³ and the monitoring site is not located at a point of relevant exposure. Distance corrected concentrations are shown in this ASR (see tables C.4 and B.1).

City of York Council has taken forward a number of direct measures during the current reporting year of 2021 in pursuit of improving local air quality. Details of all measures completed, in progress or planned are set out in Table 2.2. Twenty six measures are included within Table 2.2, with the type of measure and the progress City of York Council have made during the reporting year of 2021 presented. Where there have been, or continue to be, barriers restricting the implementation of the measure, these are also presented within Table 2.2.

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

Key completed measures and progress are:

- CYC has delivered fully electric Park & Ride sites and was awarded £8.4m (in March 2022) to buy an additional 44 new electric buses (DfT's ZEBRA Fund). In April 2022, CYC was awarded an additional £17m to support the development of key schemes and initiatives in line with York's Bus Service Improvement Plan, including wider electrification of the urban bus fleet, bus priority measures, improvements to stops, shelters and passenger information.

- CYC has launched a Clean Air Zone (CAZ) and allocated £1.65m to 5 bus operators to help replace/retrofit 93 buses to CAZ compliant standards. From the end of January 2021, York's CAZ for buses was fully operational and applied to all high frequency services using the city centre.
- CYC promoted its local 'Kick the Habit' anti-idling campaign throughout 2021 and worked with alongside partners including University of York, York Railway Station and various local Primary Schools to reduce the incidence of vehicle idling across the city.
- CYC continued the rollout of the DEFRA funded Low Emission Taxi Grant scheme throughout 2021 and welcomed several new electric taxis to the York fleet. Approximately 30% of the York fleet are now using electric or petrol hybrid vehicles. In 2021, further amendments were proposed to CYC's Taxi Licensing Policy with regards to the type of hackney carriage and private hire vehicles that will be licensed in the future. This work is expected to progress in 2022 following a further period of consultation with the trade and other relevant parties.
- CYC continued the upgrade of its fast, rapid and ultra-rapid public electric vehicle recharging network. Once complete, CYC's new charging network will consist of 350 fast charging spaces, 19 rapid chargers, and 12 ultra-rapid chargers providing different charging options depending on an EV driver's requirements.
- In mid-2021, CYC implemented a Masternaut telematics system for fleet vehicles to improve safety, reduce emissions and improve vehicle and driver efficiency. Officers are currently working on the transition to an electric fleet for all vehicles under 3.5 tonne as part of a four-year programme and exploring options for larger vehicles over 3.5 tonnes to move away from fossil fuels such as diesel.
- Throughout 2021, in line with CYC Low Emission Planning Guidance, we continued to ensure that emissions and air quality impacts from new developments were appropriately assessed and mitigated, exposure to poor air quality was reduced via good design practices and that new private trips were minimised via the provision of sustainable transport solutions. An overview of planning applications reviewed by Public Protection during 2021 is provided in this ASR.
- CYC obtained DEFRA AQ Grant funding in March 2021 to carry out a feasibility study and subsequent pilot scheme to reduce emissions relating to freight deliveries travelling in to and out of York. The initial feasibility work aimed to more precisely quantify the emission / air quality impact of freight deliveries in the city and identify

suitable sustainable alternatives, utilising low emission modes including EVs and e-cargo bikes. As part of this work, CYC has engaged with businesses, including delivery companies, on the initial feasibility work and options for a pilot scheme that will be progressed in 2022.

- CYC continued work on the development of the Air Quality Hub alongside Bradford Metropolitan District Council, Lancaster City Council and Mid-Devon District Council (the 'Low Emission Partnership'). Following a successful launch at the end of 2020, the membership base has grown significantly throughout 2021, covering local authorities across the UK. The Low Emission Partnership are currently exploring opportunities with DEFRA for wider use and adoption the Air Quality Hub in line with revisions to the National Air Quality Strategy (AQS).
- CYC promoted the Government's national Burn Better campaign and issued advice and guidance to residents on the use of appropriate fuels and maintenance of appliances. Commencing December 2021, Public Protection undertook compliance checks across petrol filling stations within CYC's area to ensure that all solid fuels being sold were certified as 'Ready to Burn' in line with the Air Quality (Domestic Solid Fuels Standards) (England) Regulations 2020.

In addition to the above, CYC continues to deliver on walking, cycling and public transport improvements. Throughout 2021:

- CYC implemented a range of temporary measures to support active travel through the pandemic. New, permanent infrastructure that will enable more convenient and safer walking and cycling across the city of York is now proposed. CYC have provisionally allocated around £3.3million to support active travel schemes to be implemented by 2023.
- CYC continued the rental trial of E-Scooters in partnership with leading European operator TIER, secured £133k of DfT funding for a 'try before you buy' E-cycle scheme and participated in national 'Bike to School' and 'Walk to School' weeks. These annual awareness-raising events aim to encourage children and their families to walk, cycle or scoot to and from school, rather than travelling by car.

Complementary air quality initiatives delivered in 2021 through CYC's carbon reduction work programmes included:

- Hosting the first ever York Net Zero Building Solutions event in November 2021 to connect solution providers with local businesses, home owners and property

managers interested in retrofitting their buildings/homes to build a cleaner, greener city for York.

- Trialling a new lower carbon solution for resurfacing roads, with a view to roll out across further projects in the city. The solution incorporates a 'crumb' of recycled rubber tyres and is able to be applied at a lower temperature, thus reducing carbon emissions. The material also creates a quieter road surface and one that causes less wear on the tyres of the vehicles that pass over it.
- Receiving grants from 3 energy efficiency funds. The £5 million funding will support works to make over 600 homes in York and the sub-region more energy efficient. The works will benefit a variety of homes including council homes, housing association, privately rented and privately owned homes. The work includes internal and external wall insulation and under floor insulation, air source heat pumps and solar panels.
- Planting the first trees at the new York Community Woodland. This first planting is paving the way for over 100,000 trees and shrubs at the woodland to be planted over the next few years.

City of York Council expects the following measures to be completed over the course of the next reporting year:

- **Continued awareness raising and campaign work in relation to anti-idling** - Whilst the 'Kick the Habit' campaign is primarily a social media based campaign aimed at making idling socially unacceptable and promoting conversation around this issue, it is necessary to issue some physical reminders to drivers in the form of signage in key idling locations. CYC will continue to address complaints of idling as and when necessary throughout 2022 and will install further campaign signage as appropriate.
- **Continued roll-out of EV charging infrastructure** - we will continue upgrading our existing charging estate in accordance with our current programme (as outlined in our [EV Charging Strategy](#)) and will continue to specify EV charging infrastructure on new developments via the Planning process and in accordance with Building Regulations.
- **Standards for taxis** - Following some delays in 2021, an update to CYC's Taxi Licensing Policy is anticipated in 2022/23. The new policy will affect both the Private Hire and Hackney Carriage fleet. CYC propose to consult further with the taxi trade regarding updates to the new policy and conditions about the type and age of vehicle that will be licensed by CYC in the future. Changes proposed will ensure a more environmentally-friendly and modern hackney carriage and private hire fleet in the city

in response to the declared climate emergency and continuing desire to improve air quality. Following a recommendation to CYC's Executive, this work is expected to progress in 2022 following a further period of consultation with the trade and other relevant parties. We will also continue to roll out funding under our DEFRA funded Low Emission Taxi Grant Scheme to allow drivers to upgrade to low emission taxis.

- **Further modal shift and network improvement measures** - including delivering initiatives to promote walking, cycling and the use of public transport. Further updates are available at [CYC's iTravel website](#).
- **Investigate first/last mile delivery options** - We will continue feasibility work to address first/last mile delivery of light goods in York, with the aim of reducing emissions of NO_x, PM and CO₂ from HGV/LGV's entering the city centre. We will continue to work with partners to evaluate low emission delivery modes that could replace journeys by conventionally fuelled HGVs/LGVs and progress a pilot 'micro-consolidation' scheme.
- **Smoke control areas / domestic solid fuel use** - We will undertake further promotion of the rules around smoke control areas and consider extension of the existing area, drawing on feasibility work undertaken in 2021/22. We will also disseminate further guidance on the use of appropriate fuels and maintenance of appliances in line with the Government's national Burn Better campaign. We will continue compliance checks across key distribution outlets within CYC's area to ensure that all solid fuels being sold are certified as 'Ready to Burn' in line with the [Air Quality \(Domestic Solid Fuels Standards\) \(England\) Regulations 2020](#).

City of York Council's priorities for the coming year are:

- **Develop an evidence base in relation to revision of CYC's AQAP** – CYC's AQAP update will include measures to further reduce nitrogen oxides and particulates from all sources and will support and complement CYC's economic strategy, Local Plan, fourth Local Transport Plan (LTP4) and Climate Change Strategy. We will continue to develop the evidence base for this update throughout 2022, taking into account updated DEFRA LAQM policy guidance. CYC will keep abreast of emerging national legislation, ensuring any new measures to reduce emissions are adequately resourced and implemented in York.
- **Clean Air Zone (CAZ) and Zero Emission Buses** - CYC will continue to work with bus operators to ensure that the CAZ requirements are fully adhered to and idling

events are minimised both within and outside the CAZ area. It remains a CYC ambition to pursue an all-electric bus fleet, becoming Britain's first fully electric bus town where all buses are capable of operating in electric zero-tailpipe emission mode in key locations. CYC has recently been awarded funding of £8.4m (DfT's ZEBRA scheme) and £17m (Bus Service Improvement Plan allocation from DfT) for wider electrification of the urban bus fleet over the next few years.

- **Anti-idling Measures** – CYC will continue to investigate complaints of vehicle idling in the city and undertake further promotion of the 'Kick the Habit' anti-idling campaign throughout 2022. Further signage will be rolled out in key locations as required.
- **Continue to reduce emissions from taxis** – We will undertake further consultation with the trade in relation to updates to our Taxi Licensing Policy. Anticipated changes to the policy will see a gradual change in the operational taxi fleet, as vehicle licenses are renewed and as vehicles become too old to operate in the city. We will continue to roll out our DEFRA funded Low Emission Taxi Grant Scheme to support CYC licensed taxi drivers with vehicle upgrades throughout 2022.
- **Continued delivery of strategic EV charging network** – we will continue upgrading our existing charging estate in accordance with our current programme (as outlined in our EV Charging Strategy). CYC are moving to a new EV charge point management system in 2022 which will provide further information about charging episodes for publicly owned EVs and electric buses. We will also continue to explore options for on-street charging and facilities for charging electric taxis.
- **Reduce emissions from new development** – we will ensure development related emissions are appropriately assessed and mitigated in line with CYC and national planning guidance and regulation.
- **Reducing emissions from CYC's fleet** – by switching from diesel to low and zero emission alternatives wherever practical. CYC's Executive agreed to commence the transition to an electric fleet for all vehicles under 3.5 tonnes as part of a four year programme. CYC aims to replace 153 vehicles from its current fleet during the next three years, reducing CO₂ emissions by a third. In the first instance, CYC need to progress electrical infrastructure upgrades at key sites.
- **Continued modal shift and network improvement measures** – via both the LTP capital programme and i-Travel York sustainable travel programme.

- **Further controls to address fine particulate emissions** – we will consider further opportunities to tackle fine particulate emissions, building on feasibility work around domestic solid fuel burning undertaken in 2021/22.
- **Reducing emissions associated with deliveries of light goods** – we will work with partners to further evaluate low emission delivery modes that could replace journeys by conventionally fuelled HGVs/LGVs and progress a pilot ‘micro-consolidation’ scheme.

City of York Council worked to implement these measures in partnership with the following stakeholders during 2021:

- Residents of York
- Various local Primary Schools
- University of York
- York Railway Station
- York Bus companies
- York Taxi Associations (and vehicle dealerships for taxi grants)
- Public Transport / Freight operators and local retailers

The principal challenges and barriers to implementation that City of York Council anticipates facing are:

- The ability of current vehicle emission standards to deliver reductions in NO_x emissions. There is still uncertainty about the on-road performance of some Euro VI diesel vehicles.
- The number of diesel vehicles in York (which have increased primary emission of NO₂ and diesel particulate).
- Development related ‘emissions creep’ through the cumulative impact of increased development in the city.
- Unnecessary vehicle idling in the city, particularly amongst heavy diesel vehicles. CYC has made significant headway in reducing idling events in the city over the last 2-3 years, via promotion of its local ‘Kick the Habit’ anti-idling campaign and by working with bus companies and taxi operators.
- Uncertainties with respect to future travel behaviour, particularly around confidence in the use of public transport during the pandemic recovery period (and possible subsequent increases in private car journeys).

Progress on the following measures has been slower than expected due to:

- **Planning and delivery of CNG refuelling infrastructure** - whilst a feasibility study was completed in 2015, recent research has shown that vehicles fuelled by CNG may emit especially large numbers of ultra-fine particles, with the highest particle number emissions measured during urban driving (i.e. low speeds, cold-starts) which has implications for York's city centre environment and fine particulate exposure reduction targets anticipated through the Environment Act 2021. In line with local air quality and carbon reduction aspirations, promotion of hydrocarbon based fuels is no longer considered appropriate. As mentioned above, CYC has since been awarded funding from DEFRA to explore options for moving goods sustainability into and out of York using low emission modes and to commission a pilot scheme to test options that will be progressed in 2022.
- **Taxi Licensing Policy** - Following some earlier delays due to the impact of the pandemic on the taxi trade, an update to CYC's Taxi Licensing Policy is anticipated in 2022/23. CYC propose to consult further with the taxi trade over the coming year regarding updates to the new policy and conditions about the type and age of vehicle that will be licensed by CYC in the future.
- **Monks Cross HyperHub** – Whilst construction of this site is complete, there was a slight delay to CYC's originally planned opening date of 2021 for this site, whilst commercial and contractual arrangements were finalised.

Whilst the measures stated above and in Table 2.2 will help to contribute towards compliance, based on monitoring during the pandemic recovery period, CYC anticipates that further additional measures not yet prescribed will be required in certain areas in subsequent years to achieve compliance and enable the revocation of the city centre AQMA (Order No.5).

Whilst members of the public have had an opportunity to experience cleaner air in York throughout 2020 and 2021, the Covid-19 pandemic has meant that the ongoing impact of CYC existing Action Plan (AQAP3), including major air quality improvement measures implemented in the last couple of years such as the impact of the York Clean Air Zone and a new all electric bus fleet, have been difficult to quantify. The true impacts of such measures may only be apparent, when/if traffic levels and behaviour return to 'normal' and the air quality impact of such interventions can be verified via longer term air quality trends.

In CYC's 2021 Annual Status Report, it was reported that CYC's original intention was to publish an updated AQAP within 12 months. In line with this original timescale, further

feasibility work has been progressed throughout 2021. Work undertaken to date includes a feasibility study to consider options for reducing city centre freight movements and further survey work in relation to the prevalence of domestic solid fuel burning across York.

As the full effects of the pandemic on traffic and travel patterns in the city are still not fully understood, CYC has decided to extend the timescales for updating its AQAP to allow consideration of additional air quality monitoring results during the pandemic 'recovery' period. Such monitoring will allow a further review of air quality trends (and in turn a more thorough evaluation of the impact of existing AQAP3 measures) and will ensure that any new measures remain proportionate to the air quality challenge faced by the city.

It will also allow CYC to fully consider new DEFRA guidance around air quality action planning and measures to tackle fine particulate matter (in line with new commitments outlined in the Environment Act 2021).

Table 2.2 – Progress on Measures to Improve Air Quality

The expected efficacy of measures in terms of ‘overall emission impact’ is colour coded from **red** (least impact) - **amber** - **green** (most impact)

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
AQAP3 (1)	Clean Air Zone (CAZ)	Promoting Low Emission Transport	Low Emission Zone	2015	2021	CYC	CYC and DEFRA Grant	YES	Funded	£1 million - £10 million	Completed	Every electric bus introduced into the CAZ will remove local emissions of NO ₂ and PM ₁₀ and reduce CO ₂ emissions by approx 35 tonnes.	Number of ultra low emission buses operating within York Inner Ring Road	<p>On 31st Jan 2020 York became the first city in the country to roll out a voluntary CAZ for buses. Buses making 5 or more entrances to the CAZ per day are now required to be Ultra Low Emission Buses (ULEB) (Euro VI diesel or electric). Following a twelve month ‘sunset’ period, York’s CAZ for buses was fully operational from January 2021 and applied to all high frequency services. To facilitate the upgrade of local bus services, a total of £1,654,000 was allocated to 5 operators by CYC to help replace/retrofit 93 buses. In addition to grant supported vehicles, operators have either converted or replaced approximately 40 additional buses to ensure compliance with the CAZ requirements.</p> <p>CYC has recently been awarded funding of £8.4m (DfT’s ZEBRA scheme - March 2022) and £17m (Bus Service Improvement Plan allocation from DfT - April 2022) for wider electrification of the urban bus fleet over the next few years.</p>	<p>Measures to reduce emissions from buses were a critical part of AQAP3. CYC made funding available to support bus upgrades on essential services affected by CAZ implementation.</p> <p>Whilst considerable progress has been made to clean up York’s buses in recent years, CYC must continue to improve emissions from lower frequency services and strive to maximise the number of services operating fully electric buses to further reduce exhaust emissions. It remains CYC’s ambition to pursue an all-electric bus fleet within the city.</p>
AQAP3 (2)	Anti-idling measures	Traffic Management	Anti-idling enforcement	2015	2021	CYC	CYC and DEFRA Grant	YES	Funded	£10k - 50k	Implementation	From feasibility report done by TTR Ltd - at 5 busiest service bus locations, estimated savings per annum of 1,526kg NO _x , 36kg PM ₁₀ , 46,555kg CO ₂ and 17,949 litres of fuel.	Estimate of idling time saved	<p>CYC continued to promote its hard hitting anti-idling campaign throughout 2021. In November 2021, CYC worked with University of York Law School to promote the scheme across campus and rolled out additional signage in the city to support the campaign. Further promotional work was also undertaken with CYC drivers. Information about the campaign can be found on CYC’s Kick the Habit Webpage at https://www.york.gov.uk/EnginesOff</p> <p>Clean Air Day 2021 was promoted through the council’s Kick the Habit campaign. In addition to a press release and messaging via CYC’s social media channels throughout the day, anti-idling signage was also erected outside 19 additional local primary schools, York District Hospital and York Railway Station. New resources were designed in 2021 to incorporate additional messaging around poor air quality and children’s health. The ‘Switch off engines for Clean Air Day’ message was also posted on all variable message signs (VMS) around the city. Work in 2021 reinforces action in previous years, including the erection of permanent signage in all council owned car parks across the city, at most city centre bus stops, multiple taxi ranks and at other key locations across the city.</p>	<p>To date CYC has not had to serve any Fixed Penalty Notices (FPNs) specifically for idling. A Fixed Penalty Notice will only be issued if a vehicle has been observed idling on the public highway for more than two minutes (without reasonable cause) and the driver refuses to switch their engine off when asked. The legislation only applies to the public highway and not to private land, such as car parks. It is also not applicable to vehicles waiting in a queue of traffic, unless there’s an obvious source of prolonged delay, such as a level crossing or an incident that’s blocking the highway. Drivers are also allowed a reasonable period in which to defrost their vehicles to a safe level during periods of cold weather.</p> <p>With respect to buses, condition 2 of the CAZ Traffic Regulation Condition (see AQAP measure 1) prohibits buses from idling their engines anywhere within the affected CAZ area for more than 2 minutes. This condition applies to all local bus services operating within the affected streets irrespective of service frequency or engine type.</p>
AQAP3 (3)	Further development of ECO-Stars Fleet Recognition Scheme	Vehicle Fleet Efficiency	Fleet efficiency and recognition schemes	2015	2018	CYC	DEFRA Grant	YES	Funded	£10k - 50k	Completed	A typical van operator could see its annual output of carbon dioxide fall by six	Number of operators signed up to the scheme	<p>ECO-Stars scheme launched March 2013. There are currently 106 members of the scheme (as of end December 2021). CYC is not currently actively recruiting new members to the York scheme as funding expired in November 2018.</p>	<p>CYC will explore further opportunities for promoting operational best practice with operators / businesses as part of ongoing work to address emissions associated with</p>

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
												tonnes per year (see http://www.ecostars-uk.com/about-eco-stars/why-join/)			freight movements and deliveries in York
AQAP3 (4)	Planning and delivery of CNG refuelling infrastructure	Promoting Low Emission Transport	Procurring alternative refuelling infrastructure to promote Low Emission Vehicles, EV charging, Gas fuel recharging	2015	2022	CYC and third party investment (to be identified)	Subject to third party investment	YES	Partially Funded	£10k - 50k	Aborted	A vehicle running on CNG has significantly lower emissions of NO ₂ , PM ₁₀ and CO ₂ compared with a diesel equivalent. Detailed emission savings to be determined at planning application stage	To be determined	CNG feasibility study completed in 2013. Potential site identified based on location of high pressure gas mains to the south west of the city. However, this location is designated greenbelt and line with local air quality and carbon reduction aspirations, promotion of hydrocarbon based fuels is no longer considered appropriate for subsequent AQAPs. This action will not be progressed.	Note that estimated cost of £10-£50k was for the feasibility study and not the implementation of a CNG refuelling facility Recent research has shown that vehicles fuelled by CNG may emit especially large numbers of ultra-fine particles, with the highest particle number emissions measured during urban driving (i.e. low speeds, cold-starts) which has implications for York's city centre environment and fine particulate exposure reduction targets (Environment Act 2021).
AQAP3 (5)	Freight delivery and service plan for key city centre retailers and streets.	Freight and delivery management	Delivery and service plans	2015	2022	CYC	CYC and DEFRA Grant	YES	Partially Funded	£100k - £500k	Planning	To be determined	To be determined	Freight improvement study undertaken in 2013. CYC was awarded additional DEFRA funding in March 2021 to carry out a feasibility study and subsequent pilot scheme to reduce emissions relating to freight deliveries travelling in to and out of York (see update for measure 5a).	Depends on external investment and planning process. Estimated cost includes feasibility and pilot study only.
AQAP3 (5a)	Freight consolidation Centre	Freight and delivery management	Freight consolidation centre	2015	2022	CYC and third party investment (to be identified)	CYC and DEFRA Grant	YES	Partially Funded	£1 million - £10 million	Planning	To be determined	Number of city centre businesses using consolidation centre.	CYC was awarded DEFRA funding in March 2021 to carry out a feasibility study and subsequent pilot scheme to reduce emissions relating to freight deliveries travelling in to and out of York. The initial feasibility work aimed to more precisely quantify the emission / air quality impact of freight deliveries in the city and identify suitable sustainable alternatives, which may include a delivery 'hub' allowing the last or first mile of the journey to be made by low emission modes, including e-cargo bikes. As part of this work, CYC has engaged with businesses, including delivery companies, on the initial feasibility work and future pilot scheme. The initial feasibility study was completed December 2021 and CYC will progress a pilot during 2022.	The delivery of a Freight Consolidation Centre is subject to third party investment / participation and a suitable site.
AQAP3 (6)	Development and implementation of LES based planning guidance	Policy guidance and development control	Air quality planning and policy guidance	2015	2021	CYC	CYC	NO	Funded	£10k - 50k	Implementation	Aims to minimise additional emission impact of development across the entire York area. Emission savings generally calculated and reported per development.	Number of publicly accessible EV parking bays available in York (some deliverable via the planning process)	Low Emission Planning Guidance has been developed to accompany policy ENV1 'Air Quality' of the Local Plan. The guidance is available at: https://www.york.gov.uk/downloads/file/2749/aq-plan-guidance.pdf The guidance outlines CYC's design and mitigation expectations for all new developments in the city, including EV charging. The guidance aims to assist developers to improve air quality and lower transport emissions in line with the aims and objectives of the York Air Quality Action Plan (AQAP) and Low Emission Strategy (LES).	In line with CYC guidance, developers are required to demonstrate how they are mitigating site emission 'damage costs' via the implementation of suitable mitigation measures.
AQAP3 (7a)	Reducing emissions from taxis (financial incentive for low emissions taxi purchase)	Promoting low emission transport	Taxi emission incentives	2015	2022	CYC	CYC and DEFRA Grant	YES	Funded	£100k - £500k	Implementation	A hybrid taxi produces approx 8 tonnes per annum of CO ₂ less than a diesel equivalent and has considerably lower emissions of	Number of low emission taxis purchased through the local grant scheme	CYC's first incentive scheme was launched in 2015/16 and provided financial assistance to CYC licensed taxi drivers to purchase low emission taxis. CYC was awarded additional DEFRA AQ Grant funding in March 2020 to continue the incentive scheme in 2020/21. The new scheme was formally launched on 10th November 2020 and is currently still open for applications. At the end of 2021, CYC had supported 19 taxi drivers with vehicle upgrades and operational costs under the latest scheme.	The grant application window for the current grant scheme has been extended until March 2023 (from the original date of March 2021). At the end of 2021, the current grant scheme had facilitated the introduction of an additional 6 electric vehicles into the York taxi fleet, alongside 13 low emission

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												NOx and PM. Electric taxis eliminate tailpipe emissions of NOx and PM		Details of the current scheme can be viewed at https://www.york.gov.uk/LowEmissionTaxiGrantScheme	petrol hybrid vehicles (Euro 6, <100g/km CO ₂).
AQAP3 (7b)	Reducing emissions from taxis (taxi licensing emissions controls)	Promoting low emission transport	Taxi licensing conditions	2015	2022	CYC	CYC	NO	Funded	< £10k	Planning	Not yet quantified	Number of low emission taxis present in the CYC taxi fleet	<p>An updated Taxi Licensing Policy was provisionally approved at the Licensing & Regulatory Committee on 25th September 2020 (see https://democracy.york.gov.uk/ieListDocuments.aspx?CLd=606&MI=12398), but has not yet been formally approved by CYC's Executive.</p> <p>In 2021, further amendments were proposed to CYC's Taxi Licensing Policy with regards to the type of hackney carriage and private hire vehicles that will be licensed in the future. Changes proposed will ensure a more environmentally-friendly and modern hackney carriage and private hire fleet in the city in response to the declared climate emergency and continuing desire to improve air quality. This work is expected to progress in 2022 following a further period of consultation with the trade and other relevant parties.</p>	Operators may experience some increased vehicle replacement costs as only modern vehicles meeting the required standards are proposed to be licensed as taxis in York. However, national / local government grants can be used to offset the purchase price of replacement vehicles. A DEFRA Air Quality grant allocation was awarded to CYC in 2020 to assist with further taxi upgrades (see update for AQAP3 Measure 7a)
AQAP3 (8)	Planning and delivery of strategic EV charging network	Promoting Low Emission Transport	Procuring alternative refuelling infrastructure to promote Low Emission Vehicles, EV charging, Gas fuel recharging	2015	2022	CYC	CYC	NO	Funded	£1 million - £10 million	Implementation	-	Number of publicly accessible EV parking bays available in York	<p>EV charging previously provided at 12 hotels in conjunction with Zero Carbon World.</p> <p>On 19th March 2020, CYC's Executive approved a new EV Charging Strategy which set out the rationale for the number and location of EV charging points, the principles of tariff-setting, and the council's approach to providing charging for residents in streets without off-road parking. The strategy outlines an equitable approach to charging infrastructure that will support improved air quality, climate change objectives and financial vitality, and aligns with wider transport policy objectives. The Executive also endorsed a commitment to continue to explore options for on street charging and facilities for charging electric taxis in the city centre.</p> <p>Implementation of an extensive 'pay as you go' fast charge public electric vehicle recharging network. Significant upgrades to charging facilities were progressed in 2021. The number of charging episodes reported in the city for 2021 was 8,543.</p> <p>Planning applications for the new Hyper Hubs at Poppleton and Monks Cross Park and Ride sites were approved in November 2019. These new dedicated charging hubs have 24/7 access and contain four 50kW Rapid chargers and four 150kW Ultra Rapid chargers (at each site) under a solar voltaic canopy structure.</p>	<p>Lack of off-street parking is a significant barrier to the uptake of EVs, as the prevailing model for domestic charging involves parking off-street (on a driveway or in a garage) and charging vehicles overnight on a domestic trickle charge. This is a particular issue in York due to high proportions of terraced housing with no off-street parking. In addition, new flatted developments present additional challenges for EV charging due to power management issues and potentially costly supply upgrades. The ultra-rapid Hyper Hub facilities are aimed at improving recharging facilities for owners of electric vehicles, especially those without off-street parking.</p> <p>The CYC charging network is complemented by a number of commercial providers. Residents and visitors can use ZapMap to find the charging options available to them (https://www.zap-map.com/live/).</p> <p>Note that charging episodes reported for 2021 do not include charging sessions at Monks Cross P&R from end May - Dec 2021 or University of York Sports Village from end July - Dec 2021.</p>
AQAP3 (9a)	Reducing CYC 'grey fleet' trips	Alternatives to private vehicle use	Car clubs	2015	2022	CYC	CYC	NO	Funded	£50k - £100k	Implementation	-	Reduction in annual business mileage	<p>CYC, working in partnership with Enterprise Car Club, provide a range of pool vehicles at various locations near West Offices (Main CYC HQ), Hazel Court and across the city which can be booked online and accessed via a smart membership card. The vehicles available come in a range of sizes and transmission variations so there is something to suit every type of driver. A number of existing diesel pool cars have been replaced with low emission Yaris Petrol Hybrid vehicles as part of the car club initiative.</p>	CYC membership of car club has significantly reduced the number of people using their own private vehicles on CYC business.

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AQAP3 (9b)	Introduction of low emission vehicles into CYC fleet	Promoting Low Emission Transport	Company vehicle procurement – prioritising uptake of low emission vehicles	2015	2024	CYC	CYC	NO	Partially Funded	£1 million - £10 million	Implementation	CYC aims to replace 153 vehicles from its current fleet during the next three years, reducing CO2 emissions by a third. The entire fleet emits a total of 1,763 tonnes of CO2 each year.	Number of full electric and electric hybrid vehicles in CYC fleet	<p>On 19th March 2020, CYC's Executive agreed to commence the transition to an electric fleet for all vehicles under 3.5 tonnes as part of a four-year programme. This programme is currently ongoing and includes infrastructure upgrades across CYC's estate. Officers are also exploring options for vehicles over 3.5 tonnes to move away from diesel as a fuel.</p> <p>With respect to waste collection, twelve new refuse trucks, including two fully electric vehicles, have been bought by CYC. The new vehicles will reduce fuel costs and pollution output by approximately 16%.</p> <p>CYC owned fleet vehicles are supplemented with low emission petrol hybrid pool vehicles, available for use by staff as part of the Enterprise Car Club initiative.</p>	The current fleet comprises of 535 vehicles and items of plant equipment with a current capital value of £15.3 million. This includes 180 vehicles that are under 3.5 tonnes of which 153 are currently due to be replaced over the next 2-3 years.
AQAP3 (9c)	CYC Eco-driver training and vehicle emission controls	Vehicle Fleet Efficiency	Driver training and Eco aids	2015	2021	CYC	CYC	NO	Funded	£10k - 50k	Completed	-	Number of CYC staff obtaining ECPO driver training	<p>Lightfoot trial completed, Fuel additive trial completed, Programme of mandatory HGV driver training completed (including eco-driving element)</p> <p>In mid-2021, CYC implemented a Masternaut telematics system for fleet vehicles to improve safety, reduce emissions and improve vehicle and driver efficiency.</p>	Ongoing programme of driver training
AQAP3 (10)	Marketing and Communication Strategy	Public Information	Via the Internet	2015		CYC	CYC and DEFRA Grant	YES	Funded	£10k - 50k	Implementation	Difficult to quantify exact emission savings as measures aimed at preventing idling / air quality awareness / education	Number of visitors to website per annum / Idling time saved	<p>Ad-hoc public communication work ongoing, including ongoing updates to CYC's air quality web pages.</p> <p>'Kick the Habit' anti-idling awareness raising campaign was launched in mid-2019. Campaign posters have been put up in doctors' surgeries and petrol stations in York. Permanent signage has also been erected in all CYC owned car parks, at most city centre bus stops, multiple taxi ranks and at other key locations across the city where vehicles have been observed idling.</p> <p>In December 2020, further anti-idling signage was erected at the Askham Bar Flu / Covid vaccination site, in partnership with CYC Public Health. In November 2021, CYC worked with University of York Law School to promote the scheme across the University campus.</p> <p>City-wide programme of anti-idling initiatives undertaken as part of Clean Air Day 2019, 2020 and 2021 including pop-up events at York Railway Station, York District Hospital and promotion with local Primary Schools.</p> <p>In October 2021, awareness raising undertaken in relation to rules around smoke control areas, use of appropriate fuels and maintenance of appliances in line with the government's Burn Better campaign. 'Ready to Burn' fuel compliance checks across York petrol stations commenced December 2021.</p>	<p>Further information about CYC's Kick the Habit campaign can be found at: https://www.york.gov.uk/engineoff</p> <p>Anti-idling enforcement patrols are undertaken by staff in Public Protection, with support from Civil Enforcement Officers, in response to persistent complaints of idling in specific areas.</p>
AQAP3 (11a)	Local incentives for low emission vehicles and alternative fuel use – EV chargers and business demonstrators	Promoting Low Emission Transport	Company Vehicle Procurement – Prioritising the uptake of low emission vehicles	2015	2019	CYC	CYC and DEFRA Grant	YES	Funded	£10k - 50k	Completed	-	Number of businesses that have installed EV charging	<p>CYC has provided advice to other local authorities regarding the operation of electric vehicles and the installation of charging infrastructure within their areas, including Selby District Council and Oxfordshire County Council. CYC has previously facilitated the installation of EV charging infrastructure in a number of business premises. CYC is also supporting the uptake of low emission taxis through the local Low Emission Tax Grant scheme (see measure AQAP3 7a)</p>	CYC provides ongoing advice on EV charging to local businesses and other local authorities.
AQAP3 (11b)	Local incentives for low emission vehicles and alternative fuel use – Priority	Promoting Low Emission Transport	Priority parking for LEVs	2015	2022	CYC	CYC	NO	Funded	£10k - 50k	Implementation	-	Number of low emission permits issued	<p>CYC continued to issue Low Emission Permits (including Household Low Emission Permits) throughout the 2021 calendar year. See https://www.york.gov.uk/LowEmissionParking for details.</p>	CYC will periodically review the local definition of 'low emission vehicle' in the context of local parking discounts, to ensure that incentives remain appropriate and deliver continuous improvement in air quality

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	parking / reduced parking fees for low emission vehicles														
AQAP3 (12)	Attracting Low Emission industries, businesses and jobs to York	Policy guidance and development control	Other policy	2015	2022	CYC	CYC	NO	Funded	£10k - 50k	Implementation	Not quantifiable	Advice provided	Provided advice to business on low emission technologies/solutions as required. Currently progressing pilot scheme to reduce emissions relating to freight deliveries travelling in to and out of York.	Will support wider air quality improvement measures across the city
AQAP3 (13a)	Modal shift and network improvement measures (i-Travel York campaign)	Promoting Travel Alternatives	Intensive active travel campaign & infrastructure	2015		CYC	DfT / Local Sustainable Transport Fund	NO	Funded	£1 million - £10 million	Implementation	Hard to precisely quantify but target to increase modal shift away from conventional car	% mode split or walking/cycling /bus vs conventional car drivers and car passengers % trips into city centre	<p>Ongoing delivery of i-Travel York sustainable travel programme - see https://www.itravelyork.info/ for further details and current updates. Specific progress updates for 2021 include:</p> <p>5,867 pupils at 23 of York's primary schools took part in Walk to School Week in autumn 2021, which ran from 11th to 15th October 2021. The annual awareness-raising event aims to encourage children and their families to walk, cycle or scoot to and from school, rather than travelling by car.</p> <p>CYC encouraged students of all ages to cycle as part of Bike to School week 2021 (27th Sept – 1st Oct 2021). Bikeability training is offered to all primary and secondary schools in York, with 98% uptake from the schools and over 2,000 training places delivered annually.</p> <p>CYC secured £133,040 of DfT funding for a new scheme enabling cyclists to borrow an e-cycle and trial it for 7 days with no obligation to buy it. Once their trial was complete, participants were eligible for £300 discount should they decide to purchase the bike.</p> <p>Throughout 2020 and 2021, as part of the Government's Emergency Active Travel Fund (EATF) CYC implemented a range of temporary measures to support active travel throughout the pandemic. New, permanent infrastructure that will enable more convenient and safer walking and cycling across the city of York is now proposed. CYC have provisionally allocated £3.3m to support active travel schemes to be implemented by 2023. CYC's iTravel team will be supporting engagement across local communities and schools to better understand barriers to active travel and how this funding can improve this across the city. Further information is available at: https://www.york.gov.uk/ActiveTravelProgramme</p>	The i-Travel York programme was established following a successful bid for funding from the Department for Transport's Local Sustainable Transport Fund. The programme has been delivering an integrated programme of personal, business and school travel planning, combined with targeted infrastructure enhancements to increase people's travel choices since 2012. I-Travel York aims to inspire people in York to help look after our city - to keep it moving and keep the air clean - by considering travel options before making a journey.
AQAP3 (13b)	Modal shift and network improvement measures (Bus Improvements)	Transport planning and infrastructure	Public transport improvements, interchanges, stations and services	2015	2024	CYC	CYC/DfT	NO	Funded	£1 million - £10 million	Implementation	Aim to increase uptake of public transport	National Annual Passenger satisfaction survey	<p>CYC and bus operators have worked together to improve York's bus network in previous years through the York Quality Bus Partnership. Innovations in York have included improvements to bus information, including new on-street timetables and more real time displays; two new park and ride sites at Askham Bar and Poppleton Bar; fare reductions and new tickets; improvements to well used bus stops in the city centre including Museum Street and Exhibition Square; new electric buses on the Poppleton and Monks Cross park and ride services; introduction of refurbished electric open-top buses on the City Sightseeing tour service; new services, such as the CityZap service between York and Leeds, and new vehicles and higher frequencies on some existing services; introduction of a multi-operator "All York" ticket and a smartcard ticket; the introduction of two "Bus Wardens" and the bus enquiry desk at the Railway Station to help passengers.</p> <p>Introduction of electric double decker buses on the York Park & Ride network, expanding the fully electric fleet on York Park & Ride to 33 buses.</p>	-

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															CYC published its Bus Service Improvement Plan in October 2021. The plan, a document required by the government's Department for Transport (DfT) National Bus Strategy published in March 2021, reflects the key priorities for improving bus services across the city.
AQAP3 (13c)	Modal shift and network improvement measures (Other LTP measures)	Transport planning and infrastructure	Other	2015		CYC	CYC / West Yorkshire Plus Transport Fund / DfT	NO	Funded	£500k - £1 million	Implementation	-	Concentration reduction target in LTP3 and AQAP3	Measures in LTP3 (published 2011) can be viewed online at: https://www.york.gov.uk/downloads/download/124/local-transport-plan-2011---2031 (Also see updates against measure 13b). Funding obtained to deliver major schemes for York Central, increasing the capacity of the A1237 (between the A19N and Hopgrove junctions) and improve the area in front of York Station. LTP4 currently in development. At the heart of LTP4's development was a city-wide conversation ('Our Big Conversation') that ran during the summer of 2021 and considered experience of and priorities for transport, air quality and carbon reduction, journeys and the economy. CYC also worked with partners at York Civic Trust to contribute to policy research and emerging findings throughout the period of engagement.	The York Outer Ring Road (YORR) project has been underway since 2017 when CYC were allocated approximately £38m for improvements to the A1237 using funds from the West Yorkshire Plus Transport Fund. This funding was for upgrades of 7 roundabouts from Wetherby Road to Monks Cross. In early 2019 the upgrade of the A1237/B1224 Wetherby Road roundabout was completed. In October 2019 the Department for Transport awarded CYC £26m from its Major Road Network fund to dual the Outer Ring Road from A19 Rawcliffe (Shipton Road) roundabout to A1036 Little Hopgrove (Malton Road) roundabout. Construction work is anticipated to commence in mid-2023 for 2 years, with completion in 2025.
AQAP3 (14)	Other air quality improvement measures (non-transport sources)	Environmental Permits	Introduction/ Increase of Environment charges through permit systems and economic instruments	2015		CYC	CYC	NO	Funded	£10k - 50k	Implementation	-	Number of scheduled inspections completed per annum	Enforcement of relevant air quality legislation is currently undertaken by Public Protection (Regulatory Support and Advice team). Estimated cost of measure is staffing resource but this will be offset by permit costs.	Scheduled inspections undertaken by CYC Public Protection staff
AQAP3 (15)	Provide more green infrastructure	Policy Guidance and Development Control	Other policy	2015		CYC	CYC	NO	Partially Funded	£100k - £500k	Planning	-	To be determined	Updates published here when available: https://www.york.gov.uk/GISstrategy . The first trees have now been planted at the new York Community Woodland. This first planting is paving the way for over 100,000 trees and shrubs at the woodland to be planted over the next few years	-
16	Further conversion of diesel double decker tour buses to electric	Vehicle Fleet Efficiency	Vehicle Retrofitting programmes	2014	2019	CYC	DfT Clean Bus Technology Fund	NO	Funded	£100k - £500k	Completed	The 4 electric buses used in York reduced tailpipe emissions in the city. Transdev committed to continue to operate the buses in service, depending on their availability, until they are no longer viable for day to day operation.	Number of buses converted to electric	CYC made a bid to DfT's Clean Bus Technology Fund (CBTF) in 2013 for funds to convert six open-top buses used on York's City Sightseeing tour service from diesel engines to fully electric. Four buses were converted and entered service under this programme. The remaining 2 buses were not converted due to the performance of the retrofitted electric buses on the ground not meeting an acceptable threshold of reliability, causing operational issues for the service (particularly the need to maintain spare diesel buses to provide the service when reliability when poor). York's experience was not unique in this respect, with a project at another historic UK city suffering problems with the supply of retrofitted electric buses, similar to those in York. Although the York trial was not successful in meeting its primary objective, it has been successful in delivering against other objectives. It allowed a five-year trial of retro-fitted buses, which has yielded much useful data in the development of subsequent electric bus projects. Use of the electric buses in York has both led to investment in the P&R fully electric bus fleet and Transdev's electric bus fleet in Harrogate. York and Harrogate now have some of the most intensively used electric buses in the UK and use of the new, as opposed to retrofitted, electric buses has been entirely successful.	York's Clean Air Zone means that it is not now possible to use the previous fleet of older diesel buses on the City Sightseeing Tour service. After 31/01/2021 this service needed to be Euro VI diesel or better to achieve compliance with the CAZ. It is understood that whilst the electric conversions have now largely been withdrawn as their level of reliability was incompatible with commercial service provision, the new diesel vehicles providing this service will all be Euro VI

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17	Retrofitting of school buses	Vehicle Fleet Efficiency	Vehicle Retrofitting programmes	2016	2022	CYC	DfT Clean Bus Technology Fund	NO	Funded	£100k - £500k	Completed	-	Number of retrofitted school buses	Following the withdrawal of the Clean Vehicle Retrofit Accreditation Scheme (CVRAS) certification for the primary vehicle retrofit manufacturer, no further vehicles were retrofitted in 2021, although York Pullman invested £1.2m in new vehicles in the current reporting year. CYC will continue to drive improvements in emission standards through contractual arrangements for school buses (and taxis).	Clean Bus Technology Funding of £308K obtained to support this measure
18	Solar panels at electric P&R sites	Promoting Low Emission Transport	Procuring alternative Refuelling infrastructure to promote Low Emission Vehicles, EV recharging, Gas fuel recharging	2017	2021	CYC	European Regional Development Fund (ERDF)	NO	Funded	£1 million - £10 million	Completed	-	Amount of energy generated by solar panels	CYC secured European funding (ERDF) to allow the delivery of a full solar canopy/battery storage solution in addition to the proposed charging points at Monks Cross and Poppleton Bar. Planning applications for the new ultra-rapid charge units and solar canopies were approved in November 2019. The solar canopies have a proposed generation capacity of up to 400kW powering a mix of 160kW and 7kW charge points. Battery storage units are also set to go on the site to store any excess solar, with the solar expected to generate up to 380,000kWh of electricity per year.	This project is funded through the European Regional Development Fund (ERDF)
19	Hyper Hubs	Promoting Low Emission Transport	Procuring alternative Refuelling infrastructure to promote Low Emission Vehicles, EV recharging, Gas fuel recharging	2016	2022	CYC	CYC and OLEV	NO	Funded	£1 million - £10 million	Implementation	-	Number of charging episodes at hyper hubs	HyperHubs at Monks Cross and Poppleton now largely complete and will open in 2022 pending sign-off of commercial and contractual arrangements. CYC are currently working on a third city centre HyperHub site.	Further information about the HyperHub project can be found at: https://www.york.gov.uk/hyper-hubs The CYC network is complemented by a number of commercial providers; details of all charge points in the city can be viewed using ZapMap (https://www.zap-map.com/live/).

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.

Based on national estimates, pro rata, between 94 and 163 people die prematurely in York each year due to the impacts of poor air quality. This is more than the combined estimate of those who die prematurely from obesity and road accidents.

The Public Health Outcomes Framework includes an indicator relating to the fraction of mortality attributable to particulate pollution. This indicator enables Directors of Public Health to prioritise action on air quality in their local area to help reduce the health burden from air pollution. Indicator D01 'Fraction of mortality attributable to particulate air pollution' is defined as the mortality burden associated with long-term exposure to anthropogenic particulate air pollution (measured as fine particulate matter, PM_{2.5}), expressed as the percentage of annual deaths from all causes in those aged 30+. The latest published figures for York are for 2019 and are 4.5%. This figure is slightly less than the figure reported for the wider Yorkshire and Humber region (4.8%) and less than the average figure reported for England in 2019 (5.1%).

It is widely accepted that fine particulate matter has a significant impact on both morbidity and mortality and diesel emissions have been classified as carcinogenic by the International Agency for Research on Cancer (part of the World Health Organisation). There is particular concern about the 'black carbon' fraction of particulate matter due to its health impacts, and its strong ability to absorb light energy and increase global warming. Black carbon emissions in urban environments arise predominantly from diesel transport, but are also a product of biomass combustion, used increasingly for energy production and space heating.

Emissions of oxides of nitrogen (NO_x) and man-made particulate must be reduced to meet the health based national air quality objectives in York and improve public health. A major source of NO_x and man-made particulate in York is traffic, particularly diesel vehicles.

Policy Guidance LAQM.PG(16) acknowledges that many local authorities will consider how to address PM_{2.5} alongside other pollutants when tackling their own fleets and services and/or work with communities and business to achieve improvements in air quality and that few standalone PM_{2.5} measures will be chosen (unless in order to address a very specific local problem).

To date CYC has produced two trip reduction / modal shift based Air Quality Action Plans (AQAPs) and in 2015 adopted a third Action Plan (AQAP3) focussing on reducing vehicle tailpipe emissions from the remaining vehicle fleet through the use of low emission technologies. AQAP3 is the main delivery document for York's overarching Low Emission Strategy (LES). York's LES was the first document of its kind in the UK. It aims to reduce all emissions to air in the city as far as practicable and recognises that there are no 'safe' limits for particulate emissions, particularly PM_{2.5}. Further air quality improvement measures are also included in the Local Transport Plan and CYC's Local Plan.

City of York Council is demonstrating a commitment to addressing PM_{2.5} through measures in its third Air Quality Action Plan. Some specific items related directly to reducing fine particulate emissions (and indeed related to reducing exposure to such emissions) are described below:

- **Exposure Reduction through the Planning Process [Measure AQAP3(6)]** - Air quality staff routinely comment on planning applications to ensure that new developments are designed in a way which minimises exposure to air pollution and further emission growth. The most recent approach requires developers to calculate the damage costs of the additional emissions that their developments will cause and to mitigate this using a range of sustainable transport and low emission vehicle measures. Such measures must be considered reasonable and proportionate, relative to the damage costs associated with the development. Pre-planning advice is often provided on locations for key exposure sites (e.g. housing, schools, sports facilities, medical facilities etc.) and the use of biomass heating systems is generally discouraged in urban areas and near sensitive receptors.
- **Policy Led Exposure Reduction [Links to various AQAP3 measures]** – CYC's Public Protection team work alongside other council departments with joint inputs into key council policies that can impact on air quality and exposure reduction. Examples of previous joint policies include the Local Transport Plan, Local Plan, Climate Change Strategy, Air Quality Action Plan and Low Emission Strategy. Work continues to strengthen links between air quality and the Health and Wellbeing Strategy. In 2019,

CYC announced a Climate Emergency and have since set an ambition for CYC to reduce its carbon emissions to net zero by 2030. CYC recognise the threat of climate change at both a global and local scale, and are committed to delivering bold, local climate action to deliver economic and social benefits, such as new green jobs, economic savings, market opportunities and much improved well-being for York residents. Air quality improvement strategies in York complement the wider climate change/carbon reduction agenda and are well aligned to recognise synergies and prevent conflict.

- **Information Led Exposure Reduction [Measure AQAP3(10)]** - at the present time there is no single marketing and communications strategy at either a national or local level to deal with dissemination of public information on the links between health, air quality and transport. Acting as part of the Low Emission Partnership (alongside Bradford Metropolitan District Council, Lancaster City Council and Mid Devon District Council), CYC obtained DEFRA AQ Grant funding and has been working on the development of a new air quality hub. Focused on information exchange between local authority professionals, the Hub features a range of content areas related to air quality improvement measures that local authorities can adopt, as well as more specific practitioner advice notes that focus on various aspects of local air quality management, planning, monitoring and enforcement. The Hub also includes a growing library of relevant case studies and a forum to facilitate discussion and information exchange. There has been increasing interest in 2021/22 from Office for Health Improvement and Disparities (OHID) on the use of this platform for further dissemination of information relating to air quality and public health. The LEP is currently in discussions with OHID regarding hosting of a link to the Air Quality Health Indicator Tool for England soon to be released. The 'JorAir' air quality website is used to communicate information locally about air quality and links to public health. CYC has also undertaken promotional work in relation to anti-idling as part of Clean Air Day 2021 and raised awareness of the links between idling emissions, air quality and health impacts.
- **Low Emission Vehicle Upgrades [AQAP3 Measures 16 & 17]** – York has delivered a fully electric Park & Ride (P&R) site at Poppleton Bar and introduced electric buses across other P&R sites. CYC was awarded £3.3m from DfT's Low Emission Bus Scheme in 2018 to support delivery of high capacity, fully electric buses and to support charging infrastructure at York's P&R sites. Further new all-electric double decker buses entered service in 2020/21 and expanded the fully electric fleet on the York P&R

service to 33 buses, one of the largest fleets of electric double decker buses outside London. In March 2022, CYC was awarded £8.4m through DfT's ZEBRA fund to buy an additional 44 new electric buses. This will be matched by a further £10 million investment by First. Once in operation, this will expand the York bus fleet to 77 all-electric buses, which will run more than half the bus-miles operated in the city. The new buses will be used on First's routes 1, 4, 5 and 6, for the York Hospital shuttle bus and on Park&Ride route 2, reducing carbon emissions in York by 2,300 tonnes per year as well as reducing NO_x and particulate emissions across the city. In April 2022, CYC was awarded an additional £17m to support the development of key schemes and initiatives in line with York's Bus Service Improvement Plan, including wider electrification of the urban bus fleet to reduce local emissions.

- **Clean Air Zone [Measure AQAP3(1)]** – The Clean Air Zone (CAZ) for buses in the city centre was launched on 31st January 2020. Buses making 5 or more entrances to the CAZ per day are now required to be Ultra Low Emission Buses (ULEB) (Euro VI diesel or electric). A total of £1,654,000 was allocated by City of York Council to 5 bus operators to help replace/retrofit 93 buses that pass through the city centre Air Quality Management Area (AQMA). Ultra Low emission buses will reduce the amount of fine particulate (as well as NO_x) emitted in the city.
- **Low Emission Taxis [Measure AQAP3(7)]** – York has previously pioneered a taxi grant scheme aimed at encouraging taxi drivers to move away from diesel to petrol hybrid and electric taxis. Further funding was awarded to York under DEFRA's 2019/20 Air Quality Grant Scheme to further accelerate the transition to electric and other ultra-low emission taxis. Through the taxi incentive scheme and changes to Taxi Licensing Policy, the number of hybrid taxis in the York fleet has been increased to 30% (figure correct as of March 2022). Traditional petrol hybrid, plug-in hybrid and electric cars produce significantly lower tailpipe emissions than diesel equivalents.
- **Low Emission Vehicle Events** – In previous years, CYC has held various Low Emission Vehicle events for the public to showcase a variety of electric cars and bikes.
- **Clean Air Act / Smoke Control Areas** – Under the requirements of the Clean Air Act, certain areas of York have been designated Smoke Control Areas (SCAs), where emissions of smoke from chimneys of domestic properties are prohibited. CYC continue to enforce existing smoke control areas to reduce particulate emissions and nuisance. In 2021, CYC undertook further promotion of the rules around SCAs and issued advice and guidance to residents on the use of appropriate fuels and maintenance of appliances in line with the Government's national Burn Better

campaign. In December 2021, Public Protection commenced a programme of compliance checks across petrol filling stations within CYC's area to ensure that all solid fuels being sold were certified as 'Ready to Burn' in line with the Air Quality (Domestic Solid Fuels Standards) (England) Regulations 2020. CYC also plan to look at opportunities for further SCAs in the context of the Local Plan process and new sites being brought forward for development. CYC will ensure any new measures to reduce PM_{2.5} emissions are proportional to the scale of local emissions and adequately resourced and implemented in York.

- **First/last mile delivery options** - City of York Council was awarded £297,237 by DEFRA in March 2021 to carry out a feasibility study and subsequent pilot scheme to reduce emissions relating to deliveries travelling in to and out of York. The project will focus on how to reduce the number of deliveries made to the city centre and around York by LGVs and HGVs. This will directly reduce particulate and other emissions. A pilot micro-consolidation scheme is expected to commence in 2022.

Links between CYC Public Protection and Public Health continue to strengthen. There are aspirations to provide a greater role for the Director of Public Health and colleagues in the Public Health team in the development and delivery of future air quality improvement measures, including full involvement in any future air quality steering group activities for the city. Public Protection has previously briefed CYC Public Health on air quality issues in York and supported them with the provision of anti-idling signage at vaccination centres. In early 2022 Public Protection also briefed CYC Public Health on air quality and the planning process. CYC maintain good contacts within the sustainability team at the York and Scarborough NHS trust and have delivered a number of joint Clean Air Day awareness raising events in partnership with them.

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

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

3.1 Summary of Monitoring Undertaken

3.1.1 Automatic Monitoring Sites

City of York Council undertook automatic (continuous) monitoring at 9 sites during 2021. Table A.1 in Appendix A shows the details of the automatic monitoring sites. NB. Local authorities do not have to report annually on the following pollutants: 1,3 butadiene, benzene, carbon monoxide and lead, unless local circumstances indicate there is a problem. The [Air Quality England](#) page presents automatic monitoring results for City of York Council, with automatic monitoring results also available through the UK-Air website .

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 have been no significant changes to City of York Council's overall automatic monitoring strategy in the last 12 months.

3.1.2 Non-Automatic Monitoring Sites

City of York Council undertook non- automatic (i.e. passive) monitoring of NO₂ at 233 sites during 2021. Table A.2 in Appendix A presents the details of the non-automatic sites.

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

3.2 Individual Pollutants

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

3.2.1 Nitrogen Dioxide (NO₂)

Table A.3 and Table A.4 in Appendix A compare the ratified and adjusted monitored NO₂ annual mean concentrations for the past five years with the air quality objective of 40µg/m³. 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 NO₂ hourly mean concentrations for the past five years with the air quality objective of 200µg/m³, not to be exceeded more than 18 times per year.

Whilst the annual average air quality objective for NO₂ (40µg/m³) was met at all monitored relevant locations in York during the last reporting year of 2020 (including all sites within the current Air Quality Management Area), the latest air pollution monitoring data for 2021, summarised in this report, indicates that NO₂ concentrations in some areas of the AQMA have increased during the pandemic recovery period. The highest concentration of NO₂ recorded at a location representative of long-term public exposure in 2021 was 47µg/m³ on Gilllygate. This contrasts with levels of 40µg/m³ monitored in the same location in 2020.

Annual mean NO₂ concentrations monitored at all roadside continuous monitoring stations were higher in 2021, compared with levels monitored in 2020. Increases in NO₂ of between 4% (Heworth Green) and 19% (Nunnery Lane) were observed between 2020 and 2021 (average increase 9%). Annual mean background concentrations of NO₂ monitored at Bootham Hospital (City of York Council's urban background continuous monitoring site)

varied by less than 1% between 2020 and 2021. This reflects the reduced impact of local traffic emissions on air quality in the vicinity of this background site.

Despite concentrations of NO₂ monitored in York throughout 2021 being higher than those monitored in 2020, they continue the general downward trend in NO₂ concentrations monitored across the city since 2012. Ongoing air quality monitoring in all locations will be fundamental to understanding the longer-term environmental impacts of the pandemic and the magnitude of any changes due to increased sustained levels of walking and cycling and changes in public transport use.

With respect to the city centre AQMA, exceedances of the health based annual mean NO₂ objective of 40µg/m³ were monitored at some locations on Gillygate / Bootham / St Leonards Place / Museum Street, on Holgate Road / Blossom Street and on Rougier Street / Bridge Street in 2021. Maximum annual mean concentrations of NO₂ monitored at relevant locations within the current AQMA 'technical breach' areas were 47.5µg/m³ (Gillygate), 40.5µg/m³ (George Hudson St / Rougier St), 43.5µg/m³ (Holgate / Blossom Street), 33.7µg/m³ (Lawrence St), 32.9µg/m³ (Fishergate / Paragon St), 32.8µg/m³ (Prices Lane/Nunnery Lane) and 31.8µg/m³ (Coppergate). Maximum concentrations of NO₂ recorded in these areas were on average 12.1% higher in 2021 than in 2020 and ranged from 1.9% higher on Coppergate to 24.5% higher on Holgate / Blossom Street.

Due to the differences in air pollution observed across the city throughout the period 2019 – 2021 and uncertainties around the longer-term impacts of the pandemic on traffic and emissions, it is not considered appropriate to reduce the size of the city centre AQMA at this time. In line with DEFRA's LAQM guidance, before revoking an AQMA on the basis of measured pollutant concentrations, a local authority needs to be reasonably certain that any future exceedances of air quality objectives are unlikely. For this reason, it is expected that local authorities will need to consider measurements carried out over several years or more, national trends in emissions, as well as local factors that may affect the AQMA. The AQMA boundary will be reviewed again as part of City of York Council's next Annual Status Report (due June 2023) when the longer terms impacts of the pandemic on traffic may be clearer.

Concentrations of NO₂ monitored in the former Fulford Road AQMA in 2021 continue to be well below the annual mean objective of 40µg/m³. The highest recorded levels of NO₂ in this area were monitored on Fulford Main Street and were 25.4 µg/m³. This supports the decision to revoke the Fulford Road AQMA, as discussed in City of York Council's previous Annual Status Reports and implemented in February 2020.

Concentrations of NO₂ monitored in the former Salisbury Terrace / Leeman Road AQMA in 2021 were also all well below the annual mean objective of 40µg/m³. The highest recorded levels of NO₂ in this area were monitored on Salisbury Terrace and were 29.2µg/m³. This confirms that the decision to revoke this AQMA in December 2017 was appropriate.

In December 2018, the boundary of the city centre AQMA was extended to include the full length of Coppergate and the buildings either side of the road, due to monitored concentrations of NO₂ above the annual mean objective for this pollutant. Concentrations of NO₂ monitored along Coppergate in 2021 were marginally higher than those monitored in 2020 (1.9%), but still significantly lower than those monitored pre-pandemic in 2019, with the highest concentration in 2021 observed at site D56 (Three Tuns Pub, 12 Coppergate). This site recorded an annual mean NO₂ concentration of 31.8µg/m³ in 2021 which is well below the annual mean objective for this pollutant and still represents a 16.8% reduction in NO₂ compared with concentrations monitored at this site in 2019.

Revisions to the AQMA Order in 2018 also removed the reference to breaches of the short-term hourly objective along George Hudson Street / Rougier Street / Bridge Street based on monitoring results in this area. The latest 2021 monitoring results for this area of the city indicate that this short-term objective is still being met.

3.2.2 Particulate Matter (PM₁₀)

Table A.6 in Appendix A: Monitoring Results compares the ratified and adjusted monitored PM₁₀ annual mean concentrations for the past five years with the air quality objective of 40µg/m³.

Table A.7 in Appendix A compares the ratified continuous monitored PM₁₀ daily mean concentrations for the past five years with the air quality objective of 50µg/m³, not to be exceeded more than 35 times per year.

City of York Council monitors particulate (PM₁₀) at 4 sites in the city (Bootham, Fishergate, Holgate Road and Plantation Drive). National air quality objectives for PM₁₀ are currently met in York; this has been the case since monitoring of PM₁₀ was established in the city. The highest annual mean concentration of PM₁₀ monitored in York during 2021 was 17.2µg/m³. Along with most areas of the UK, this concentration is above the World Health Organisation (WHO) guideline for this pollutant, which has recently been strengthened to 15µg/m³. Concentrations of PM₁₀ monitored in 2021 were below maximum levels of 19.2µg/m³ monitored in 2020.

At roadside locations between 2020 and 2021, annual mean PM₁₀ decreased at Fishergate and Holgate Road by 18.1% and 6.6% respectively, but increased by 1.2% on Plantation Drive. Annual mean concentrations of PM₁₀ monitored at the Bootham background site also decreased by 11.8% between 2020 and 2021. Based on PM₁₀ monitoring data over the last 5 years, there does not appear to be any clear trend in PM₁₀ concentrations. The general downward trend in PM₁₀ concentrations previously observed at roadside monitoring sites up to 2017 has not continued between 2018 and 2021.

City of York Council is currently reviewing the scope of its particulate monitoring network; updates will be provided in future Annual Status Reports.

3.2.3 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.

Although not explicitly required under the Local Air Quality Management regime, where Local Authorities undertake PM_{2.5} monitoring they are encouraged to report it as part of the Annual Status Report. Micro-particulate, or PM_{2.5}, is the pollutant which has the biggest impact on public health and on which the Public Health Outcomes framework (PHOF) indicator is based. City of York Council monitors PM_{2.5} at three locations in the city, namely Bootham (urban background site), Fishergate (roadside site) and Gillygate (roadside site). Monitoring of PM_{2.5} at Fishergate and Bootham is carried out as part of DEFRA's Automatic and Rural Monitoring Network (AURN). Monitoring at Gillygate was established by City of York Council as a result of the growing concerns over the health impacts of PM_{2.5}.

National air quality objectives for PM_{2.5} are currently met in York. The highest annual mean level of PM_{2.5} monitored in York during 2021 was 8.4µg/m³. This compares with a maximum level of 8.6µg/m³ monitored in 2020.

Between 2020 and 2021, annual mean concentrations of PM_{2.5} decreased at Gillygate and Bootham by 15.1% and 2.9% respectively. Fishergate roadside monitoring site exhibited an increase in annual mean PM_{2.5} of 3.2% between 2020 and 2021. No exceedances of the annual mean PM_{2.5} objective (25µg/m³) have been recorded to date since monitoring of PM_{2.5} was established; concentrations recorded in 2021 remain some of the lowest ever recorded in the city. Trend analysis over the last 5 years reveals that concentrations of PM_{2.5} have generally decreased at roadside monitoring sites in this time, although PM_{2.5}

monitored at the Bootham urban background site has been more variable in this timeframe.

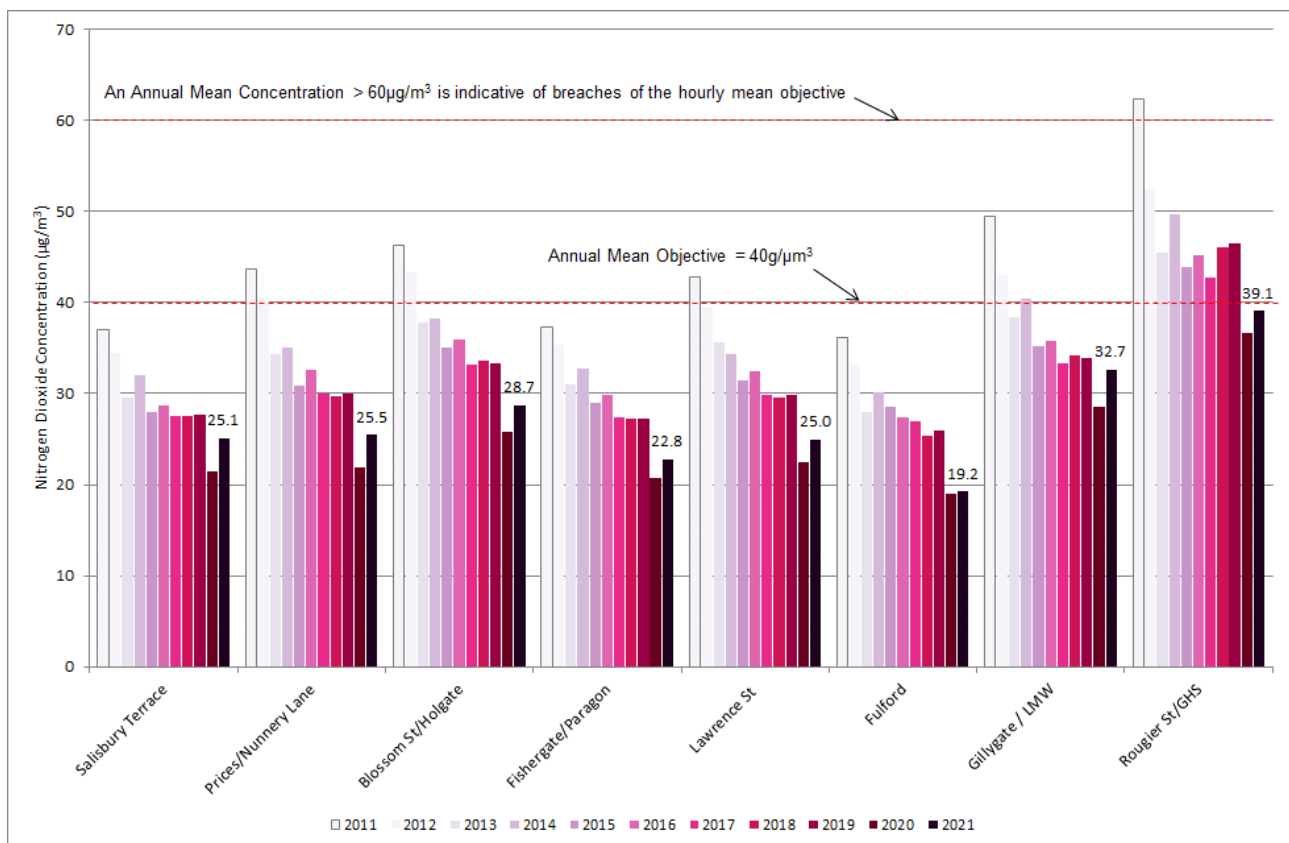
3.3 Air Quality Indicators

3.3.1 Council Plan Air Quality Indicators

Two air quality indicators have been developed for City of York Council's 'Council Plan'. These are used to look at trends in air quality across AQMAs/technical breach areas and are as follows:

Indicator CAN027 – Average Annual Mean Nitrogen Dioxide Concentration in each area of technical breach. This indicator provides an average nitrogen dioxide concentration based on all monitoring undertaken in each area of technical breach (historical areas of technical breach, such as Salisbury Terrace, are also shown for information). Monitoring results include bias corrected diffusion tube data and data from continuous monitors (if applicable). Trends between 2011 and 2021 are shown below.

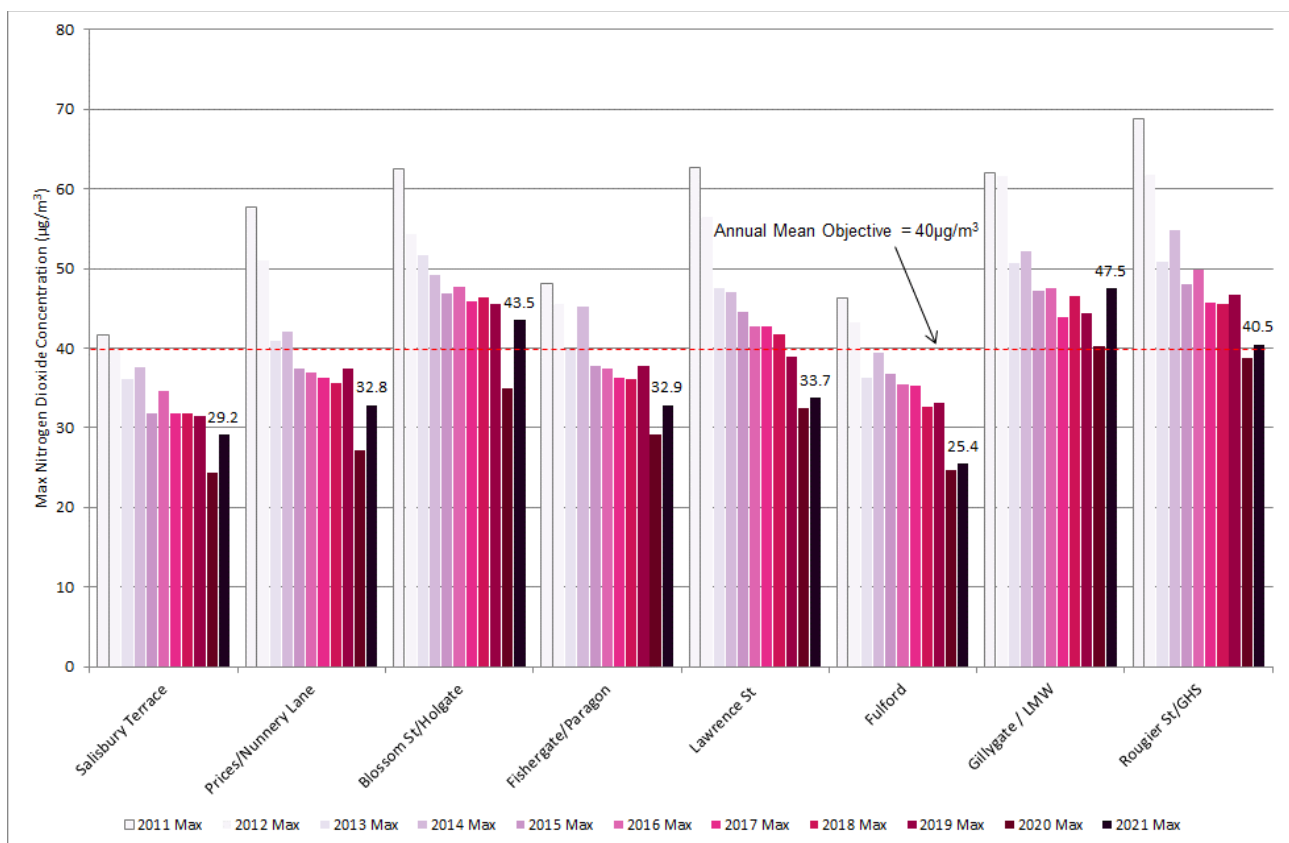
Indicator CAN027 – Trends in average annual mean nitrogen dioxide concentration in each area of technical breach



Average concentrations of NO₂ monitored in 2021 were higher than in 2020 in all areas. This is to be expected, as NO₂ concentrations in 2020 were atypical / depressed due to the Covid-19 pandemic. Increases in average NO₂ between 2020 and 2021 ranged from 1.2% (Fulford) to 17.0% (Salisbury Terrace). However, it should be noted that average concentrations monitored in 2021 were lower than average concentrations previously recorded for this indicator in the 9 years between 2011 and 2019. Indicator CAN027 continues to suggest a steady downward trend in nitrogen dioxide concentrations over the last 10+ years.

CAN028 - Maximum Nitrogen Dioxide Concentration (at relevant location) in each area of Technical Breach. This indicator provides a maximum recorded annual mean nitrogen dioxide concentration in each area of technical breach (historical areas of technical breach, such as Salisbury Terrace, are also shown for information). This only considers monitoring at relevant locations and is therefore useful to look at the validity of existing AQMA boundaries year to year. Trends between 2011 and 2021 are shown below.

Indicator CAN028 – Maximum nitrogen dioxide concentration (at relevant location) in each area of technical breach



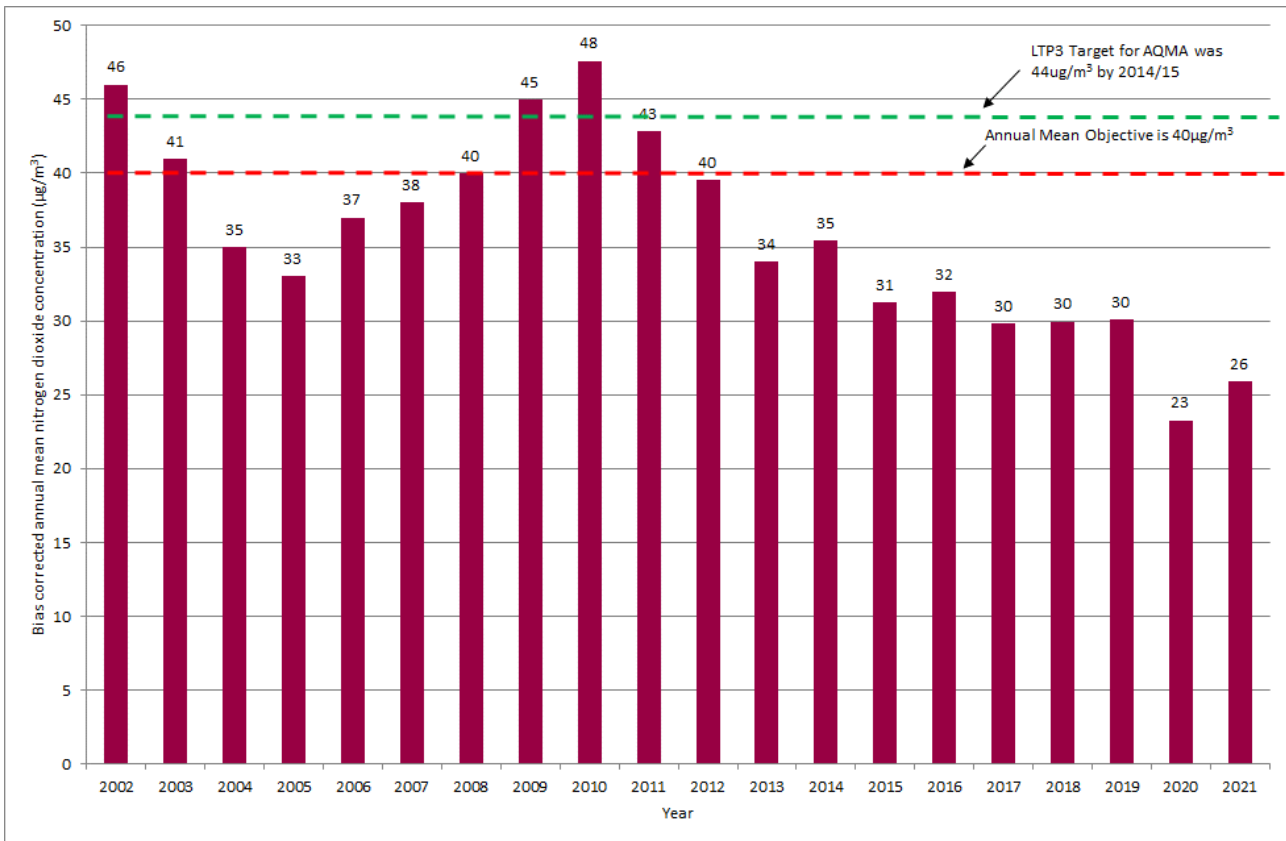
The maximum annual mean NO₂ concentration monitored at a relevant location was 47.5µg/m³ on Gillygate. Maximum concentrations of NO₂ monitored in the Blossom Street / Holgate Road and Rougier Street / George Hudson Street areas were also above the annual mean objective of 40µg/m³ at 43.5 µg/m³ and 40.5 µg/m³ respectively. Maximum concentrations of NO₂ in all other areas were below the annual mean NO₂ objective. On average, maximum NO₂ concentrations increased by 12.1% across all areas, with the greatest increase between 2020 and 2021 seen in the Blossom Street / Holgate Road area (24.5% increase).

Similar to the situation with Indicator CAN027, but with the notable exception of Gillygate, maximum concentrations of NO₂ monitored in all other areas were lower than those recorded in the 9 years between 2011 and 2019. This also suggests a steady downward trend in nitrogen dioxide concentrations over the last 10+ years for most areas of York.

3.3.2 Local Transport Plan Air Quality Indicator

For the purpose of monitoring the impact of York's Local Transport Plan (LTP3) a local air quality indicator has been established. This indicator measures the mean of annual average results obtained from 36 diffusion tubes located within York's city centre AQMA. Trends in this indicator between 2002 and 2021 are shown below.

LTP AQ Indicator – Average concentration of NO₂ monitored across 36 locations located within the city centre Air Quality Management Area



This indicator suggests that NO₂ concentrations across the city were in general decline between 2002 and 2005. This was followed by a steady increase in concentrations between 2006 and 2010. Between 2010 and 2019, concentrations of NO₂ within the city centre AQMA improved, with levels of nitrogen dioxide across all the sites used for the indicator falling to 30µg/m³ in 2019 (this indicator was also 30µg/m³ in 2017 and 2018 and had appeared to plateau). The figure of 23µg/m³ recorded in 2020 was the lowest recorded value since the indicator was established in 2002 and was likely to be a result of significantly lower traffic levels and associated emissions in the city as a result of the Covid-19 lockdowns in 2020. The latest 2021 figure of 26µg/m³, whilst higher than the 2020 figure, demonstrates an ongoing downward trend in NO₂ concentrations across the city centre AQMA and reinforces trends seen with other council air quality indicators.

4 Planning Application Review

The land-use planning system is recognised to play an integral part in improving air quality. This requires close co-operation between planners and environmental health practitioners.

City of York Council regularly reviews applications with respect to potential air quality and other environmental impacts. Table 4.1 below provides a list of those planning applications that have been considered in relation to air quality by City of York Council's Public Protection team during 2021. A formal air quality impact assessment has been requested for some of these applications. Where applications listed in City of York Council's last Annual Status Report were marked as 'awaiting decision', an update has been provided in this year's report.

The Annual Status Report provides an opportunity to keep a record of such applications to provide a picture of where changes in air quality may occur in the future. The information presented is also useful to identify where combined impacts of several developments may become important.

It should be noted that passive provision for electric vehicle recharging was requested in 2021 for all applications for residential properties where secure off-street parking was provided (secure parking is defined as a house with a garage or private driveway). Due to the large number of applications that this applies to, these have been omitted from the table below. Comments on all applications processed by City of York Council are available by searching the planning reference number at [Search Planning Applications received by City of York Council](#).

Table 4. 1 Planning Applications considered during 2021

[N.B. Comments provided relating to application status reflect the position as of end March 2022]

Planning Reference	Description	Type	Comments	Status
15/00166/FULM / 15/00167/FULM	Proposed erection of 228 dwellings, café/retail unit with associated access, highways, landscaping, open space and engineering works. Land to the south of Hull Road, York	Full Application	<p>Predicted impacts on annual mean concentrations of NO₂, PM₁₀ and PM_{2.5} at sensitive receptor locations within the vicinity of the site considered 'negligible' when assessed in line with relevant guidance. Cumulative air quality impacts associated with operational traffic and proposed 2MW combustion plant at University of York also assessed and not of concern.</p> <p>A strategy for the provision of EV charging facilities across the site was requested. Construction Environmental Management Plan (CEMP) requested. Emission mitigation statement requested.</p>	<p>2022 Update Awaiting determination</p>
18/00017/OUTM	Outline planning application with full details of means of access for residential development of 970 dwellings with associated demolition, infrastructure works, open space, primary school, community facilities and convenience store on land West of Monks Cross Link Road	Outline Application	<p>Public Protection requested conditions regarding a Construction Environmental Management Plan (CEMP) and facilities for charging electric vehicles on the site.</p>	<p>2022 Update Awaiting determination</p>

Planning Reference	Description	Type	Comments	Status
18/00680/OUTM	Outline planning application with all matters reserved except for means of access for the erection of 160no. dwellings with public open space, landscaping and drainage, OS Field Lying To The South Of And Adjacent to No 1 Tadcaster Road, Copmanthorpe, York	Outline Application	Public Protection requested conditions relating to electric vehicle recharge points and a Construction Environmental Management Plan (CEMP)	2022 Update Awaiting determination
19/00246/FULM	Erection of 80 Dwellings with associated access, infrastructure, landscaping, public open space and parking. York City Football Club, Bootham Crescent, York, YO30 7AQ	Full Application	Public Protection previously advised (as part of the pre-application consultation for the site) that an air quality assessment was unlikely to be required based on the number of dwellings and the likely traffic generation figures for the development. Conditions were requested relating to the provision of electric vehicle recharging facilities and a Construction Environmental Management Plan.	2022 Update Application approved 01/02/2022 Conditions attached to approval regarding CEMP and EV charging facilities
19/00602/FULM	Erection of 97 dwellings, landscaping, public open space and associated infrastructure. Land To The South East Of 51 Moor Lane, Copmanthorpe, York	Full Application	Public Protection requested conditions relating to electric vehicle charge points and the production of a Construction Environmental Management Plan	2022 Update Awaiting determination
19/01260/OUTM	Outline application for planning permission for a business park up to 25,084sq.m (Use Class B1) and an Innovation Centre up to 6,503 sq.m (Use Class B1/B2), with ancillary pavilion units up to 836 sq.m (Use Classes A1, A3, A4, D1 and D2), associated car parking, a park and ride facility, including	Outline Application	Public Protection requested a condition regarding the production of Construction Environmental Management Plan to minimise dust emissions during construction phases. Conditions were also requested regarding the assessment of any air	2022 Update Awaiting determination

Planning Reference	Description	Type	Comments	Status
	park and ride amenity building up to 186 sq.m, hard and soft landscaping and highway alterations, all matters reserved apart from detailed access. Field Adjacent A19 And St Nicholas Avenue York		quality impacts associated with any on-site combustion, and the provision of a strategy for the provision of electric vehicle charging facilities across the site.	
19/01969/FULM	Extension to existing York Designer Outlet Centre, relocation of existing Park & Ride facility, creation of new retail car parking and associated landscaping. York Designer Outlet, St Nicholas Avenue, York, YO19 4TA	Full Application	The development did not necessitate a detailed air quality assessment on the basis of the anticipated increase in traffic. Public Protection requested that a minimum of 32 parking spaces were provided with facilities for charging electric vehicles (with an additional 32 bays identified for the future installation of additional electric vehicle charge points). A Construction Environmental Management plan was also requested.	2022 Update Awaiting determination
20/00359/FUL	Hotel Ibis, 77 The Mount, York, YO24 1AX	Full Application	1 EV charge point requested	2022 Update Application approved 14/5/2021 Condition 15 required 2 EV charge points to be retained and maintained for the lifetime of the development.
20/01471/FULM	Royal Masonic Benevolent Institute, Connaught Court, St Oswalds Road, York, YO10 4QA	Full Application	Public Protection requested 2 active charge points for electric vehicles (this was already proposed as part of the application)	2022 Update Awaiting determination

Planning Reference	Description	Type	Comments	Status
20/01521/FULM	Erection of a 3, 4 and 5 storey student accommodation block (providing 105 bedrooms) following demolition of existing buildings. Plumbase, Waterloo House, Fawcett Street, York, YO10 4AH	Full Application	Public Protection requested a screening assessment for the proposed boiler plant. It was also requested that windows to ground floor rooms fronting Fawcett Street (gym and communal living area) should be non-openable to minimise exposure of residents as far as possible to vehicle emissions / poor air quality emanating from Fawcett Street. As the proposals include the demolition of the existing buildings and construction of a new structure, a CEMP was also requested.	2022 Update Application refused
20/01916/OUTM	Erection of 85no. dwellings (use class C3) with associated parking, landscaping, access and ancillary works. No matters reserved except for the appearance, scale and internal layout of 5no. self-build plots in Terrace 5. Burnholme Community Hub, Mossdale Avenue, York, YO31 0HA	Outline Application	Public Protection requested that prior to first occupation of the development a strategy for the provision of electric vehicle charging facilities on the site shall be agreed with City of York Council. The strategy should detail the numbers, specification, locations and installation timescales for all Electric Vehicle Charging Points (including any future locations/passive provision).	2022 Update Application approved Condition 25 required the submission of a strategy outlining provision for EVs on the site. A minimum of 4 dedicated EV charge points were required (with passive provision for an additional 4 spaces)
20/02421/FULM	Erection of 99no. room hotel, associated works and infrastructure. Land To The Rear Of Mill House, North Street, York	Full Application	12 EV charging points to the north and east of the development were proposed for use by staff and visitors	2022 Update Awaiting determination

Diffusion Tube ID	Site Name	Site Type	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Pollutants Monitored	In AQMA Order No.5?	Distance to Relevant Exposure (m) ⁽¹⁾	Distance to kerb of nearest road (m) ⁽²⁾	Tube Co-located with a Continuous Analyser?	Tube Height (m)
9a	Portland Street - triplicate	Urban Background	460163	452468	NO ₂	NO	3.7	1.8	N	~2.75
A1	Bootham traffic light outside dance shop	Roadside	460088	452263	NO ₂	YES	0.2	2.3	N	~2.75
A11	Traffic lights end of Water Lane	Roadside	459341	453042	NO ₂	YES	13.6	0.4	N	~2.75
A12	Lamp post 7 Clifton Green	Roadside	459251	453008	NO ₂	YES	12.9	2.2	N	~2.75
A13	Lamp post 1 Clifton Dale - triplicate	Urban Background	459335	452931	NO ₂	NO	2.7	1.6	N	~2.75
A14	Lamp post 1 Clifton Dale - triplicate	Urban Background	459335	452931	NO ₂	NO	2.7	1.6	N	~2.75
A14a	Lamp post 1 Clifton Dale - triplicate	Urban Background	459335	452931	NO ₂	NO	2.7	1.6	N	~2.75
A17	Sailsbury Road	Roadside	458578	452472	NO ₂	NO	8.7	1.5	N	~2.75
A19	17 Sailsbury Terrace - triplicate	Roadside	458713	452414	NO ₂	NO	0.2	1.3	N	~2.75
A19a	17 Sailsbury Terrace - triplicate	Roadside	458713	452414	NO ₂	NO	0.2	1.3	N	~2.75
A19b	17 Sailsbury Terrace - triplicate	Roadside	458713	452414	NO ₂	NO	0.2	1.3	N	~2.75
A2	Drainpipe on front of registry office	Roadside	459917	452405	NO ₂	YES	0.2	3.4	N	~2.75
A20	224 Sailsbury Terrace - triplicate	Roadside	458760	452404	NO ₂	NO	0.2	1.1	N	~2.75
A20a	224 Sailsbury Terrace - triplicate	Roadside	458760	452404	NO ₂	NO	0.2	1.1	N	~2.75
A20b	224 Sailsbury Terrace - triplicate	Roadside	458760	452404	NO ₂	NO	0.2	1.1	N	~2.75
A21	Kingsland Terrace	Urban Background	458806	452326	NO ₂	NO	0.2	1.4	N	~2.75
A22	Kingsland Terrace	Urban Background	458792	452242	NO ₂	NO	0.2	23.8	N	~2.75
A25	Garfield Terrace	Roadside	458706	452225	NO ₂	NO	0.2	1.5	N	~2.75

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A29	Low Poppleton Lane	Urban Background	456939	453013	NO ₂	NO	23.6	1.1	N	~2.75
A3	WRVS building - Bootham	Roadside	459822	452492	NO ₂	YES	0.2	2.6	N	~2.75
A30	Boroughbridge Road	Urban Background	457060	452888	NO ₂	NO	8.3	6.2	N	~2.75
A36	Boroughbridge Road	Urban Background	457625	452446	NO ₂	NO	0.2	9.4	N	~2.75
A38	Boroughbridge Road	Urban Background	457857	452334	NO ₂	NO	0.2	10.3	N	~2.75
A4	St Olaves Road	Urban Background	459699	452638	NO ₂	YES	5.8	0.7	N	~2.75
A40	Poppleton Road School	Urban Background	458109	452196	NO ₂	NO	0.2	7.9	N	~2.75
A41	140 Poppleton Road	Roadside	458172	452108	NO ₂	NO	0.2	5.3	N	~2.75
A45	Grantham Drive	Urban Background	458384	451817	NO ₂	NO	0.2	10.5	N	~2.75
A98	8 Poppleton Road	Roadside	458666	451468	NO ₂	NO	0.2	4.9	N	~2.75
A50	Outside Fox pub - Holgate Rd	Roadside	458732	451393	NO ₂	YES	16.1	0.3	N	~2.75
A51	Thrall entrance	Urban Background	458827	451348	NO ₂	YES	18	2.2	N	~2.75
A52	Holgate Road (corner of Hamilton Dr East)	Roadside	458945	451254	NO ₂	YES	10.9	2	N	~2.75
A53	Holgate Road	Roadside	459066	451239	NO ₂	YES	7.9	2.7	N	~2.75
A54	Dalton Terrace	Roadside	459254	451223	NO ₂	YES	17.1	3.3	N	~2.75
A55	Holgate Road	Roadside	459351	451221	NO ₂	YES	5.5	0.2	N	~2.75
A56	Holgate Road	Urban Background	459470	451268	NO ₂	YES	0.2	10.2	N	~2.75
A57	Hairdressers Holgate Road	Roadside	459533	451280	NO ₂	YES	0.2	2.8	N	~2.75
A6	Clifton Bingo Hall	Roadside	459536	452811	NO ₂	YES	6.2	3	N	~2.75

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A60	Shipton Road	Urban Background	458906	453276	NO ₂	NO	0.2	21.5	N	~2.75
A62	42 Shipton Road	Urban Background	458806	453483	NO ₂	NO	0.2	15.7	N	~2.75
A64	Lamp post outside Charlie Browns	Roadside	460030	452327	NO ₂	YES	2.4	0.6	N	~2.75
A66	70 Shipton Road	Urban Background	458672	453685	NO ₂	NO	0.2	18.4	N	~2.75
A69	6 South Cottages	Urban Background	458375	453958	NO ₂	NO	0.2	10	N	~2.75
A7	51 Clifton	Roadside	459441	452892	NO ₂	YES	3.3	2.1	N	~2.75
A70	120 Shipton Road	Urban Background	458299	454070	NO ₂	NO	0.2	13	N	~2.75
A71	154 Shipton road	Urban Background	458121	454254	NO ₂	NO	0.2	9.6	N	~2.75
A74	176 Shipton Road	Urban Background	458041	454371	NO ₂	NO	0.2	7.1	N	~2.75
A77	Lamp post outside 206 Shipton Road	Urban Background	457929	454537	NO ₂	NO	6.1	1.7	N	~2.75
A81	Lamp post outside 276 Shipton Rd	Urban Background	457733	454805	NO ₂	NO	0.2	8.4	N	~2.75
A85	Drainpipe front of Greenside guest house	Urban Background	459364	453009	NO ₂	NO	0.2	11.5	N	~2.75
A88	111 Boroughbridge Road, Drainpipe nearest Garage at side of the door	Urban Background	457470	452550	NO ₂	NO	0.2	12.9	N	~2.75
A9	Lime Tree House	Roadside	459295	453067	NO ₂	YES	12.6	1.7	N	~2.75
A90	Lamp post 25 Shipton Rd	Roadside	459238	453157	NO ₂	YES	8.2	1.9	N	~2.75
A94	5 Salisbury Road	Roadside	458651	452426	NO ₂	NO	0.2	13.7	N	~2.75
A96	Ousecliffe Gardens signpost, outside 31 Water End	Roadside	459038	452850	NO ₂	NO	10	0.6	N	~2.75

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A97	Lamp post next to Air Quality Monitoring Station on Plantation Drive	Roadside	457431	452616	NO ₂	NO	18.7	2.2	N	~2.75
B1	Lamp post 1 Lowther Street opposite Riverside House Flats	Roadside	460848	452582	NO ₂	YES	0.2	1.3	N	~2.75
B15	Lamp post 99 Huntington Road	Roadside	461294	455305	NO ₂	NO	28	1.6	N	~2.75
B19	Lamp post 5 outside Huntington Primary School	Roadside	461891	455876	NO ₂	NO	17.2	1.6	N	~2.75
B2	Lamp post 7 Huntington Road opposite Park Grove	Roadside	460924	452697	NO ₂	YES	2.5	1.3	N	~2.75
B29	Eastern Terrace	Roadside	461453	452750	NO ₂	NO	0.3	1	N	~2.75
B3	Lamp post 11 Huntington Road outside no 70	Roadside	460952	452826	NO ₂	NO	2.9	1.4	N	~2.75
B36	Lamp post 60 Malton Road - triplicate	Urban Background	462565	454194	NO ₂	NO	16.9	0.6	N	~2.75
B37	Lamp post 60 Malton Road - triplicate	Urban Background	462565	454194	NO ₂	NO	16.9	0.6	N	~2.75
B37a	Lamp post 60 Malton Road - triplicate	Urban Background	462565	454194	NO ₂	NO	16.9	0.6	N	~2.75
B38	482 Malton Road	Urban Background	463757	455155	NO ₂	NO	0.2	11.7	N	~2.75
B41	76 Lawrence Street	Urban Background	461326	451330	NO ₂	YES	0.2	6.5	N	~2.75

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B42	83 Lawrence Street	Urban Background	461430	451348	NO ₂	YES	0.2	7.2	N	~2.75
B43	117 Lawrence Street	Urban Background	461557	451343	NO ₂	YES	0.2	7.9	N	~2.75
B44	Outside nursing home, Lawrence Street	Roadside	461643	451343	NO ₂	YES	8.6	1.9	N	~2.75
B45	Pedestrian crossing Traffic Light Melrosegate Crossroads	Roadside	461849	451284	NO ₂	YES	17.3	0.5	N	~2.75
B47	47 Hull Road	Urban Background	462019	451289	NO ₂	NO	0.2	12.2	N	~2.75
B48	61 Hull Road	Urban Background	462122	451289	NO ₂	NO	0.2	12.8	N	~2.75
B50	134 Hull Road	Roadside	462291	451269	NO ₂	NO	0.2	3.7	N	~2.75
B51	117 Hull Road	Urban Background	462384	451298	NO ₂	NO	0.2	13.2	N	~2.75
B56	Lamp post 40 Hull Road	Roadside	462888	451289	NO ₂	NO	14.4	2.3	N	~2.75
B58	231 Hull Road	Urban Background	462970	451300	NO ₂	NO	0.2	14	N	~2.75
B60	Lamp post 1 Nursery Gardens	Urban Background	463234	451339	NO ₂	NO	10.7	1.3	N	~2.75
B63	Lamp post 54 Tang Hall Lane	Roadside	462704	451300	NO ₂	NO	13.2	0.9	N	~2.75
B72	Front of York Cycleworks	Roadside	461122	451374	NO ₂	YES	10	2.9	N	~2.75
B74	Heworth Court Hotel sign outside Sutherland House on side of house on drainpipe.	Urban Background	461371	452708	NO ₂	NO	5.2	17.8	N	~2.75

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B80	On drainpipe on front of Heworth Surgery.	Urban Background	461185	452663	NO ₂	NO	24.5	13.4	N	~2.75
B82	Lamp post Dalguise Grove	Urban Background	460974	452563	NO ₂	NO	3.1	1.1	N	~2.75
B83	Lamp post 24 Outside No.55 Heworth Green	Roadside	461285	452695	NO ₂	NO	11.3	1	N	~2.75
B84	Drainpipe to the left of the front door on 167 Hull Road	Urban Background	462654	451293	NO ₂	NO	0.2	13.4	N	~2.75
B85	Lamp post 7 Outside St Lawrences Working Mens Club	Roadside	461227	451368	NO ₂	YES	18.8	5.6	N	~2.75
B86	Lamp post 16 Heworth Green, next to Air Quality Station	Roadside	461116	452602	NO ₂	NO	5	0.7	N	~2.75
B88	Telegraph Pole 381 Hull Road	Roadside	462799	451291	NO ₂	NO	10	6.8	N	~2.75
B89	Outside old DC Cook site on signpost	Roadside	461170	451357	NO ₂	YES	2	2.8	N	~2.75
B90	11 Lawrence Street	Roadside	461133	451394	NO ₂	YES	0.1	4.4	N	~2.75
C12	Lamp post 1 Ainsty Grove	Urban Background	458825	449928	NO ₂	NO	10.8	0.3	N	~2.75
C17	248 Tadcaster Rd	Urban Background	459085	450544	NO ₂	NO	0.2	20.6	N	~2.75
C18	196 Mount Vale	Urban Background	459204	450772	NO ₂	YES	0.2	9.2	N	~2.75
C19	Trentholme Dr	Urban Background	459271	450819	NO ₂	YES	7.7	0.4	N	~2.75
C2	Lamp post 66 Tesco roundabout	Roadside	458333	448974	NO ₂	NO	16.9	1.1	N	~2.75

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C20	Elmbank hotel	Urban Background	459280	450923	NO ₂	YES	21.4	0.5	N	~2.75
C21	Dalton Terrace	Roadside	459410	451040	NO ₂	YES	3.8	3.5	N	~2.75
C22	Park Street	Urban Background	459570	451195	NO ₂	YES	14.4	1.1	N	~2.75
C23	The Mount	Roadside	459553	451252	NO ₂	YES	0.2	3	N	~2.75
C26	Outside Odean	Roadside	459639	451334	NO ₂	YES	12.9	0.8	N	~2.75
C27	Windmill Pub	Roadside	459717	451433	NO ₂	YES	0.2	3.2	N	~2.75
C28	House top of Selby Rd	Urban Background	461201	448386	NO ₂	NO	0.2	15.3	N	~2.75
C29	Lamp post 34 Selby Road	Roadside	461196	448426	NO ₂	NO	21.7	0.5	N	~2.75
C30	Lamp post 2 Selby Rd	Roadside	461185	448462	NO ₂	NO	13.1	1.2	N	~2.75
C31	2 Selby Rd	Urban Background	461193	448473	NO ₂	NO	0.2	14.1	N	~2.75
C32	Fordlands Rd	Urban Background	461128	448823	NO ₂	NO	5.4	6.8	N	~2.75
C33	124 Main St	Urban Background	461085	448933	NO ₂	NO	1	11.2	N	~2.75
C34	103 Main St	Roadside	461085	449067	NO ₂	NO	0.2	3.5	N	~2.75
C36	50 Main St	Roadside	461052	449146	NO ₂	NO	0.2	3.7	N	~2.75
C37	59 Main St	Urban Background	461045	449223	NO ₂	NO	0.2	6.7	N	~2.75
C38	Lamp post 8 Main St	Roadside	461038	449225	NO ₂	NO	6	0.4	N	~2.75
C39	18 Main St	Roadside	460974	449336	NO ₂	NO	0.2	2.4	N	~2.75
C4	147 Tadcaster Rd	Urban Background	458470	449126	NO ₂	NO	0.2	14.3	N	~2.75
C40	Adams House B&B	Urban Background	460910	449628	NO ₂	NO	0.2	8.7	N	~2.75
C42	300 Fulford Rd	Urban Background	460857	449748	NO ₂	NO	0.2	10	N	~2.75

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C43	Lamp post 39 Fulford Rd - triplicate	Roadside	460869	449730	NO ₂	NO	8.7	0.3	N	~2.75
C43a	Lamp post 39 Fulford Rd - triplicate	Roadside	460869	449730	NO ₂	NO	8.7	0.3	N	~2.75
C44	Lamp post 39 Fulford Rd - triplicate	Roadside	460869	449730	NO ₂	NO	8.7	0.3	N	~2.75
C49	Alma terrace	Urban Background	460860	450530	NO ₂	YES	6	0.9	N	~2.75
C51	Conservative Club	Roadside	460871	450727	NO ₂	YES	9.8	1	N	~2.75
C52	Howard St	Roadside	460853	450781	NO ₂	YES	9.9	1.4	N	~2.75
C53	Winterscale St	Roadside	460766	450924	NO ₂	YES	14.7	2.1	N	~2.75
C54	Escrick St	Roadside	460762	451069	NO ₂	YES	1.7	3.2	N	~2.75
C56	Pedestrian crossing on junction of Scarcroft Road/The Mount	Roadside	459484	451141	NO ₂	YES	25.1	1.3	N	~2.75
C57	Lamp post 1 Nelson's Lane	Urban Background	458912	450111	NO ₂	NO	5.9	1.3	N	~2.75
C58	Drainpipe of 4 Main Street Fulford	Roadside	460926	449429	NO ₂	NO	0.2	3.6	N	~2.75
C59	Drainpipe of 34 Tadcaster Road	Roadside	458735	449713	NO ₂	NO	0.2	3.6	N	~2.75
C62	East Mount Road	Roadside	459579	451251	NO ₂	YES	0.1	1	N	~2.75
C63	1 St Edwards Close	Roadside	458790	449740	NO ₂	NO	0.1	15.6	N	~2.75
C7	Slingsby Grove	Roadside	458611	449477	NO ₂	NO	1.4	2.6	N	~2.75
D10	Daisy Taylors Card Shop, Kings Square	Urban Background	460443	451927	NO ₂	NO	0.2	0.9	N	~2.75
D12	On signpost outside 26 Fossgate	Roadside	460567	451740	NO ₂	YES	0.2	1.6	N	~2.75

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D13	Lamp post 4 Skeldergate, opposite City Mills	Roadside	460271	451358	NO ₂	YES	1.6	1.6	N	~2.75
D14	Lamp post 3 Barbican Road outside No.7	Roadside	461077	451354	NO ₂	YES	1.9	0.2	N	~2.75
D16	Lamp post 1, Paragon St	Roadside	460708	451231	NO ₂	YES	0.2	3	N	~2.75
D17	Piccadilly/ Merchantgate junction	Roadside	460575	451616	NO ₂	YES	19.3	0.3	N	~2.75
D18	Lamp post 6 Clifford St opposite Peckitt Street	Roadside	460395	451502	NO ₂	YES	0.4	1.8	N	~2.75
D19	Bridge St/ Micklegate Junction	Roadside	460038	451626	NO ₂	YES	1.7	0.2	N	~2.75
D20	Low Ousegate / Clifford St junction, outside Waterstones	Roadside	460323	451685	NO ₂	YES	13	0.5	N	~2.75
D22	Outside Museum Gardens	Roadside	460035	452010	NO ₂	YES	7.9	2.1	N	~2.75
D24	Priory St sign Micklegate	Roadside	459805	451543	NO ₂	NO	3.4	0.5	N	~2.75
D25	Bus Stop E outside Royal York Hotel	Roadside	459693	451750	NO ₂	YES	169.3	0.4	N	~2.75
D26	Lamp post 14 Piccadilly (near Travellodge)	Roadside	460671	451400	NO ₂	YES	15.5	2.1	N	~2.75
D27	Lamp post 2 St Deny's Road - outside hotel	Roadside	460734	451563	NO ₂	NO	11.7	1.5	N	~2.75
D28	Lamp post 4 outside The Garden	Roadside	460764	451185	NO ₂	YES	23.6	2.4	N	~2.75

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	of India restaurant on Fawcett Street									
D30	Lamp post outside Barbican Centre	Roadside	460834	451252	NO ₂	YES	35.5	0.1	N	~2.75
D31	Lamp post 9 Barbican road outside No.24	Roadside	461002	451229	NO ₂	YES	2	0.3	N	~2.75
D32	Lamp post 3 Bishopgate Street - next to bench	Roadside	460258	451208	NO ₂	YES	22.2	1.9	N	~2.75
D33	Lamp post 17 Nunnery Lane outside 81	Roadside	460075	451174	NO ₂	YES	3.9	0.2	N	~2.75
D35	Drainpipe of house 22, Prices Lane	Roadside	460134	451170	NO ₂	YES	0.2	1.6	N	~2.75
D36	Lamp post 7 Bishopthorpe Road, opposite entrance to Charlton St	Roadside	460135	450884	NO ₂	YES	6.1	0.2	N	~2.75
D37	Lamp post 3, Bishopthorpe Road, outside house 26	Roadside	460157	450988	NO ₂	YES	2	2	N	~2.75
D38	Lamp post 2 Scarcroft Rd	Roadside	460088	450929	NO ₂	YES	2.7	1.6	N	~2.75
D39	Lamp post 1 Bishopthorpe Road	Roadside	460185	451055	NO ₂	YES	1.5	0.5	N	~2.75
D4	Lamp post 11 Lord Mayor's Walk - opposite bike shop	Roadside	460560	452300	NO ₂	YES	25.1	2.3	N	~2.75
D40	Lamp post 16 Nunnery Lane	Roadside	460069	451196	NO ₂	YES	3.3	1.6	N	~2.75
D41	Drainpipe of 55 Lord Mayor's Walk	Roadside	460286	452487	NO ₂	YES	0.2	3.8	N	~2.75
D43	Rougier Street Signpost 1, has	Roadside	459920	451834	NO ₂	YES	3	0.3	N	~2.75

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	"Except for Access" sign on it.									
D45	Lamp post 6 The Stonebow Opposite Windsors World of Shoes	Roadside	460673	451869	NO ₂	YES	15.6	1	N	~2.75
D47	Lamp post 8 Jewbury	Roadside	460682	452187	NO ₂	YES	0.6	2.4	N	~2.75
D48	Outside De Grey House right hand side of side entrance gate post	Roadside	460103	452180	NO ₂	YES	33.6	2.3	N	~2.75
D49	Lamp post 1 Fishergate	Roadside	460656	451269	NO ₂	YES	0.2	2.8	N	~2.75
D50	Drainpipe side of Cardshop Coppergate	Roadside	460371	451682	NO ₂	YES	0.2	1.9	N	~2.75
D51	Inside Taxi Rank @ York Railway Station	Roadside	459640	451722	NO ₂	NO	N	40	N	~2.75
D52	Lamp post 3 Kent Street at side of car park	Roadside	460887	451140	NO ₂	NO	2	2	N	~2.75
D53	58 Nunnery Lane	Roadside	460115	451146	NO ₂	YES	0.1	3.6	N	~2.75
D54	76 Nunnery Lane	Roadside	460146	451116	NO ₂	YES	0.1	5.5	N	~2.75
D55	Museum Street - Opposite Thomas's Pub	Roadside	460087	452065	NO ₂	YES	1.8	2.2	N	~2.75
D6	Margaret Phillipson Court, Aldwalk	Urban Background	460570	452177	NO ₂	NO	0.2	2.6	N	~2.75
D8	Lamp post 2, The Stonebow - Jorvick café	Roadside	460553	451843	NO ₂	NO	27.3	0.5	N	~2.75

Diffusion Tube ID	Site Name	Site Type	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Pollutants Monitored	In AQMA Order No.5?	Distance to Relevant Exposure (m) ⁽¹⁾	Distance to kerb of nearest road (m) ⁽²⁾	Tube Co-located with a Continuous Analyser?	Tube Height (m)
D9	Lamp post 8, Lord Mayor's Walk outside no 34	Roadside	460483	452357	NO ₂	YES	1.8	0.1	N	~2.75
D56	Three Tuns Pub, 12 Coppergate	Roadside	460400	451685	NO ₂	YES	0.1	1.6	N	~2.75
D57	Lamp post 4, Pedestrian Crossing, Coppergate	Roadside	460416	451708	NO ₂	YES	11.9	2.4	N	~2.75
D58	Traffic lights, opposite Duttons, Coppergate	Roadside	460435	451732	NO ₂	YES	8	0.1	N	~2.75
D59	Bus Stop outside 8/9 SLP	Roadside	460087	452156	NO ₂	YES	1.8	2.7	N	~2.75
D60	No entry sign outside 'Schuh' Shoe Shop	Roadside	460294	451883	NO ₂	NO	N	1.7	N	~2.75
130	Outside 81 Low Mill Close	Roadside	463663	451054	NO ₂	NO	13.6	1.1	N	~2.75
115	Inside Bus Stop (opposite side of road from tube 114) Rougier Street	Roadside	459962	451771	NO ₂	YES	47	1.5	N	~2.75

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 NO₂ Monitoring Results: Automatic Monitoring (µg/m³)

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
Bootham	460022	452777	Urban Background	91.2	91.2	14.9	15.2	14.9	12.9	12.7
Fishergate	460746	451038	Roadside	99.1	99.1	27.7	26.1	26.1	18.8	19.8
Holgate	459512	451282	Roadside	98.9	98.9	24.8	24.8	25.2	20.7	23.6
Nunnery Lane	460068	451199	Roadside	88.4	88.4	25.9	23.4	22.9	16.7	19.8
Gillygate	460147	452345	Roadside	97.2	97.2	25.2	27.1	27.3	23.5	25.5
Lawrence Street	461256	451340	Roadside	97.5	97.5	29.3	27.3	26.9	19.5	21.3
Heworth Green	461126	452602	Roadside	99.6	99.6	26.5	26.2	25.6	19.5	20.3
Fulford Road	460937	449464	Roadside	97.9	97.9	23.0	22.2	22.3	16.6	17.3

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/m³.

Exceedances of the NO₂ annual mean objective of 40µg/m³ 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 NO₂ Monitoring Results: Non-Automatic Monitoring (µg/m³)

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
5	462040	454883	Roadside	100	100	16.0	15.2	16.2	14.3	12.1
6	459777	451406	Roadside	100	100	37.3	37.1	37.3	29.1	33.9
7	460217	452421	Roadside	83	83	42.4	45.3	45.4	38.2	46.2
8	460163	452468	Urban Background	100	100	15.7	15.5	18.1	12.5	12.7
9	460163	452468	Urban Background	100	100	15.7	15.7	17.6	12.3	12.6
11	458846	450946	Urban Background	100	100	14.7	15.6	17.9	12.5	13.2
13	460176	452377	Roadside	100	100	42.5	42.6	40.7	38.0	46.5
14	460167	452347	Roadside	100	100	43.6	46.6	44.3	40.2	47.5
15	461105	451458	Roadside	92	92	35.9	36.0	34.7	28.7	30.7
16	460160	451152	Roadside	100	100	36.0	35.6	35.9	26.2	30.4
17	459646	451500	Roadside	100	100	30.9	32.2	31.4	25.0	26.0
18	460457	452903	Roadside	100	100	28.9	29.4	29.9	24.0	30.3
25	461721	452709	Roadside	100	100	20.9	20.0	22.4	17.1	18.8
26	460829	453524	Roadside	92	92	28.3	26.0	26.7	21.0	26.4
33	460598	453227	Roadside	100	100	26.0	23.7	23.5	20.0	22.5
35	457603	451492	Roadside	92	92	24.4	24.3	23.5	18.4	19.7
37	459522	451187	Roadside	100	100	33.3 (estimate)	31.1	29.6	22.6	23.2
44	460679	452326	Roadside	92	92	22.4	22.9	22.3	18.4	18.9
45	460319	452754	Roadside	100	100	29.5	31.6	31.4	25.7	28.9
47	462009	456996	Roadside	100	100	28.4	26.9	26.8	21.0	22.1
50	N/A	N/A	BLANK	92	92	Blank	Blank	Blank	Blank	0.0
60	461017	451781	Roadside	100	100	22.5	19.8	22.9	17.2	17.2
78	460149	452342	Roadside	100	100	28.3	30.3	28.6	23.9	27.2
79	460149	452342	Roadside	100	100	28.7	29.6	29.4	24.3	26.2
80	460149	452342	Roadside	100	100	28.2	29.4	29.8	24.8	29.4
83	461597	452830	Urban Background	100	100	22.6	20.2	19.9	13.8	14.9
88	463354	451972	Urban Background	100	100	13.1	11.9	13.8 (estimate)	9.9	9.3
90	459997	450109	Roadside	100	100	15.6	15.7	15.7	10.9	11.0
96	460978	449452	Roadside	100	100	20.9	20.5	20.9	14.4	15.2

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
100	456228	453312	Roadside	100	100	18.7	17.7	18.3	13.2	14.3
101	459746	455897	Roadside	100	100	32.2	29.1	31.2	23.0	24.5
102	458703	452429	Roadside	100	100	29.8	31.5	30.8	23.7	28.8
103	458703	452429	Roadside	100	100	30.9	31.8	30.5	21.7	29.1
104	458703	452429	Roadside	100	100	31.7	31.2	31.4	24.4	29.2
107	458779	452387	Roadside	100	100	18.1	18.8	18.7	14.0	15.9
108	458814	452373	Roadside	100	100	22.2	21.6	22.3	18.8	20.1
109	459924	451833	Roadside	92	92	43.3	45.1	46.7	38.8	39.3
110	459985	451727	Roadside	83	83	45.8	43.6	45.3	34.4	39.3
111	459917	451728	Roadside	92	92	25.9	25.6	28.0	19.8	20.6
112	459873	451684	Roadside	100	100	22.6	22.5	23.3	17.7	17.3
114	459981	451778	Roadside	100	100	39.8	38.0	38.5	29.0	33.8
116	458212	452037	Roadside	100	100	27.7	26.1	25.9	19.4	22.5
125	463194	451967	Roadside	83	83	14.7	14.2	14.2	12.0	10.6
126	463482	451896	Roadside	83	83	16.1	16.3	16.0	13.9	13.9
127	461108	452313	Roadside	100	100	22.8	19.3	19.5	17.6	18.3
128	458686	452369	Roadside	100	100	18.6	19.1	19.1	13.5	14.9
129	455968	453397	Roadside	100	100	17.2	15.9	16.7	11.2	12.7
2a	460746	451034	Roadside	100	100	25.3	24.5	24.1	17.6	18.7
2b	460746	451034	Roadside	100	100	25.5	25.5	24.8	18.1	18.4
2c	460746	451034	Roadside	100	100	24.8	24.8	23.4	18.0	18.8
3a	460024	452767	Urban Background	100	100	14.5	14.8	16.4	12.3	12.0
3b	460024	452767	Urban Background	100	100	15.5	15.3	16.8	11.6	12.5
3c	460024	452767	Urban Background	100	100	15.6	15.1	16.8	11.9	13.8
95a	460938	449465	Roadside	100	100	22.6	21.5	21.9	16.8	16.9
95b	460938	449465	Roadside	100	100	22.5	21.7	22.4	16.6	16.3
95c	460938	449465	Roadside	100	100	23.3	21.5	22.7	16.5	16.5
9a	460163	452468	Urban Background	100	100	16.2	15.0	18.3	12.4	12.6
A1	460088	452263	Roadside	83	83	43.9	43.5	43.0	36.4	43.6
A11	459341	453042	Roadside	100	100	30.0	31.3	29.8	23.6	25.8
A12	459251	453008	Roadside	100	100	27.7	30.3	27.7	20.1	22.4
A13	459335	452931	Urban Background	92	92	16.0	16.3	17.3	12.9	13.8

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
A14	459335	452931	Urban Background	92	92	15.1	16.0	17.7	13.0	13.6
A14a	459335	452931	Urban Background	83	83	16.3	17.1	17.8	12.3	13.5
A17	458578	452472	Roadside	92	92	27.6	28.7	27.6	21.5	24.7
A19	458713	452414	Roadside	100	100	27.7	26.4	27.2	21.7	22.7
A19a	458713	452414	Roadside	100	100	28.7	26.4	27.4	20.9	23.3
A19b	458713	452414	Roadside	100	100	28.5	27.3	27.2	21.3	22.7
A2	459917	452405	Roadside	92	92	30.3	27.9	30.0	23.8	25.7
A20	458760	452404	Roadside	100	100	29.1	29.3	30.0	23.5	27.2
A20a	458760	452404	Roadside	100	100	27.4	30.0	29.4	22.5	28.6
A20b	458760	452404	Roadside	100	100	29.5	28.8	29.1	23.7	28.9
A21	458806	452326	Urban Background	100	100	19.3	17.9	21.5	15.5	14.9
A22	458792	452242	Urban Background	100	100	19.1	19.0	21.2	14.5	15.8
A25	458706	452225	Roadside	100	100	21.8	21.6	20.2	15.0	18.0
A29	456939	453013	Urban Background	83	83	18.1	17.3	19.3	12.9	15.2
A3	459822	452492	Roadside	92	92	26.7	26.7	27.4	21.7	23.4
A30	457060	452888	Urban Background	100	100	18.4	17.8	19.7	13.3	15.8
A36	457625	452446	Urban Background	67	67	15.8 (estimate)	15.8 (estimate)	18.4 (estimate)	11.4 (estimate)	13.7 (estimate)
A38	457857	452334	Urban Background	100	100	14.3	15.1	16.3	11.8	12.6
A4	459699	452638	Urban Background	100	100	18.2	18.3	20.0	13.9	14.5
A40	458109	452196	Urban Background	100	100	18.0	19.3	21.2	14.0	16.3
A41	458172	452108	Roadside	100	100	19.9	21.2	20.7	15.3	18.1
A45	458384	451817	Urban Background	100	100	13.3	14.5	16.3	10.6	12.0
A50	458732	451393	Roadside	92	92	26.1	26.4	26.2	21.4	22.5
A51	458827	451348	Urban Background	100	100	20.6	19.5	22.1	15.4	17.9
A52	458945	451254	Roadside	100	100	29.7	31.5	30.7	24.6	27.9

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
A53	459066	451239	Roadside	100	100	28.8	29.3	30.6	23.4	28.1
A54	459254	451223	Roadside	100	100	33.1	35.2 (estimate)	31.4	25.1	30.9
A55	459351	451221	Roadside	100	100	29.7	29.3	30.1	24.2	28.0
A56	459470	451268	Urban Background	100	100	26.4	25.8	28.1	19.8	21.7
A57	459533	451280	Roadside	100	100	43.1	45.3	45.5	33.7	43.5
A6	459536	452811	Roadside	100	100	24.2	23.9	23.5	17.9	18.5
A60	458906	453276	Urban Background	100	100	13.2	13.5	14.7	9.7	10.7
A62	458806	453483	Urban Background	100	100	13.8	13.0	15.3	10.1	11.2
A64	460030	452327	Roadside	100	100	28.3	30.0	28.6	20.8	24.8
A66	458672	453685	Urban Background	100	100	14.7	13.9	16.3	10.6	12.0
A69	458375	453958	Urban Background	92	92	12.6	12.8	14.8	9.7	11.7
A7	459441	452892	Roadside	100	100	26.7	23.3	24.3	18.8	20.8
A70	458299	454070	Urban Background	100	100	17.0	15.8	17.5	11.5	13.6
A71	458121	454254	Urban Background	100	100	13.5	12.6	14.7	10.0	10.5
A74	458041	454371	Urban Background	92	92	13.4	12.6	14.4	9.7	10.8
A77	457929	454537	Urban Background	100	100	17.5	17.5	20.1	13.4	13.9
A81	457733	454805	Urban Background	100	100	14.7	14.2	17.9	12.3	12.0
A85	459364	453009	Urban Background	100	100	19.2	18.6	21.4	14.5	16.1
A88	457470	452550	Urban Background	100	100	15.0	15.4	17.9	11.4	12.9
A9	459295	453067	Roadside	92	92	27.0	30.3 (estimate)	28.8	22.8	25.7
A90	459238	453157	Roadside	100	100	35.9	33.6	32.1	25.6	32.7
A94	458651	452426	Roadside	100	100	22.4	28.7	27.8	20.1	23.2
A96	459038	452850	Roadside	100	100	29.4	28.1	29.9	21.5	25.7

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
A97	457431	452616	Roadside	100	100	19.3	19.7	18.9	14.3	16.0
A98	458666	451468	Roadside	100	100	22.8	21.8	22.8	17.0	19.4
B1	460848	452582	Roadside	100	100	28.5	26.6	28.9	18.2	15.9
B15	461294	455305	Roadside	100	100	18.9	18.1	18.5	15.1	15.5
B19	461891	455876	Roadside	100	100	19.9	18.9	19.3	16.2	15.4
B2	460924	452697	Roadside	92	92	24.2	22.8	24.0	17.9	19.4
B29	461453	452750	Roadside	100	100	20.0	19.5	19.3	15.6	15.7
B3	460952	452826	Roadside	100	100	21.5	21.8	21.5	15.9	17.7
B36	462565	454194	Urban Background	100	100	13.6 (estimate)	13.2	15.4	10.4	10.9
B37	462565	454194	Urban Background	92	92	13.0 (estimate)	13.8	14.5	9.6	9.8
B37a	462565	454194	Urban Background	100	100	14.3 (estimate)	12.9	13.9	10.5	10.2
B38	463757	455155	Urban Background	100	100	15.9	16.1	17.2	11.9	12.5
B41	461326	451330	Urban Background	100	100	28.2	27.4	30.1	20.0	23.7
B42	461430	451348	Urban Background	100	100	22.3	20.8	23.3	15.5	18.4
B43	461557	451343	Urban Background	100	100	19.8	19.2	20.0	14.3	15.9
B44	461643	451343	Roadside	100	100	29.4	28.1	28.9	23.1	25.3
B45	461849	451284	Roadside	100	100	26.5	27.2	26.2	18.7	22.4
B47	462019	451289	Urban Background	100	100	15.0	14.1	15.8	11.2	11.8
B48	462122	451289	Urban Background	100	100	19.8	17.5	19.0	11.8	14.5
B50	462291	451269	Roadside	100	100	22.2	21.5	22.7	15.8	17.1
B51	462384	451298	Urban Background	100	100	16.2	15.6	18.2	12.8	13.0
B56	462888	451289	Roadside	83	83	30.7	28.3	28.6	20.8	22.7
B58	462970	451300	Urban Background	92	92	17.6	16.8	19.0	12.7	12.6
B60	463234	451339	Urban Background	100	100	18.0	16.7	19.0	12.1	13.7
B63	462704	451300	Roadside	92	92	29.7	27.9	29.2	22.4	23.2

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
B72	461122	451374	Roadside	100	100	42.8	41.8	38.9	32.5	33.7
B74	461371	452708	Urban Background	83	83	17.1	17.8	18.9	13.7	13.4
B80	461185	452663	Urban Background	100	100	15.1	15.0	17.3	12.2	12.5
B82	460974	452563	Urban Background	100	100	21.7	21.5	24.1	17.4	17.3
B83	461285	452695	Roadside	100	100	25.2	25.3	24.6	21.1	20.7
B84	462654	451293	Urban Background	100	100	21.6	19.8	22.3	15.1	16.9
B85	461227	451368	Roadside	100	100	28.4	28.1	28.7	20.8	24.9
B86	461116	452602	Roadside	92	92	23.2	22.5	23.0	18.6	21.1
B88	462799	451291	Roadside	100	100	28.5	25.9	26.8	19.9	20.4
B89	461170	451357	Roadside	83	83	36.8	33.7	32.9	25.6	27.3
B90	461133	451394	Roadside	100	100	34.1	36.8	36.0	27.5	28.5
C12	458825	449928	Urban Background	100	100	15.2	15.9	18.6	12.1	13.1
C17	459085	450544	Urban Background	100	100	16.1	15.2	16.2	11.4	12.1
C18	459204	450772	Urban Background	100	100	22.5	21.8	25.3	17.0	16.8
C19	459271	450819	Urban Background	100	100	15.6	15.9	17.5	11.7	12.8
C2	458333	448974	Roadside	100	100	31.5	29.0	29.8	24.4	25.8
C20	459280	450923	Urban Background	83	83	16.8	17.2	19.3	14.9	14.1
C21	459410	451040	Roadside	100	100	25.8	23.5	24.9	20.6	18.7
C22	459570	451195	Urban Background	100	100	19.6	19.6	21.0	15.2	15.4
C23	459553	451252	Roadside	100	100	37.0	36.2	35.7	29.5	28.9
C26	459639	451334	Roadside	100	100	38.1	41.0	38.3	31.2	34.1
C27	459717	451433	Roadside	100	100	45.9	46.3	44.0	35.0	40.7
C28	461201	448386	Urban Background	100	100	14.3	14.4	16.4	10.8	11.1
C29	461196	448426	Roadside	100	100	28.1	26.5	26.8	19.6	20.3
C30	461185	448462	Roadside	100	100	29.0	31.1	30.0	22.7	23.7

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
C31	461193	448473	Urban Background	100	100	17.8	16.3	18.0	12.0	12.7
C32	461128	448823	Urban Background	100	100	21.6	20.9	22.9	15.0	15.8
C33	461085	448933	Urban Background	83	83	15.2	14.9	16.7	10.5	11.0
C34	461085	449067	Roadside	100	100	22.3	22.8	23.5	16.2	17.3
C36	461052	449146	Roadside	100	100	27.3	25.0	25.3	19.7	20.1
C37	461045	449223	Urban Background	100	100	18.7	20.6	21.2	14.2	15.7
C38	461038	449225	Roadside	92	92	25.6	24.8	25.2	17.1	18.2
C39	460974	449336	Roadside	100	100	34.9	32.7	33.1	22.9	22.8
C4	458470	449126	Urban Background	100	100	15.9	16.3	18.2	12.5	12.5
C40	460910	449628	Urban Background	100	100	17.6	17.1	18.7	12.6	12.9
C42	460857	449748	Urban Background	100	100	20.0	19.1	21.8	14.3	15.2
C43	460869	449730	Roadside	100	100	28.2	26.7	25.1	18.4	19.3
C43a	460869	449730	Roadside	100	100	28.3	26.5	26.5	19.3	20.2
C44	460869	449730	Roadside	100	100	28.5	26.8	27.0	19.6	19.7
C49	460860	450530	Urban Background	100	100	17.6	17.7	20.0	13.0	14.3
C51	460871	450727	Roadside	100	100	24.4	25.0	25.5	17.9	19.3
C52	460853	450781	Roadside	92	92	23.8	23.0	22.6	17.8	17.2
C53	460766	450924	Roadside	50	50	22.1 (estimate)	20.8	22.0	15.2 (estimate)	16.0 (estimate)
C54	460762	451069	Roadside	100	100	22.8	25.7	24.7	18.4	21.3
C56	459484	451141	Roadside	100	100	28.3	30.8	30.5	21.8	25.0
C57	458912	450111	Urban Background	100	100	18.8	19.1	20.6	14.4	14.4
C58	460926	449429	Roadside	100	100	35.2	32.5	33.0	24.6	25.4
C59	458735	449713	Roadside	100	100	28.3	27.5	27.1	22.3	23.3
C62	459579	451251	Roadside	100	100	27.2	27.0	26.4	20.1	20.8
C63	458790	449740	Roadside	100	100	17.8	16.9	18.1	13.3	13.8
C7	458611	449477	Roadside	92	92	18.0	17.5	19.2	14.9	15.4

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
D10	460443	451927	Urban Background	100	100	16.5	16.5	19.1	11.3	12.5
D12	460567	451740	Roadside	100	100	19.8	18.5	19.4	15.7	14.3
D13	460271	451358	Roadside	100	100	24.9	25.3	24.9	20.4	17.6
D14	461077	451354	Roadside	100	100	32.7	37.6	36.6	28.2	30.8
D16	460708	451231	Roadside	100	100	36.2	36.1	37.8	29.2	32.9
D17	460575	451616	Roadside	75	75	26.7	27.9	29.6	23.7	28.5
D18	460395	451502	Roadside	100	100	27.7	29.1	28.7	23.1	24.2
D19	460038	451626	Roadside	100	100	44.1	45.5	45.9	34.8	40.5
D20	460323	451685	Roadside	75	75	40.6	39.7	38.9	30.1	33.4
D22	460035	452010	Roadside	92	92	31.8	32.5	31.5	27.2	32.3
D24	459805	451543	Roadside	92	92	28.2	28.9	27.5	18.9	20.5
D25	459693	451750	Roadside	100	100	36.7	36.5	37.4	29.0	33.0
D26	460671	451400	Roadside	100	100	24.9	23.9 (estimate)	25.1	20.2	25.1
D27	460734	451563	Roadside	92	92	23.3	23.6	22.8	19.5	20.8
D28	460764	451185	Roadside	100	100	31.4	31.9	32.4	25.0	27.4
D30	460834	451252	Roadside	100	100	24.7	23.7	24.7	18.6	20.4
D31	461002	451229	Roadside	100	100	29.2	29.5	28.0	20.6	24.4
D32	460258	451208	Roadside	100	100	31.7	33.7	34.6	26.4	29.1
D33	460075	451174	Roadside	92	92	27.5	26.6	26.3	20.7	24.4
D35	460134	451170	Roadside	100	100	36.3	35.2	37.4	27.2	32.8
D36	460135	450884	Roadside	100	100	31.7	33.2	31.6	22.8	25.2
D37	460157	450988	Roadside	100	100	27.0	27.1	27.5	18.7	22.6
D38	460088	450929	Roadside	100	100	21.8	20.9	22.1	16.8	18.2
D39	460185	451055	Roadside	92	92	29.2	30.2	29.5	20.4	23.5
D4	460560	452300	Roadside	100	100	25.3	24.4	25.5	19.2	22.2
D40	460069	451196	Roadside	100	100	25.8	25.6	25.5	18.9	21.7
D41	460286	452487	Roadside	100	100	33.4	34.5	32.8	27.9	30.8
D43	459920	451834	Roadside	92	92	41.0	44.4	43.6	34.2	36.9
D45	460673	451869	Roadside	100	100	27.9	26.3	23.9	17.7	18.7
D47	460682	452187	Roadside	100	100	25.9	24.8	25.9	20.8	19.3
D48	460103	452180	Roadside	100	100	32.9	34.7	34.3	28.0	35.1
D49	460656	451269	Roadside	92	92	38.0	34.3	35.0	24.4	30.0
D50	460371	451682	Roadside	92	92	37.7	37.9	34.7	27.2	29.1
D51	459640	451722	Roadside	100	100	58.6	57.7	55.5	34.4	35.9
D52	460887	451140	Roadside	100	100	23.6	23.4	23.7	17.4	19.3

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
D53	460115	451146	Roadside	92	92	24.4	25.1	24.3	19.6	21.9
D54	460146	451116	Roadside	100	100	23.8	24.8	23.9	18.5	20.6
D55	460087	452065	Roadside	100	100	35.1	37.4	38.2	33.5	44.9
D6	460570	452177	Urban Background	100	100	17.9	15.8	19.5	13.5	16.2
D8	460553	451843	Roadside	75	75	31.5	34.1	31.7	28.4	32.2
D9	460483	452357	Roadside	83	83	31.7	32.6	33.6	25.3	27.7
D56	460400	451685	Roadside	100	100	42.1	42.3	38.2	31.2	31.8
D57	460416	451708	Roadside	100	100	30.3 (estimate)	33.8	29.4	25.0	26.1
D58	460435	451732	Roadside	100	100	38.7	36.8	34.6	26.1	29.5
D59	460087	452156	Roadside	92	92	41.2	39.2	39.7	35.4	43.2
D60	460294	451883	Roadside	83	83	22.3	20.5	21.4	15.6	14.2
130	463663	451054	Roadside	83	83	13.9	13.5 (estimate)	13.3	10.5	10.1
115	459962	451771	Roadside	100	100	-	59.7 (estimate)	59.2	48.8	44.7

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

Diffusion tube data has been bias adjusted.

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

Notes:

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

Exceedances of the NO₂ annual mean objective of $40\mu\text{g}/\text{m}^3$ are shown in **bold**.

NO₂ annual means exceeding $60\mu\text{g}/\text{m}^3$, indicating a potential exceedance of the NO₂ 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 NO₂ Concentrations

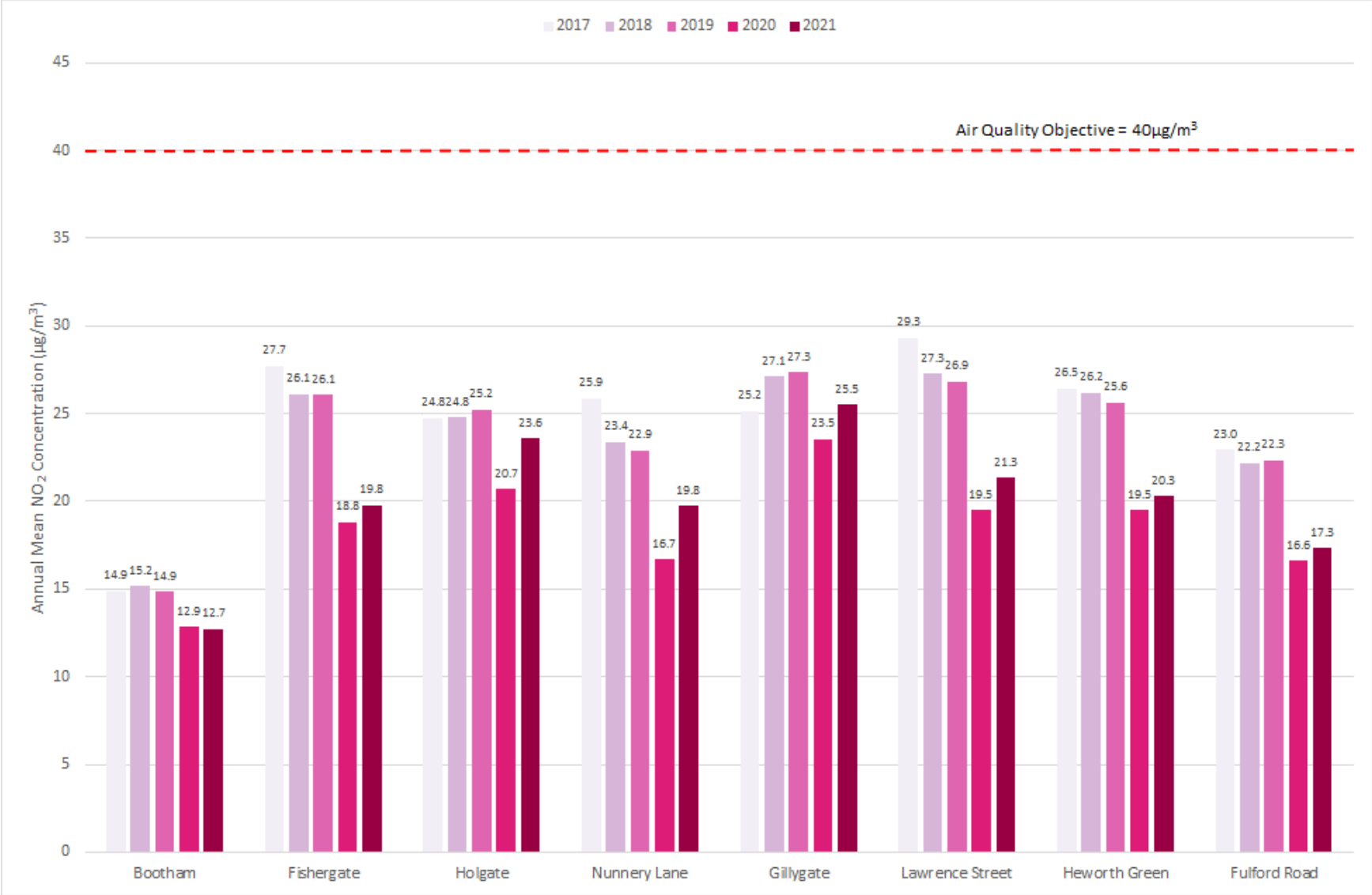


Table A.5 – 1-Hour Mean NO₂ Monitoring Results, Number of 1-Hour Means > 200µg/m³

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
Bootham	460022	452777	Urban Background	91.2	91.2	0	0	0	0	0
Fishergate	460746	451038	Roadside	99.1	99.1	0	0	0	0	0
Holgate	459512	451282	Roadside	98.9	98.9	0	0	0	0	0
Nunnery Lane	460068	451199	Roadside	88.4	88.4	0	0	0	0	0
Gillygate	460147	452345	Roadside	97.2	97.2	0	0	0	0	0
Lawrence Street	461256	451340	Roadside	97.5	97.5	0	1	0	0	0
Heworth Green	461126	452602	Roadside	99.6	99.6	0	0	0	0	0
Fulford Road	460937	449464	Roadside	97.9	97.9	0	0	0 (80.3)	0	0

Notes:

Results are presented as the number of 1-hour periods where concentrations greater than 200µg/m³ have been recorded.

Exceedances of the NO₂ 1-hour mean objective (200µg/m³ 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%).

Figure A.2 – Trends in Number of NO₂ 1-Hour Means > 200µg/m³



Table A.6 – Annual Mean PM₁₀ Monitoring Results (µg/m³)

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
Bootham	460022	452777	Urban Background	89.4	89.4	13.4	13.8	14.0	15.2	13.4
Fishergate	460746	451038	Roadside	95.0	95.0	16.3	18.3	21.9	19.2	15.8
Holgate Road	459512	451282	Roadside	95.3	95.3	10.5	12.4	13.9	18.4	17.2
Plantation Drive	457428	452620	Roadside	93.2	93.2	15.6	14.3	16.4	15.8	16.0

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

Notes:

The annual mean concentrations are presented as µg/m³.

Exceedances of the PM₁₀ annual mean objective of 40µg/m³ 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.3 – Trends in Annual Mean PM₁₀ Concentrations

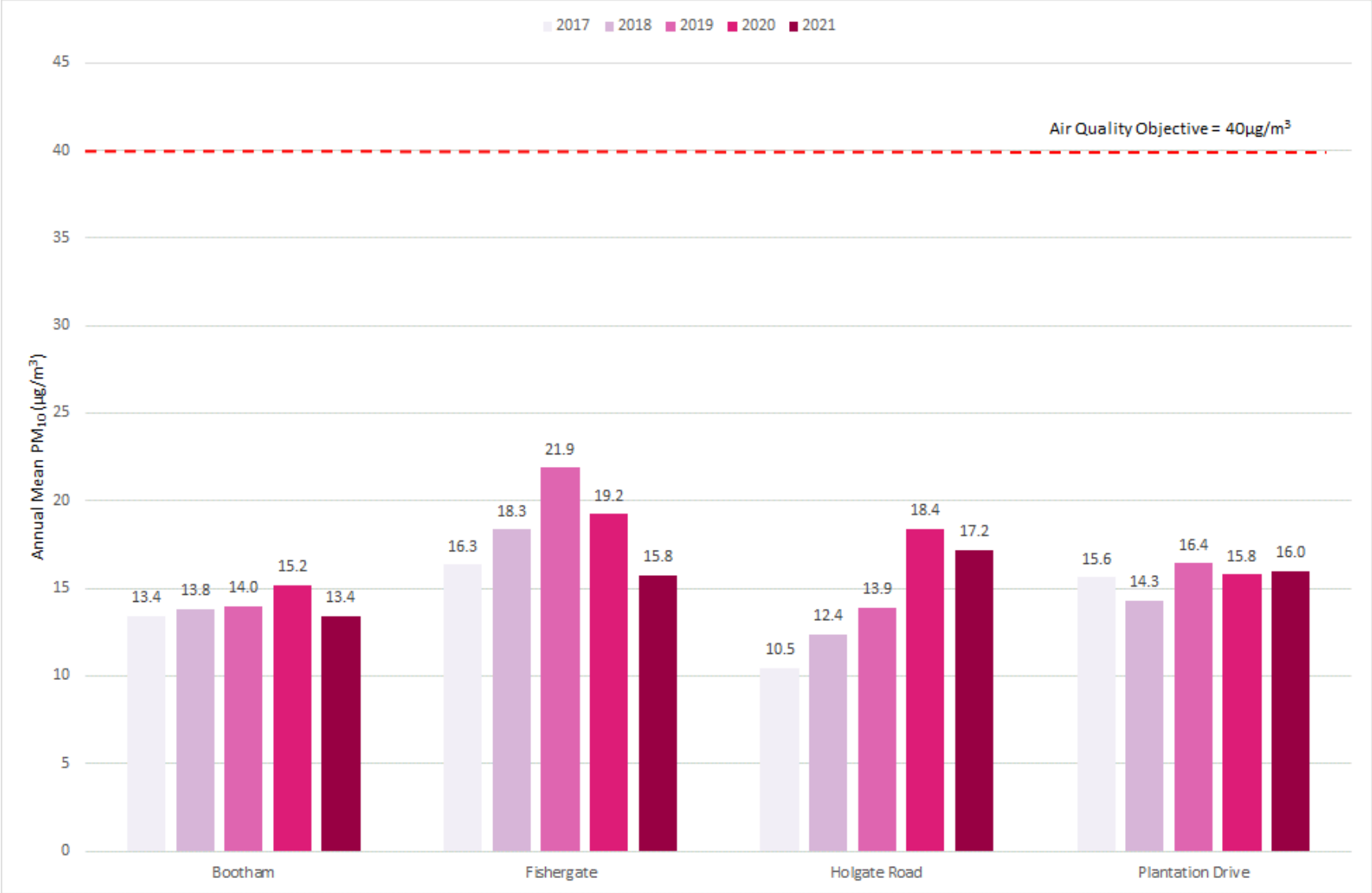


Table A.7 – 24-Hour Mean PM₁₀ Monitoring Results, Number of PM₁₀ 24-Hour Means > 50µg/m³

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
Bootham	460022	452777	Urban Background	89.4	89.4	5	3	0	2	0
Fishergate	460746	451038	Roadside	95.0	95.0	6	4	8	1	0
Holgate Road	459512	451282	Roadside	95.3	95.3	4	1	0	2	0
Plantation Drive	457428	452620	Roadside	93.2	93.2	4	0	4	1	0

Notes:

Results are presented as the number of 24-hour periods where daily mean concentrations greater than 50µg/m³ have been recorded.

Exceedances of the PM₁₀ 24-hour mean objective (50µg/m³ 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%).

Figure A.4 – Trends in Number of 24-Hour Mean PM₁₀ Results > 50µg/m³

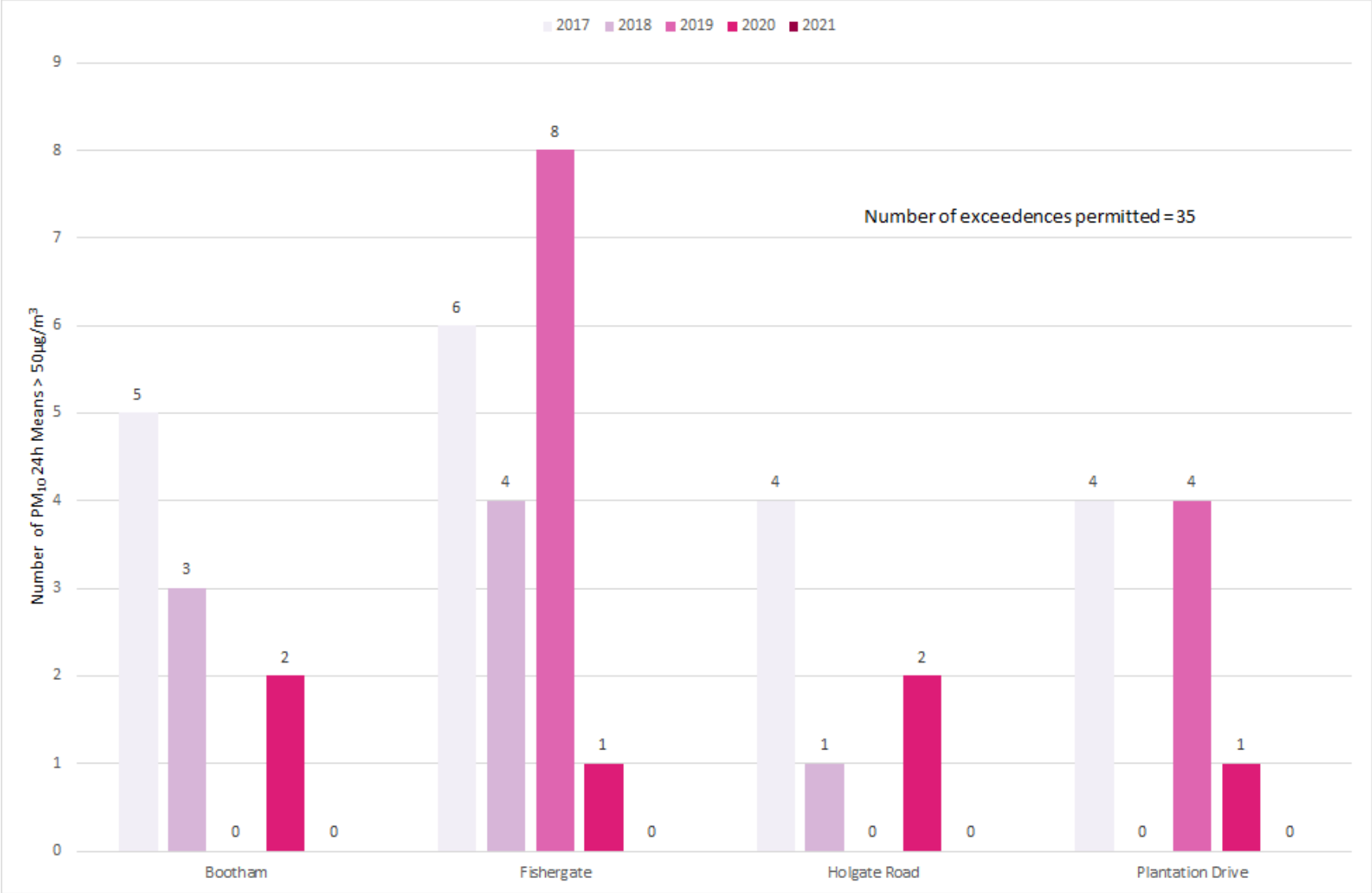


Table A.8 – Annual Mean PM_{2.5} Monitoring Results (µg/m³)

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
Bootham	460022	452777	Urban Background	88.0	88.0	8.7	10.8	11.1	8.6	8.4
Fishergate	460746	451038	Roadside	94.2	94.2	11.4	10.5	10.7	7.6	7.9
Gillygate	460147	452345	Roadside	98.3	98.3	8.4	8.3	7.6	7.1	6.1

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

Notes:

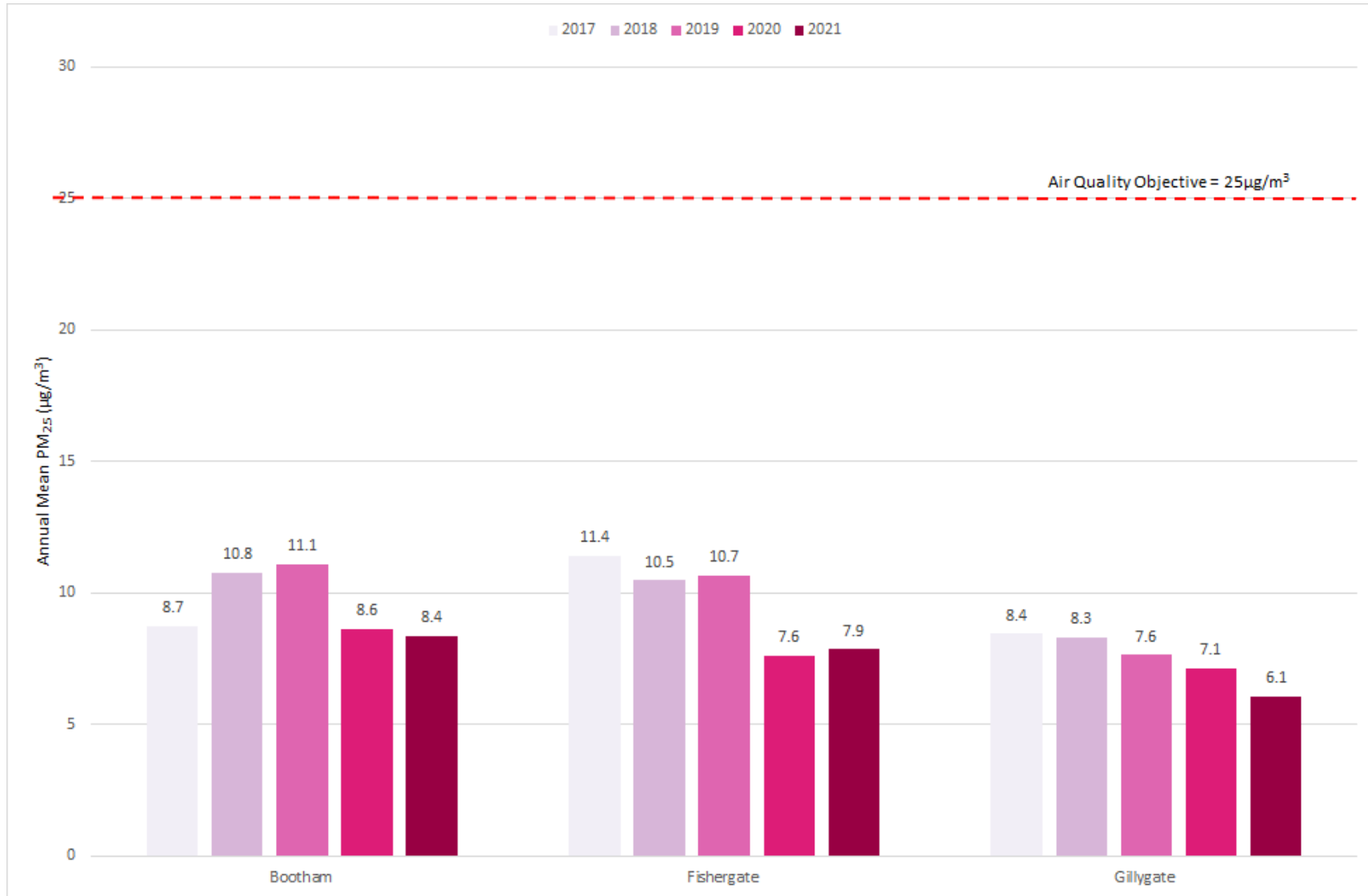
The annual mean concentrations are presented as µg/m³.

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.5 – Trends in Annual Mean PM_{2.5} Concentrations



Appendix B: Full Monthly Diffusion Tube Results for 2021

Table B.1 – NO₂ 2021 Diffusion Tube Results (µg/m³)

DT ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Easting)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean: Raw Data	Annual Mean: Annualised and Bias Adjusted (B=0.72, R=0.75)	Annual Mean: Distance Corrected to Nearest Exposure	Comment
5	462040	454883	27.2	18.9	16.1	11.6	6.9	10.6	11.0	11.8	16.0	20.1	23.4	20.7	16.2	12.1	-	
6	459777	451406	55.2	40.2	43.2	43.8	45.0	42.3	41.4	29.1	46.8	46.3	59.7	50.0	45.3	33.9	-	
7	460217	452421	69.2	56.1	42.7		70.7		57.8	56.8	61.5	67.1	62.4	71.2	61.6	46.2	34.8	
8	460163	452468	28.3	21.1	14.5	14.0	14.0	10.8	11.9	12.3	16.6	20.3	22.2	25.8	17.7	12.7	-	Part of triplicate set - see bottom of table for triplicate average
9	460163	452468	26.5	20.6	15.8	14.6	15.7	11.2	12.1	11.6	16.9	17.5	22.4	25.6	17.5	12.6	-	Part of triplicate set - see bottom of table for triplicate average
11	458846	450946	27.1	25.9	14.1	11.9	15.3	10.7	11.8	13.4	19.0	20.8	23.0	26.4	18.3	13.2	-	
13	460176	452377	67.9	54.2	57.0	59.8	65.0	64.4	58.8	64.3	53.5	64.5	69.1	66.1	62.1	46.5	-	
14	460167	452347	67.4	71.8	53.6	55.3	69.0	63.0	63.0	55.1	62.6	68.1	57.8	72.7	63.3	47.5	-	
15	461105	451458	49.0	40.8	35.7	35.1	42.9	34.6	37.7	31.8		48.3	46.3	48.5	41.0	30.7	-	
16	460160	451152	48.0	37.5	37.0	34.6	36.0	34.6	32.9	32.2	35.8	47.0	56.6	54.9	40.6	30.4	-	
17	459646	451500	44.5	32.0	27.4	27.1	30.1	27.1	29.6	30.7	34.4	41.8	45.4	45.9	34.7	26.0	-	
18	460457	452903	51.4	42.1	34.6	33.2	33.7	35.0	33.9	37.0	43.1	44.9	50.7	44.5	40.3	30.3	-	
25	461721	452709	35.4	30.8	21.9	24.4	20.5	15.6	13.5	19.0	23.5	25.7	34.4	36.8	25.1	18.8	-	
26	460829	453524	30.7	36.8	28.8	34.4	32.7	31.4	28.1	30.2	37.1		47.4	49.2	35.2	26.4	-	
33	460598	453227	41.5	33.6	29.2	25.6	27.2	17.6	22.0	21.9	24.8	36.8	40.4	39.7	30.0	22.5	-	
35	457603	451492	35.8	29.5	23.5		21.1	19.6	18.7	19.9	24.8	29.0	33.6	33.4	26.3	19.7	-	
37	459522	451187	28.6	29.3	29.3	29.7	31.3	25.6	31.2	31.1	34.1	28.6	33.7	38.4	30.9	23.2	-	
44	460679	452326	38.3	24.8	24.0	21.2	21.2	19.0		19.3	22.6	24.7	31.3	30.6	25.2	18.9	-	
45	460319	452754	51.7	40.2	42.8	12.9	19.5	36.9	38.4	37.2	41.5	43.8	49.0	48.8	38.6	28.9	-	
47	462009	456996	34.5	27.0	26.4	20.2	26.6	25.9	24.1	25.6	34.0	29.3	39.2	41.0	29.5	22.1	-	
50	N/A	N/A	0.9	0.7	0.6		0.7	0.7	0.5	0.6	0.7	0.5	0.6	0.5	0.6	-	-	
60	461017	451781	36.4	25.3	18.5	16.4	19.2	16.2	17.2	19.3	23.5	26.0	27.2	29.9	22.9	17.2	-	
78	460149	452342	42.9	39.5	32.9	33.9	34.6	34.5	33.5	31.1	33.2	39.6	37.4	41.9	36.3	27.2	-	Part of triplicate set - see bottom of table for triplicate average
79	460149	452342	41.3	38.9	33.2	35.9	20.5	34.6	34.4	32.6	26.1	41.6	37.6	43.2	35.0	26.2	-	Part of triplicate set - see bottom of table for triplicate average
80	460149	452342	42.3	41.2	33.4	34.1	40.3	32.9	33.5	34.3	53.8	41.0	39.0	44.3	39.2	29.4	-	Part of triplicate set - see bottom of table for triplicate average
83	461597	452830	28.0	20.6	17.8	14.8	17.6	13.7	20.0	15.5	17.4	25.0	28.3	30.2	20.7	14.9	-	
88	463354	451972	21.9	18.4	12.2	8.9	8.8	7.5	7.1	7.3	10.6	11.2	20.1	21.3	12.9	9.3	-	
90	459997	450109	22.9	17.7	13.3	15.5	6.2	10.1	10.2	10.7	13.7	14.5	19.8	21.7	14.7	11.0	-	
96	460978	449452	24.9	21.2	17.9	16.2	19.5	14.1	12.4	13.7	20.2	24.0	29.5	30.0	20.3	15.2	-	
100	456228	453312	20.9	23.0	14.4	17.5	19.4	14.8	14.1	13.6	22.1	23.1	20.6	24.6	19.0	14.3	-	
101	459746	455897	37.1	28.7	30.5	27.4	32.2	29.4	26.0	25.9	38.7	36.4	42.4	38.0	32.7	24.5	-	
102	458703	452429	49.8	36.7	33.6	35.7	39.3	30.4	34.2	28.0	44.5	38.1	47.9	42.3	38.4	28.8	-	Part of triplicate set - see bottom of table for triplicate average
103	458703	452429	49.6	39.3	30.7	35.4	40.5	34.6	32.9	31.7	45.1	38.5	43.5	43.1	38.7	29.1	-	Part of triplicate set - see bottom of table for triplicate average
104	458703	452429	43.2	42.3	33.4	41.3	43.5	35.3	31.6	29.8	38.5	37.0	42.4	48.7	38.9	29.2	-	Part of triplicate set - see bottom of table for triplicate average
107	458779	452387	25.7	25.3	32.7	16.6	17.6	12.9	13.8	14.2	20.3	23.8	22.6	29.5	21.3	15.9	-	
108	458814	452373	37.4	23.7	23.4	21.9	24.0	21.1	20.9	22.3	24.8	30.0	33.6	38.0	26.8	20.1	-	
109	459924	451833	55.0	51.8	46.2	47.4	48.5	47.2	50.5	39.1	63.3	65.0		62.4	52.4	39.3	-	
110	459985	451727		49.1	44.6	46.1	52.0	44.0		42.6	62.8	61.6	63.2	57.7	52.4	39.3	-	
111	459917	451728	40.3	26.1	23.2	25.8	22.1	24.1		22.1	26.1	25.8	32.7	34.1	27.5	20.6	-	

DT ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Easting)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean: Raw Data	Annual Mean: Annualised and Bias Adjusted (B=0.72, R=0.75)	Annual Mean: Distance Corrected to Nearest Exposure	Comment
112	459873	451684	35.6	21.7	21.1	18.2	18.2	16.6	19.0	19.8	21.8	25.4	28.1	30.7	23.0	17.3	-	
114	459981	451778	51.7	37.5	42.3	44.2	42.8	41.7	39.9	42.2	49.9	45.6	58.6	44.8	45.1	33.8	-	
115	459962	451771	66.6	58.6	55.3	44.0	46.7	53.8	52.1	53.7	56.9	79.4	81.7	66.6	59.6	44.7	-	
116	458212	452037	38.0	30.4	27.4	28.5	26.2	23.4	23.3	23.2	29.9	32.3	37.2	39.6	30.0	22.5	-	
125	463194	451967	24.5	19.3	13.5	11.0	12.9	9.8	8.8	9.9	12.8	19.1			14.2	10.6	-	
126	463482	451896	28.2	22.0	15.6	14.2	13.2		11.6		13.2	17.3	24.7	25.1	18.5	13.9	-	
127	461108	452313	31.7	26.3	19.0	18.5	16.5	16.6	19.4	19.3	23.2	28.2	34.0	39.5	24.4	18.3	-	
128	458686	452369	27.0	24.4	14.8	18.3	15.0	11.9	14.4	13.8	22.2	26.3	21.4	28.3	19.8	14.9	-	
129	455968	453397	23.1	20.1	14.0	13.8	12.1	12.4	11.5	12.1	17.1	21.7	21.8	23.9	17.0	12.7	-	
130	463663	451054	23.0		13.1	12.2	10.2	8.6	7.4	7.5	12.2		20.2	20.0	13.4	10.1	-	
2a	460746	451034	23.7	26.7	21.6	22.6	20.4	20.7	22.3	21.3	26.1	27.8	34.0	32.0	24.9	18.7	-	Part of triplicate set - see bottom of table for triplicate average
2b	460746	451034	31.2	24.4	20.5	22.6	20.8	19.7	18.1	21.1	25.4	27.4	31.5	32.0	24.6	18.4	-	Part of triplicate set - see bottom of table for triplicate average
2c	460746	451034	27.8	26.1	21.7	23.5	22.1	19.2	21.1	21.5	26.4	28.0	32.0	31.7	25.1	18.8	-	Part of triplicate set - see bottom of table for triplicate average
3a	460024	452767	26.8	19.1	17.6	10.9	11.9	10.8	9.3	11.6	15.3	20.0	22.7	24.8	16.7	12.0	-	Part of triplicate set - see bottom of table for triplicate average
3b	460024	452767	24.6	22.4	14.4	12.4	15.8	9.7	10.0	11.6	14.8	21.4	23.9	26.8	17.3	12.5	-	Part of triplicate set - see bottom of table for triplicate average
3c	460024	452767	25.8	19.4	15.4	38.5	12.7	9.5	8.5	11.7	15.3	22.4	22.4	28.9	19.2	13.8	-	Part of triplicate set - see bottom of table for triplicate average
95a	460938	449465	27.2	21.3	20.0	20.7	19.0	18.5	15.4	19.5	21.6	25.1	32.5	29.5	22.5	16.9	-	Part of triplicate set - see bottom of table for triplicate average
95b	460938	449465	30.4	19.9	20.6	17.3	15.4	17.0	15.2	18.1	21.1	25.6	29.6	30.6	21.7	16.3	-	Part of triplicate set - see bottom of table for triplicate average
95c	460938	449465	30.2	22.1	19.7	16.9	17.0	15.5	18.0	14.6	21.4	25.4	32.3	31.0	22.0	16.5	-	Part of triplicate set - see bottom of table for triplicate average
9a	460163	452468	27.3	21.7	15.8	12.7	15.5	12.2	11.6	11.1	15.8	17.7	22.9	26.0	17.5	12.6	-	Part of triplicate set - see bottom of table for triplicate average
A1	460088	452263	60.4	48.9	55.4	56.8	59.3		53.4	57.8	56.6		66.1	66.5	58.1	43.6	-	
A11	459341	453042	44.1	36.1	31.5	31.9	26.1	30.4	25.3	30.8	37.5	39.8	34.8	44.7	34.4	25.8	-	
A12	459251	453008	39.1	29.8	27.3	24.2	27.5	26.0	25.1	21.9	25.9	33.4	36.8	41.7	29.9	22.4	-	
A13	459335	452931	28.9	22.4	16.5	16.2	13.7		11.0	12.2	16.9	21.5	23.1	28.8	19.2	13.8	-	Part of triplicate set - see bottom of table for triplicate average
A14	459335	452931	29.8	23.4	16.1	14.9	13.6		11.8	13.6	16.5	22.4	19.9	25.8	18.9	13.6	-	Part of triplicate set - see bottom of table for triplicate average
A14a	459335	452931	28.7	23.5	16.6	15.2	8.9		9.0		18.2	20.8	21.8	25.2	18.8	13.5	-	Part of triplicate set - see bottom of table for triplicate average
A17	458578	452472	41.0	34.6	25.3	26.7	29.4	25.6		24.9	34.7	39.1	37.4	44.2	33.0	24.7	-	
A19	458713	452414	37.1	32.7	24.9	26.0	29.8	23.7	24.3	24.9	30.4	34.8	32.7	42.2	30.3	22.7	-	Part of triplicate set - see bottom of table for triplicate average
A19a	458713	452414	39.4	34.2	26.0	27.8	29.0	23.8	21.4	25.4	30.6	38.1	35.3	41.0	31.0	23.3	-	Part of triplicate set - see bottom of table for triplicate average
A19b	458713	452414	39.6	35.1	26.1	23.2	23.6	24.0	24.3	25.0	33.2	36.7	32.5	40.6	30.3	22.7	-	Part of triplicate set - see bottom of table for triplicate average
A2	459917	452405	41.2	32.4	25.2		29.1	27.0	30.7	28.2	35.3	39.9	41.7	46.0	34.2	25.7	-	
A20	458760	452404	43.1	36.1	12.5	38.4	36.2	31.8	35.1	32.5	46.3	33.5	44.5	45.3	36.3	27.2	-	Part of triplicate set - see bottom of table for triplicate average
A20a	458760	452404	49.1	35.1	35.5	33.8	36.2	29.8	33.1	32.9	42.7	36.6	45.3	48.1	38.2	28.6	-	Part of triplicate set - see bottom of table for triplicate average
A20b	458760	452404	48.2	36.2	32.6	39.5	41.6	32.1	35.5	33.4	42.3	37.9	41.4	41.1	38.5	28.9	-	Part of triplicate set - see bottom of table for triplicate average
A21	458806	452326	31.3	23.7	17.6	17.4	19.2	14.5	14.4	15.7	19.9	26.7	28.0	20.1	20.7	14.9	-	
A22	458792	452242	33.2	24.6	18.8	15.8	19.0	14.1	13.6	14.8	22.3	27.3	28.1	32.1	22.0	15.8	-	

DT ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Easting)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean: Raw Data	Annual Mean: Annualised and Bias Adjusted (B=0.72, R=0.75)	Annual Mean: Distance Corrected to Nearest Exposure	Comment
A25	458706	452225	32.2	24.4	19.5	24.8	23.7	18.0	19.1	18.4	25.7	26.0	27.4	29.0	24.0	18.0	-	
A29	456939	453013		25.8	18.7		19.5	15.9	13.6	16.5	21.4	26.9	26.7	26.4	21.1	15.2	-	
A3	459822	452492	39.6	34.6		20.7	32.1	26.9	28.4	16.7	35.5	33.5	35.5	40.2	31.2	23.4	-	
A30	457060	452888	30.1	24.2	16.9	20.5	17.4	17.4	19.1	17.9	20.3	19.6	31.6	27.7	21.9	15.8	-	
A36	457625	452446	27.2		14.8		17.0	12.7	14.8	13.7	18.1	20.5			17.4	13.7 (annualised)	-	
A38	457857	452334	28.2	22.4	14.7	15.8	11.8	11.2	12.7	10.9	17.1	19.8	21.0	25.0	17.6	12.6	-	
A4	459699	452638	30.2	19.8	17.9	14.8	12.9	13.1	14.2	15.3	21.1	26.0	25.7	30.0	20.1	14.5	-	
A40	458109	452196	29.3	27.0	18.1	24.1	21.4	18.0	19.4	16.8	23.6	21.8	24.6	27.8	22.7	16.3	-	
A41	458172	452108	32.1	26.3	20.6	24.5	22.5	19.6	21.3	19.5	25.5	21.4	25.6	31.0	24.2	18.1	-	
A45	458384	451817	25.0	23.3	13.0	16.0	14.3	9.8	8.6	11.2	16.3	16.6	20.8	25.3	16.7	12.0	-	
A50	458732	451393	37.8	34.9	24.9	18.1	20.5	26.6	28.2		31.8	31.1	36.4	39.9	30.0	22.5	-	
A51	458827	451348	33.1	29.6	19.3	29.4	19.6	17.3	17.1	19.4	22.7	28.4	30.1	32.1	24.8	17.9	-	
A52	458945	451254	53.1	41.1	35.7	35.0	33.1	31.5	28.1	26.5	36.2	35.0	43.9	47.5	37.2	27.9	-	
A53	459066	451239	44.3	39.0	32.1	32.3	36.4	30.9	29.1	34.0	37.6	44.0	43.4	46.9	37.5	28.1	-	
A54	459254	451223	52.6	39.5	39.5	37.8	35.7	38.4	38.0	38.5	43.7	40.6	45.8	44.4	41.2	30.9	-	
A55	459351	451221	45.1	33.2	30.9	31.1	36.7	29.6	32.3	38.9	44.6	40.4	43.6	42.1	37.4	28.0	-	
A56	459470	451268	40.1	31.3	25.7	27.8	26.6	24.2	25.4	27.3	31.1	29.4	36.3	37.0	30.2	21.7	-	
A57	459533	451280	67.1	62.7	53.4	59.5	51.0	56.2	37.6	53.6	73.5	54.1	65.9	61.7	58.0	43.5	-	
A6	459536	452811	36.9	25.8	20.9	19.0	21.6	17.3	17.6	17.9	26.5	24.3	32.2	36.2	24.7	18.5	-	
A60	458906	453276	22.3	14.7	13.3	14.2	11.7	11.7	10.6	10.5	14.7	15.5	17.5	21.1	14.8	10.7	-	
A62	458806	453483	23.1	16.3	13.0	13.0	13.8	9.6	8.9	11.0	13.8	18.9	20.8	24.1	15.5	11.2	-	
A64	460030	452327	40.8	34.1	27.6	35.4	33.7	29.0	27.0	31.1	37.5	32.7	33.1	35.0	33.1	24.8	-	
A66	458672	453685	25.8	19.2	13.4	13.6	11.8	10.7	11.3	12.9	16.1	20.2	20.5	24.9	16.7	12.0	-	
A69	458375	453958	25.5	15.4	13.0	15.9	14.6	10.6	11.6		13.5	16.3	18.2	23.7	16.2	11.7	-	
A7	459441	452892	36.0	29.9	25.5	23.9	24.8	19.2	19.4	19.6	28.9	33.2	34.3	37.9	27.7	20.8	-	
A70	458299	454070	25.0	19.1	15.3	15.8	15.9	13.7	13.5	16.0	18.4	21.9	25.0	26.3	18.8	13.6	-	
A71	458121	454254	22.7	18.0	11.0	11.5	10.6	9.1	8.5	8.7	14.3	16.6	20.7	23.3	14.6	10.5	-	
A74	458041	454371	23.2	18.5	10.9	11.3	10.7	9.1	8.8	9.7		18.4	20.9	23.4	15.0	10.8	-	
A77	457929	454537	20.9	24.1	17.5	14.3	16.6	13.0	12.5	11.8	19.9	25.6	25.8	30.4	19.4	13.9	-	
A81	457733	454805	23.7	20.2	16.2	15.4	14.7	12.6	11.0	9.0	15.6	19.2	17.0	25.9	16.7	12.0	-	
A85	459364	453009	31.0	25.2	17.4	18.4	19.2	15.5	16.4	17.7	22.8	28.0	28.2	28.7	22.4	16.1	-	
A88	457470	452550	28.8	22.0	16.8	14.8	16.2	12.4	12.5	13.2	12.1	20.6	21.0	24.6	17.9	12.9	-	
A9	459295	453067	45.6	36.6	28.9	32.6	26.6	28.2	31.7	29.7	34.1		39.4	42.8	34.2	25.7	-	
A90	459238	453157	39.1	37.1	42.5	38.5	43.0	39.7	37.1	36.2	48.8	50.4	55.9	54.9	43.6	32.7	-	
A94	458651	452426	64.8	51.2	31.5	39.5	37.4	13.2	11.7	10.2	18.2	20.1	32.1	41.5	31.0	23.2	-	
A96	459038	452850	42.7	32.5	29.5	29.9	34.9	22.3	28.5	28.4	36.7	37.7	42.4	45.2	34.2	25.7	-	
A97	457431	452616	32.2	28.4	15.3	18.6	17.3	12.7	14.2	15.2	20.5	26.5	25.9	28.8	21.3	16.0	-	
A98	458666	451468	35.9	29.3	18.0	22.6	26.4	19.4	21.2	19.4	25.5	26.9	32.2	34.2	25.9	19.4	-	
B1	460848	452582	33.8	23.0	18.6	11.3	18.6	14.2	9.8	14.3	21.0	26.5	31.2	32.4	21.2	15.9	-	
B15	461294	455305	29.9	17.3	16.9	14.9	16.2	14.0	14.6	16.1	21.6	24.5	29.7	31.6	20.6	15.5	-	
B19	461891	455876	28.5	21.0	20.3	17.6	16.3	14.4	12.1	15.6	20.7	21.7	27.9	30.9	20.6	15.4	-	
B2	460924	452697	35.8	27.0	22.1	20.5	20.4		18.0	16.7	23.5	30.2	33.3	36.9	25.9	19.4	-	
B29	461453	452750	31.8	23.5	18.6	18.7	15.0	14.8	12.9	15.6	21.0	19.6	28.8	30.3	20.9	15.7	-	
B3	460952	452826	33.6	27.5	21.3	20.5	18.7	16.2	15.8	15.3	22.9	27.6	28.2	34.9	23.5	17.7	-	
B36	462565	454194	28.8	15.1	12.9	11.8	10.3	8.9	9.8	10.4	15.7	15.3	20.9	22.2	15.2	10.9	-	Part of triplicate set - see bottom of table for triplicate average
B37	462565	454194	23.3	14.2	13.6	10.5	9.7	9.6	8.7	9.5	13.2	14.9		22.2	13.6	9.8	-	Part of triplicate set - see bottom of table for triplicate average
B37a	462565	454194	17.6	14.0	14.9	12.8	10.4	8.9	7.9	10.4	14.5	16.7	20.4	21.6	14.2	10.2	-	Part of triplicate set - see bottom of table for triplicate average
B38	463757	455155	22.8	21.7	16.4	17.3	12.4	11.6	10.1	11.7	16.3	19.4	22.1	26.4	17.4	12.5	-	
B41	461326	451330	45.2	36.0	31.8	26.7	30.4	27.2	25.7	24.8	32.9	37.4	37.3	40.2	33.0	23.7	-	
B42	461430	451348	36.6	25.3	25.5	24.6	23.3	20.0	21.7	19.8	27.0	23.6	30.0	29.8	25.6	18.4	-	
B43	461557	451343	33.6	17.6	22.0	22.9	20.5	18.2	16.3	17.8	19.7	21.3	26.8	27.6	22.0	15.9	-	

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B44	461643	451343	50.5	29.7	34.5	30.4	30.9	25.1	29.0	22.1	37.7	31.7	42.1	41.5	33.8	25.3	-	
B45	461849	451284	43.5	32.4	28.4	30.7	30.0	23.9	23.4	23.8	24.5	30.9	30.0	37.3	29.9	22.4	-	
B47	462019	451289	26.4	19.5	15.3	11.9	12.9	9.5	11.1	10.0	15.3	19.0	22.5	23.8	16.4	11.8	-	
B48	462122	451289	31.9	23.2	18.8	14.8	17.1	13.7	12.5	14.2	20.0	22.0	26.4	27.0	20.1	14.5	-	
B50	462291	451269	30.9	29.8	20.6	20.0	18.4	16.3	18.1	14.9	23.9	20.1	27.6	33.2	22.8	17.1	-	
B51	462384	451298	30.5	21.7	15.7	12.3	14.4	9.0	10.2	11.8	17.5	21.0	24.8	27.3	18.0	13.0	-	
B56	462888	451289	44.6	30.9	28.2		28.2	21.7	26.6	25.3	28.7	30.2		38.6	30.3	22.7	-	
B58	462970	451300	28.3	19.8	19.0	14.0	10.6	10.8	13.1	13.9	15.7	21.3	26.2		17.5	12.6	-	
B60	463234	451339	26.4	24.8	16.4	13.1	9.7	11.6	11.2	12.7	18.9	24.7	27.4	30.8	19.0	13.7	-	
B63	462704	451300	38.9	33.0		26.6	28.0	23.5	22.3	25.1	32.8	36.1	37.8	35.5	30.9	23.2	-	
B72	461122	451374	35.2	43.0	38.3	38.1	46.6	39.2	42.6	41.3	47.5	53.7	55.8	58.0	44.9	33.7	-	
B74	461371	452708	33.1	22.1	17.0	17.2	14.7	12.6	13.3	14.6	18.1	23.1			18.6	13.4	-	
B80	461185	452663	26.9	19.7	14.6	12.9	13.1	8.6	11.3	11.6	16.4	20.7	24.8	27.2	17.3	12.5	-	
B82	460974	452563	34.7	28.1	21.2	18.8	16.2	16.9	16.7	16.4	24.8	29.2	30.0	35.1	24.0	17.3	-	
B83	461285	452695	41.7	26.3	25.2	24.7	22.8	21.2	22.6	22.2	30.6	30.0	30.0	34.1	27.6	20.7	-	
B84	462654	451293	30.1	24.8	20.2	18.0	21.0	17.5	17.6	19.0	24.5	32.1	28.2	28.7	23.5	16.9	-	
B85	461227	451368	41.9	32.4	28.1	31.8	31.2	25.4	29.1	27.9	34.9	36.0	39.4	40.8	33.2	24.9	-	
B86	461116	452602	39.3	27.2	23.9		19.8	16.5	60.3	16.1	21.8	21.6	30.2	33.3	28.2	21.1	-	
B88	462799	451291	40.8	30.2	29.8	25.3	17.3	19.0	17.3	15.1	29.1	32.0	37.9	32.5	27.2	20.4	-	
B89	461170	451357	44.5	37.2	32.3	32.3	39.1	30.0	37.1	19.3	46.1			45.8	36.4	27.3	-	
B90	461133	451394	47.0	37.5	38.0	38.1	35.0	33.3	35.0	31.4	41.5	33.7	41.7	43.7	38.0	28.5	-	
C12	458825	449928	27.2	22.7	14.1	15.7	15.8	12.0	13.7	10.2	16.6	19.2	22.5	28.4	18.2	13.1	-	
C17	459085	450544	25.4	20.7	15.5	15.8	10.7	12.3	11.0	13.2	15.7	17.9	20.3	23.2	16.8	12.1	-	
C18	459204	450772	36.4	25.5	20.4	21.2	19.5	16.2	17.4	16.4	20.6	24.0	31.0	32.1	23.4	16.8	-	
C19	459271	450819	27.5	18.7	17.0	13.8	13.3	13.0	13.4	12.5	16.1	18.1	25.5	23.6	17.7	12.8	-	
C2	458333	448974	45.0	35.6	38.6	29.3	27.1	26.5	29.2	28.9	35.3	36.0	38.8	42.8	34.4	25.8	-	
C20	459280	450923	31.2	22.5	19.0	18.1	15.1	15.3	15.4	13.4	20.5	25.7			19.6	14.1	-	
C21	459410	451040	34.6	25.8	26.1	23.2	17.7	19.8	20.0	20.8	21.6	26.6	29.3	34.3	25.0	18.7	-	
C22	459570	451195	33.9	20.1	21.6	20.1	16.9	16.9	17.2	16.7	18.6	20.3	24.8	29.4	21.4	15.4	-	
C23	459553	451252	45.2	36.3	41.7	29.6	28.0	39.2	37.3	39.1	46.4	39.3	49.5	31.1	38.6	28.9	-	
C26	459639	451334	57.6	40.1	41.7	42.5	43.9	42.1	42.8	42.6	43.8	41.5	55.7	51.4	45.5	34.1	-	
C27	459717	451433	53.1	51.1	52.3	47.2	52.0	50.7	50.9	53.4	57.7	52.3	65.7	64.9	54.3	40.7	-	
C28	461201	448386	18.8	18.0	13.2	13.7	13.6	10.1	11.2	10.3	14.8	16.1	20.1	24.4	15.4	11.1	-	
C29	461196	448426	34.1	30.1	17.6	25.8	24.1	21.9	19.9	19.6	28.5	31.8	33.5	37.9	27.1	20.3	-	
C30	461185	448462	34.1	31.5	25.4	28.7	32.3	27.1	26.0	25.0	32.8	34.9	39.1	42.3	31.6	23.7	-	
C31	461193	448473	24.3	18.9	13.7	16.4	15.4	10.6	11.1	12.7	16.7	21.1	24.3	27.0	17.7	12.7	-	
C32	461128	448823	25.9	21.0	19.4	17.3	18.1	15.8	17.0	16.1	23.0	26.5	32.1	31.8	22.0	15.8	-	
C33	461085	448933		18.8	14.3		11.6	10.0	10.0	10.6	15.1	16.7	21.6	24.3	15.3	11.0	-	
C34	461085	449067	25.7	25.6	19.7	22.2	22.6	16.6	15.5	18.6	24.1	23.9	29.1	32.4	23.0	17.3	-	
C36	461052	449146	32.8	26.8	22.3	22.0	26.3	20.7	21.2	23.1	26.2	32.0	31.4	36.5	26.8	20.1	-	
C37	461045	449223	30.4	24.3	17.7	21.1	21.1	15.8	15.7	16.4	20.9	22.8	26.3	29.7	21.9	15.7	-	
C38	461038	449225	31.1	28.8	19.2	23.4	23.6	18.3	17.9	15.8	22.3		31.1	35.8	24.3	18.2	-	
C39	460974	449336	23.7	24.1	25.2	28.1	29.4	26.0	25.1	25.6	31.7	38.6	43.1	44.7	30.4	22.8	-	
C4	458470	449126	26.8	20.9	18.5	14.5	13.9	11.0	12.0	13.5	15.8	21.1	15.8	24.8	17.4	12.5	-	
C40	460910	449628	25.1	21.4	14.1	16.6	13.0	12.8	11.2	14.0	16.7	19.2	24.7	26.4	17.9	12.9	-	
C42	460857	449748	28.2	20.4	19.6	17.8	17.9	15.5	15.6	16.6	19.2	24.2	30.0	28.9	21.2	15.2	-	
C43	460869	449730	27.4	24.9	24.8	21.5	17.2	21.2	22.6	23.1	23.4	29.2	35.8	36.9	25.7	19.3	-	Part of triplicate set - see bottom of table for triplicate average
C43a	460869	449730	35.9	25.3	23.3	24.1	22.8	20.9	19.1	20.5	25.5	31.2	36.5	37.7	26.9	20.2	-	Part of triplicate set - see bottom of table for triplicate average
C44	460869	449730	25.9	24.1	22.4	23.3	24.0	22.4	20.2	22.6	25.9	30.6	36.6	37.7	26.3	19.7	-	Part of triplicate set - see bottom of table for triplicate average
C49	460860	450530	29.3	23.3	17.0	18.1	16.7	15.2	14.2	13.6	17.4	22.1	25.1	26.9	19.9	14.3	-	
C51	460871	450727	38.0	27.7	19.5	21.9	22.2	19.4	21.1	19.4	25.3	28.5	33.0	32.7	25.7	19.3	-	

DT ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Easting)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean: Raw Data	Annual Mean: Annualised and Bias Adjusted (B=0.72, R=0.75)	Annual Mean: Distance Corrected to Nearest Exposure	Comment
C52	460853	450781	29.5	22.2	19.1		20.7	15.4	15.2	16.0	18.5	25.9	33.9	35.8	22.9	17.2	-	
C53	460766	450924	20.6	23.9	22.4	20.2							31.3	31.4	25.0	16.0 (annualised)	-	
C54	460762	451069	32.8	27.8	24.8	25.9	25.8	22.3	23.8	23.7	30.4	29.9	35.5	38.2	28.4	21.3	-	
C56	459484	451141	40.9	33.5	30.3	31.0	31.4	30.6	29.2	31.2	31.9	24.6	41.0	44.6	33.4	25.0	-	
C57	458912	450111	31.2	23.7	15.1	18.7	12.1	16.8	14.6	16.9	22.2	19.3	22.3	27.6	20.0	14.4	-	
C58	460926	449429	36.7	28.1	30.4	28.0	34.9	31.0	29.4	28.4	35.5	40.0	43.1	41.6	33.9	25.4	-	
C59	458735	449713	36.7	29.6	29.3	26.7	29.7	27.5	19.1	27.8	34.4	34.3	35.8	41.1	31.0	23.3	-	
C62	459579	451251	43.0	27.0	27.8	24.1	20.7	19.4	22.8	20.6	27.8	26.4	34.9	37.8	27.7	20.8	-	
C63	458790	449740	26.2	17.3	19.8	16.1	13.3	14.1	14.0	15.9	16.1	18.5	23.9	25.8	18.4	13.8	-	
C7	458611	449477	29.4	22.3	18.2	17.8	18.0	14.0		14.5	15.0	22.5	25.1	29.1	20.5	15.4	-	
D10	460443	451927	24.4	18.3	15.7	13.4	9.3	8.8	12.8	12.5	17.3	19.7	27.3	29.4	17.4	12.5	-	
D12	460567	451740	28.8	19.6	19.0	14.2	11.2	12.8	13.1	14.0	17.5	23.3	26.4	28.4	19.0	14.3	-	
D13	460271	451358	34.1	23.6	24.0	21.1	23.1	16.4	16.5	14.8	22.7	24.5	30.9	30.5	23.5	17.6	-	
D14	461077	451354	48.7	44.0	34.4	40.7	39.2	35.8	32.0	33.8	48.5	45.8	41.9	48.5	41.1	30.8	-	
D16	460708	451231	52.4	42.0	32.2	38.6	45.5	43.3	45.3	38.1	52.0	45.5	43.9	47.1	43.8	32.9	-	
D17	460575	451616	50.4	35.9	36.5	31.0	34.4		31.0	32.5	35.1			55.2	38.0	28.5	-	
D18	460395	451502	40.8	27.4	24.6	28.6	30.8	27.3	21.0	30.5	32.3	37.2	44.9	41.0	32.2	24.2	-	
D19	460038	451626	58.1	46.8	35.0	41.2	58.5	52.0	51.8	49.8	66.0	66.0	62.3	60.3	54.0	40.5	31.9	
D20	460323	451685	49.6	40.9	28.6	32.5		41.2		38.3	59.4	54.9		55.4	44.5	33.4	-	
D22	460035	452010	50.2	38.1		39.8	46.3	38.7	45.8	36.6	39.0	41.9	46.8	49.8	43.0	32.3	-	
D24	459805	451543	35.1	23.9	25.6	22.2	21.1	20.6	21.4	23.4		30.1	40.0	37.2	27.3	20.5	-	
D25	459693	451750	51.5	35.6	37.1	38.5	37.3	37.3	41.6	44.8	45.0	48.4	56.9	53.5	44.0	33.0	-	
D26	460671	451400	42.6	35.0	32.0	28.0	29.7	26.4	26.6	27.6	34.0	39.3	37.6	43.2	33.5	25.1	-	
D27	460734	451563	37.9	29.6	22.5	23.3	26.9	21.5	23.1	21.7	31.4		33.3	34.3	27.8	20.8	-	
D28	460764	451185	44.4	31.4	36.8	30.3	31.5	32.1	33.8	33.2	40.1	43.6	38.1	43.8	36.6	27.4	-	
D30	460834	451252	35.7	28.9	22.8	23.4	25.0	19.5	23.4	18.8	28.4	31.9	32.5	36.3	27.2	20.4	-	
D31	461002	451229	41.7	36.9	27.0	33.2	31.3	26.2	29.2	25.6	34.5	33.2	33.9	37.8	32.5	24.4	-	
D32	460258	451208	46.4	32.7	33.9	38.4	37.5	30.9	30.4	35.4	39.5	45.2	46.5	48.2	38.8	29.1	-	
D33	460075	451174	38.8	29.3	23.5		26.4	22.6	27.6	28.9	35.6	39.5	39.5	46.4	32.6	24.4	-	
D35	460134	451170	49.0	37.6	38.8	33.1	43.0	38.9	36.8	41.5	45.4	53.1	56.5	51.7	43.8	32.8	-	
D36	460135	450884	37.8	33.5	32.6	25.0	30.7	29.9	25.9	30.0	34.4	36.6	45.7	41.4	33.6	25.2	-	
D37	460157	450988	39.8	28.5	24.0	29.1	33.5	22.5	26.3	21.3	31.6	31.2	32.8	41.5	30.2	22.6	-	
D38	460088	450929	36.2	24.7	21.9	22.0	19.8	18.3	19.1	18.9	22.0	25.6	31.1	31.5	24.3	18.2	-	
D39	460185	451055	39.4	33.7	26.5	29.9	26.0	26.2	23.9	27.9	33.2		36.5	41.8	31.4	23.5	-	
D4	460560	452300	38.4	25.8	27.1	22.4	27.1	22.6	23.5	22.8	29.8	35.8	37.1	42.2	29.6	22.2	-	
D40	460069	451196	40.2	29.7	33.7	23.9	30.7	20.9	15.9	23.0	32.5	27.0	33.3	36.0	28.9	21.7	-	
D41	460286	452487	45.9	26.9	41.3	33.3	43.0	42.0	28.4	42.0	38.7	49.8	50.2	50.6	41.0	30.8	-	
D43	459920	451834	52.2	49.4	42.6	45.4	52.9	43.1	46.4	38.3	56.4	57.0		57.9	49.2	36.9	27.9	
D45	460673	451869	33.9	24.9	22.7	20.1	20.6	27.0	17.1	22.6	21.5	25.8	30.2	33.4	25.0	18.7	-	
D47	460682	452187	36.7	28.3	20.4	21.6	9.6	18.6	24.5	20.9	31.0	30.3	31.2	36.3	25.8	19.3	-	
D48	460103	452180	53.8	44.9	36.9	45.1	45.5	46.6	45.7	48.7	51.0	49.8	45.3	48.4	46.8	35.1	-	
D49	460656	451269	48.0	43.0	28.5	33.9	36.0	33.2	38.3	34.0	46.6	50.3		48.1	40.0	30.0	-	
D50	460371	451682	45.1	32.7	31.7		34.0	32.8	33.1	35.3	45.8	42.9	47.2	45.9	38.8	29.1	-	
D51	459640	451722	50.9	35.1	47.0	45.2	30.4	45.8	49.3	52.2	51.9	56.4	62.6	46.9	47.8	35.9	-	
D52	460887	451140	33.9	27.4	20.9	22.4	23.2	20.8	22.1	12.0	27.4	31.8	33.1	34.1	25.8	19.3	-	
D53	460115	451146	35.2	26.7		32.6	30.1	25.4	27.6	22.5	33.6	24.3	30.0	32.8	29.2	21.9	-	
D54	460146	451116	30.3	27.6	24.7	32.8	26.5	24.6	23.4	24.2	31.2	24.2	29.5	29.8	27.4	20.6	-	
D55	460087	452065	65.0	44.4	55.6	59.9	59.6	63.6	59.3	65.1	62.9	62.0	60.6	60.2	59.9	44.9	40.4	
D56	460400	451685	52.0	38.3	35.2	37.4	43.6	43.0	41.7	36.7	18.0	55.1	56.2	51.2	42.4	31.8	-	
D57	460416	451708	38.1	30.4	30.3	30.5	34.5	28.5	30.0	31.7	37.3	41.7	43.4	41.7	34.8	26.1	-	
D58	460435	451732	44.3	35.9	29.7	28.2	37.7	36.3	31.2	36.1	48.7	49.2	49.0	46.4	39.4	29.5	-	
D59	460087	452156	58.6	52.6	55.6	45.2	56.0	52.1	50.7	60.4	63.0	72.8	67.2		57.7	43.2	39.4	
D6	460570	452177	30.4	17.9	18.0	15.4	14.2	9.5	11.0	14.6	58.2	23.2	26.8	30.1	22.4	16.2	-	
D60	460294	451883	25.6	20.3	16.0	15.7	16.8	14.1	15.0	16.1	21.2			29.1	19.0	14.2	-	

DT ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Easting)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean: Raw Data	Annual Mean: Annualised and Bias Adjusted (B=0.72, R=0.75)	Annual Mean: Distance Corrected to Nearest Exposure	Comment
D8	460553	451843	47.3			37.5	29.6	43.1	32.2	44.4	56.8		44.7	51.1	43.0	32.2	-	
D9	460483	452357	48.4	36.5	32.5	44.1		43.8	36.1	35.1	7.6		43.1	42.6	37.0	27.7	-	
8, 9, 9a	460163	452468	27.4	21.1	15.4	13.8	15.1	11.4	11.9	11.7	16.4	18.5	22.5	25.8	17.6	12.7	-	Triplicate Average for sites 8, 9 and 9a (Portland Street)
A13, A14, A14a	459335	452931	29.1	23.1	16.4	15.4	12.1		10.6	12.9	17.2	21.6	21.6	26.6	18.8	13.5	-	Triplicate Average for sites A13, A14 and A14a (Clifton Dale)
78, 79, 80	460149	452342	42.2	39.9	33.2	34.6	31.8	34.0	33.8	32.7	37.7	40.7	38.0	43.1	36.8	27.6	-	Triplicate Average for sites 78, 79 and 80 (Gillygate)
102, 103, 104	458703	452429	47.5	39.4	32.6	37.5	41.1	33.4	32.9	29.8	42.7	37.9	44.6	44.7	38.7	29.0	-	Triplicate Average for sites 102, 103 and 104 (Salisbury Terrace)
2a, 2b, 2c	460746	451034	27.6	25.7	21.3	22.9	21.1	19.9	20.5	21.3	26.0	27.7	32.5	31.9	24.9	18.6	-	Triplicate Average for sites 2a, 2b and 2c (Fishergate)
3a, 3b, 3c	460024	452767	25.7	20.3	15.8	20.6	13.5	10.0	9.3	11.6	15.1	21.3	23.0	26.8	17.8	12.8	-	Triplicate Average for sites 3a, 3b and 3c (Bootham)
95a, 95b, 95c	460938	449465	29.3	21.1	20.1	18.3	17.1	17.0	16.2	17.4	21.4	25.4	31.5	30.4	22.1	16.6	-	Triplicate Average for sites 95a, 95b and 95c (Fulford)
A19, A19a, A19b	458713	452414	38.7	34.0	25.7	25.7	27.5	23.8	23.3	25.1	31.4	36.5	33.5	41.3	30.5	22.9	-	Triplicate Average for sites A19, A19a and A19b (Salisbury Terrace)
A20, A20a, A20b	458760	452404	46.8	35.8	26.9	37.2	38.0	31.2	34.6	32.9	43.8	36.0	43.7	44.8	37.6	28.2	-	Triplicate Average for sites A20, A20a and A20b (Salisbury Terrace)
B36, B37, B37a	462565	454194	23.2	14.4	13.8	11.7	10.1	9.1	8.8	10.1	14.5	15.6	20.7	22.0	14.5	10.4	-	Triplicate Average for sites B36, B37 and B37a (Malton Road)
C43, C43a, C44	460869	449730	29.7	24.8	23.5	23.0	21.3	21.5	20.6	22.1	24.9	30.3	36.3	37.4	26.3	19.7	-	Triplicate Average for sites C43, C43a and C44 (Fulford Road)

- All erroneous data has been removed from the NO₂ 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.
- Where applicable, data has been distance corrected for relevant exposure in the final column.
- City of York Council confirm that all 2021 diffusion tube data has been uploaded to the Diffusion Tube Data Entry System.

Notes:

Exceedances of the NO₂ annual mean objective of 40µg/m³ are shown in **bold**.

NO₂ annual means exceeding 60µg/m³, indicating a potential exceedance of the NO₂ 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 York During 2021

A full overview of all planning applications considered by City of York Council with the potential to impact on air quality is provided in Chapter 4 of this Annual Status Report. The main sources identified include road traffic associated with new developments. Developments have been required to assess their impacts on air quality where necessary in line with City of York Council's draft Low Emission Planning Guidance.

Additional Air Quality Works Undertaken by City of York Council during 2021

Additional feasibility work has been carried out in 2021 to support the development of a number of AQAP measures as follows:

- CYC obtained DEFRA funding in March 2021 to carry out a feasibility study and subsequent pilot scheme to reduce emissions relating to freight deliveries travelling in to and out of York. The initial feasibility work aimed to more precisely quantify the emission / air quality impact of freight deliveries in the city and identify suitable sustainable alternatives, utilising low emission modes, including EVs and e-cargo bikes. A pilot scheme will be progressed in 2022.
- CYC commissioned a study to generate GIS data sets to provide insight into solid fuel use, including wood burning, across York. Fuel use data from [Energy Performance Certificates \(EPCs\)](#) and CYC data for wood burner installations were mapped using address locations from the [Local Land and Property Gazetteer](#). This work will be used to support further targeted smoke control actions in the city, including potential extension of the existing Smoke Control Area (SCA), subject to further consultation.

QA/QC of Diffusion Tube Monitoring

Diffusion tubes used by City of York Council in 2021 were supplied and analysed by SOCOTEC (Didcot), Unit 12 Moorbrook, Southmead Industrial Park, Didcot, Oxfordshire,

OX11 7HP. The preparation method used for the diffusion tubes was 50% TEA in Acetone.

Diffusion tube monitoring was completed in line with the 2021 Diffusion Tube Monitoring Calendar as available on DEFRA's LAQM webpage.

AIR is an independent analytical proficiency-testing (PT) scheme, operated by LGC Standards and supported by the Health and Safety Laboratory (HSL). AIR PT is a new scheme, started in April 2014, which combines two long running PT schemes: LGC Standards STACKS PT scheme and HSL WASP PT scheme. AIR offers a number of test samples designed to test the proficiency of laboratories undertaking analysis of chemical pollutants in ambient indoor, stack and workplace air. For the 2021 period, the percentage of results submitted by SOCTEC that were deemed to be satisfactory was 100% for all rounds reported at the time of writing (round AR042, Jan – Mar 2021). Further information about this scheme is available on the [DEFRA webpage](#).

Diffusion Tube Annualisation

LAQM.TG16 states that annualisation is required for any diffusion tube monitoring site with data capture less than 75% but greater than 25%. Annualisation effectively scales the available monitoring data to provide an estimate of the annual mean nitrogen dioxide concentration. This can then be compared with health based Air Quality Objectives.

City of York Council undertook background diffusion tube monitoring of nitrogen dioxide at a number of background locations during 2021. Of these sites, 56 diffusion tubes had 12 months data available and have been used to derive the period to annual ratios required for the annualisation. This methodology has previously been agreed with the LAQM Helpdesk and is in line with the methodology used in previous ASRs. The following steps were used:

- **Step 1** - Calculate the period mean for the diffusion tube sample requiring annualisation
- **Step 2** - Calculate the corresponding period means and annual means for each of the 56 background diffusion tube locations. Use these two figures to calculate the period mean to annual mean ratio for each of the 56 background diffusion tube sites.
- **Step 3** – Calculate the average ratio across the 56 background monitoring sites (i.e. $n = 56$)
- **Step 4** – Use the ratio in Step 3 to adjust the period mean (Step 1) to provide an estimate of the annual diffusion tube mean (non-bias adjusted)

- **Step 5** – Bias correct the value calculated in step 4 using the appropriate bias correction factor.

Two diffusion tube sites required annualisation, namely A36 and C53. The calculations and annualisation factors are provided in Table C.2. Both the annualised diffusion tube results are well below the annual mean objective for nitrogen dioxide.

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/NO₂ continuous analysers. Alternatively, the national database of diffusion tube co-location surveys provides bias factors for the relevant laboratory and preparation method.

City of York Council have applied local roadside and background bias adjustment factors of 0.75 and 0.72 respectively to the 2021 monitoring data. A summary of bias adjustment factors used by City of York Council over the past five years is presented in Table C.1.

For the purposes of this ASR, local bias adjustment factors have been calculated for diffusion tubes located at roadside and urban background locations separately. This is in line with the approach used by City of York Council for the last 15+ years and in line with advice from the LAQM Helpdesk obtained in previous reporting years. AEA's [Precision and Accuracy spreadsheet](#) has been used to consider co-location studies at 3 York roadside locations (Fishergate, Gillygate and Fulford Road) and one York urban-background location (Bootham).

Roadside bias adjustment factor

Data capture and tube precision for 2021 was shown to be 'good' at all 3 roadside sites and the resultant combined/average bias factor across the 3 sites (following methodology in TG16 para 7.205) was 0.75. This factor has been used to correct diffusion tube results at roadside locations in 2021. The methodology used to derive the combined factor was:

- Step 1 - Average of Bias Factor B's = $(27+45+29)/3 = 33.67$
- Step 2 - Express as a factor = 0.3367
- Step 3 - Add 1 to this value = $0.3367 + 1 = 1.3367$

- Step 4 - Take the inverse to give the bias adjustment factor = $1/1.3367 = 0.75$

Urban background bias adjustment factor

Data capture and tube precision for 2021 was shown to be 'good' at the Bootham urban background site. The bias factor for this site was calculated to be 0.72. This factor has been used to correct diffusion tube results at urban background locations in 2021.

Comparison with national bias adjustment factor

The overall 2021 bias correction factor from the national diffusion tube bias adjustment factor spreadsheet for SOCOTEC Didcot [preparation method 50% TEA in acetone] from 23 studies was 0.78. This is the suggested figure to use for all site types in the absence of any local collocation data. It was considered that the locally derived bias correction factors were broadly comparable to this national figure. Historically, locally derived bias correction factors have always been used for the correction of City of York Council's diffusion tube data and the local figures have therefore been used for correction of tube data presented in this report. Local bias factors in 2021 are also comparable to factors calculated or previous years and reported in historical Annual Status Reports and shown in Table C.1.

If the national bias correction factor of 0.78 had been applied to all CYC diffusion tubes, this would have resulted in the following diffusion tubes coming close to / exceeding the annual mean objective.

Tube 7 (Gillygate)	46.2µg/m ³ (Local factor)	48.0µg/m ³ (National factor)
Tube 13 (Gillygate)	46.5µg/m ³ (Local factor)	48.4µg/m ³ (National factor)
Tube 14 (Gillygate)	47.5µg/m ³ (Local factor)	49.4µg/m ³ (National factor)
Tube 109 (Rougier St)	39.3µg/m ³ (Local factor)	40.9µg/m ³ (National factor)
Tube 110 (Rougier St)	39.3µg/m ³ (Local factor)	40.8µg/m ³ (National factor)
Tube 115 (Rougier St)	44.7µg/m ³ (Local factor)	46.5µg/m ³ (National factor)
Tube A1 (Bootham)	43.6µg/m ³ (Local factor)	45.3µg/m ³ (National factor)
Tube A57 (Holgate Rd)	43.5µg/m ³ (Local factor)	45.3µg/m ³ (National factor)
Tube C27 (Blossom St)	40.7µg/m ³ (Local factor)	42.3µg/m ³ (National factor)
Tube C19 (Bridge St)	40.5µg/m ³ (Local factor)	42.1µg/m ³ (National factor)
Tube D55 (Museum St)	44.9µg/m ³ (Local factor)	46.7µg/m ³ (National factor)
Tube D59 (St Leonards)	43.2µg/m ³ (Local factor)	45.0µg/m ³ (National factor)

All tubes above are already included within City of York Council's AQMA boundary. Tube 115 is not in a relevant location with respect to the annual mean NO₂ objective as it is located in a bus shelter. The result is also below 60µg/m³, which would potentially indicative of potential breaches of the short-term hourly NO₂ objective.

Table C.1 – Bias Adjustment Factor

Monitoring Year	Local or National	If National, Version of National Spreadsheet	Adjustment Factor
2021	Local	-	Background tubes 0.72 Roadside tubes 0.75
2020	Local	--	Background tubes 0.68 Roadside tubes 0.74
2019	Local	-	Background tubes 0.76 Roadside tubes 0.74
2018	Local	-	Background tubes 0.68 Roadside tubes 0.73
2017	Local	-	Background tubes 0.66 Roadside tubes 0.71

NO₂ Fall-off with Distance from the Road

Wherever possible, monitoring locations are representative of exposure. However, where this is not possible, the NO₂ concentration at the nearest location relevant for exposure has been estimated using the Diffusion Tube Data Processing Tool/NO₂ fall-off with distance calculator available on the LAQM Support website. Where appropriate, non-automatic annual mean NO₂ concentrations corrected for distance are presented in Table B.1.

Distance correction has been considered at monitoring sites where the annual mean concentration is greater than 36µg/m³ and the monitoring site is not located at a point of relevant exposure (taking the limitations of the calculator into account). In 2021, 13 diffusion monitoring sites recorded bias corrected annual mean concentrations in excess of 36µg/m³, namely site references 7, 13, 14, 109, 110, 115, A1, A57, C27, D19, D43, D55 and D59. Further commentary on each of these sites is provided in Table C.4.

QA/QC of Automatic Monitoring

To ensure that the air quality data obtained by City of York Council fully complies with the requirements of the Review and Assessment process, a comprehensive set of QA/QC procedures are in place. The aims of the QA/QC programme were fully detailed in 'Technical Annex 2: Air Pollution Monitoring in York' which was submitted with the Second and Third Stage Review and Assessment of Air Quality in York.

All continuous sites are calibrated fortnightly by City of York Council's Public Protection Team. Sites are serviced by the equipment suppliers every 6 months and independently audited every 12 months. The annual audit also provides an independent check of site cylinder concentrations against reference standards. The latest round of station audits was carried out in January 2022 by Ricardo-AEA.

City of York Council's continuous monitoring sites are currently serviced and maintained by 'Matt's Monitors'. Data management is currently undertaken by Ricardo-AEA with all results being published to the [Air Quality England website](#). This website displays live and historical data for all automatic monitoring sites in York. All data presented in this ASR is fully ratified.

PM₁₀ and PM_{2.5} Monitoring Adjustment

For Holgate Road and Plantation Drive TEOM (PM₁₀) data in 2021 a correction factor of 1.3 has been applied (INDIC.GRAV). The data could not be VCM corrected due to lack of nearby TEOM-FDMS data. Gillygate PM_{2.5} data is presented as uncorrected TEOM data, as the VCM is not considered appropriate for correction of PM_{2.5} data. No correction factors have been applied to the BAM data presented in this report (Bootham and Fishergate) as this is this monitoring method provides reference method equivalent data.

Automatic Monitoring Annualisation

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

NO₂ Fall-off with Distance from the Road

Wherever possible, monitoring locations are representative of exposure. However, where this is not possible, the NO₂ concentration at the nearest location relevant for exposure

has been estimated using the NO₂ fall-off with distance calculator available on the LAQM Support website. Where appropriate, non-automatic annual mean NO₂ concentrations corrected for distance are presented in Table B.1.

No automatic NO₂ monitoring locations within City of York Council's area required distance correction during 2021.

Table C.2 – Annualisation Summary (concentrations presented in $\mu\text{g}/\text{m}^3$)

Site ID	Annualisation Factor – 56 Background Diffusion Tubes	Average Annualisation Factor	Raw Data Annual Mean	Annualised Annual Mean	Comments
A36	Average factor across 56 background diffusion tube locations with 100% data capture used	1.098	17.4	19.1	This is an urban background monitoring site. Using a local bias correction factor of 0.72 results in a bias corrected annual mean of $13.7 \mu\text{g}/\text{m}^3$
C53	Average factor across 56 background diffusion tube locations with 100% data capture used	0.854	25.0	21.3	This is roadside monitoring site. Using a local bias correction factor of 0.75 results in a bias corrected annual mean of $16.0 \mu\text{g}/\text{m}^3$

Table C.3 – Local Bias Adjustment Calculation

	Local Bias Adjustment Input 1 – Bootham (Urban Background)	Local Bias Adjustment Input 2 – Fishergate (Roadside)	Local Bias Adjustment Input 3 – Gillygate (Roadside)	Local Bias Adjustment Input 4 – Fulford (Roadside)
Periods used to calculate bias	10	12	10	12
Bias Factor A	0.72 (0.69 – 0.75)	0.79 (0.75 – 0.83)	0.69 (0.65 – 0.73)	0.77 (0.74 – 0.82)
Bias Factor B	40% (34% - 46%)	27% (21% - 33%)	45% (36% - 55%)	29% (22% - 36%)
Diffusion Tube Mean ($\mu\text{g}/\text{m}^3$)	18	25	37	22
Mean CV (Precision)	7	4	3	7
Automatic Mean ($\mu\text{g}/\text{m}^3$)	13	20	26	17
Data Capture	97%	99%	97%	98%
Adjusted Tube Mean ($\mu\text{g}/\text{m}^3$)	13 (12 – 14)	20 (19 – 21)	26 (24 – 27)	17 (16 – 18)

Notes:

A single local bias adjustment factor of 0.72 has been used to bias adjust the 2021 diffusion tube results at urban background locations.

A combined local bias adjustment factor of 0.75 has been used to bias adjust the 2021 diffusion tube results at roadside locations.

Table C.4 – NO₂ Fall off With Distance Calculations (concentrations presented in µg/m³)

Site ID	Distance (m): Monitoring Site to Kerb	Distance (m): Receptor to Kerb	Monitored Concentration (Annualised and Bias Adjusted)	Background Concentration	Concentration Predicted at Receptor	Comments
7	0.3	2.6	46.2	13.8	34.8	See calculation to left. Site located within current AQMA
13	1.5	1.6	46.5	-	-	Location considered relevant without correction as mounted on a drainpipe attached to facade of building. Site located within current AQMA
14	2.3	2.5	47.5	-	-	Location considered relevant without correction as mounted on a drainpipe attached to facade of building. Site located within current AQMA
109	2.5	2.7	39.3	-	-	Location considered relevant without correction as mounted on a drainpipe attached to facade of building. Site located within current AQMA
110	2.3	2.5	39.3	-	-	Location considered relevant without correction as mounted on a drainpipe attached to facade of building. Relevant exposure at first floor level. Site located within current AQMA
115	1.5	N/A	44.7	-	-	Not relevant location with respect to annual mean as located at a bus stop. Only relevant with respect to hourly NO ₂ objective, but currently under 60µg/m ³ so not of concern. Nevertheless, site located within current wider AQMA
A1	2.3	2.5	43.6	-	-	Location considered relevant without correction as mounted on a drainpipe attached to facade of building. Site located within current AQMA
A57	2.8	3.0	43.5	-	-	Location considered relevant without correction as mounted on a drainpipe attached to facade of building. Relevant exposure at first floor level. Site located within current AQMA
C27	3.2	3.4	40.7	-	-	Location considered relevant without correction as mounted on a drainpipe attached to facade of building. Site located within current AQMA
D19	0.2	1.9	40.5	15.4	31.9	See calculation to left. Site located within current AQMA
D43	0.3	3.3	36.9	13.8	27.9	See calculation to left. Site located within current AQMA

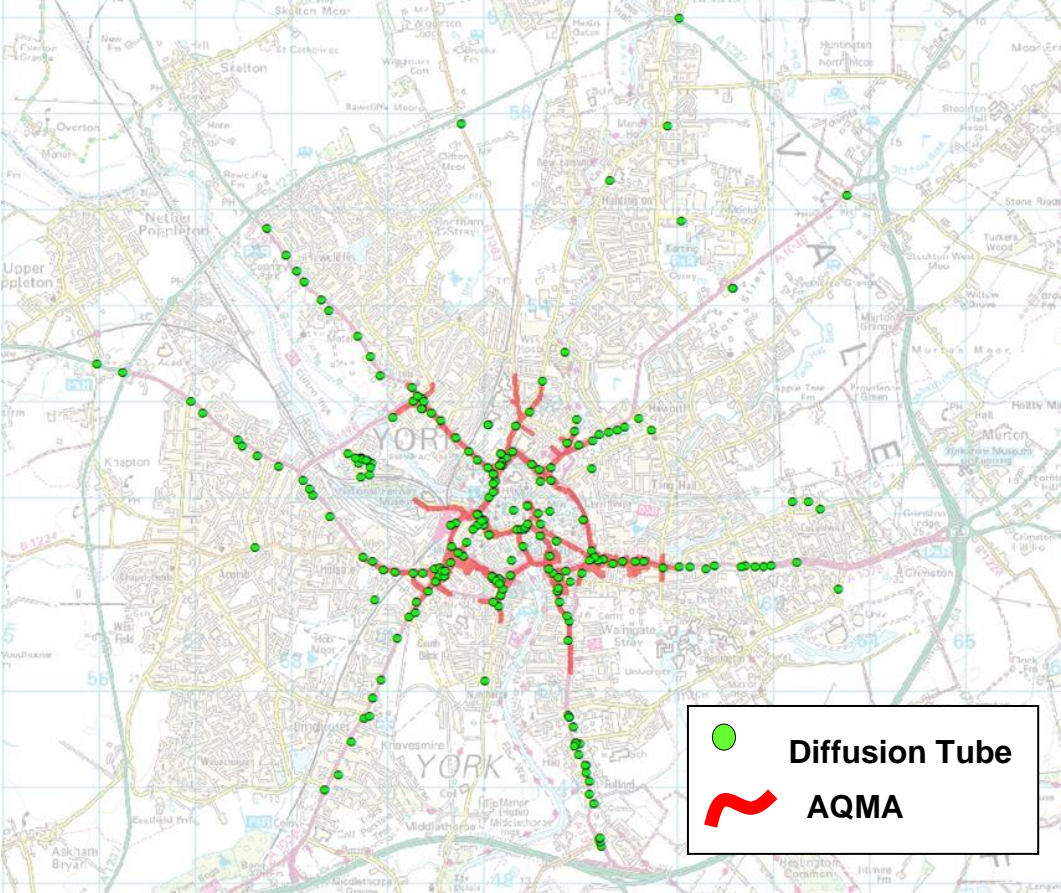
Site ID	Distance (m): Monitoring Site to Kerb	Distance (m): Receptor to Kerb	Monitored Concentration (Annualised and Bias Adjusted)	Background Concentration	Concentration Predicted at Receptor	Comments
D55	2.2	4.0	44.9	13.8	40.4	See calculation to left. Site located within current AQMA
D59	2.7	4.5	43.2	13.8	39.4	See calculation to left. Site located within current AQMA

Note: background concentrations obtained from DEFRA background maps (2018 maps projected to 2021)

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

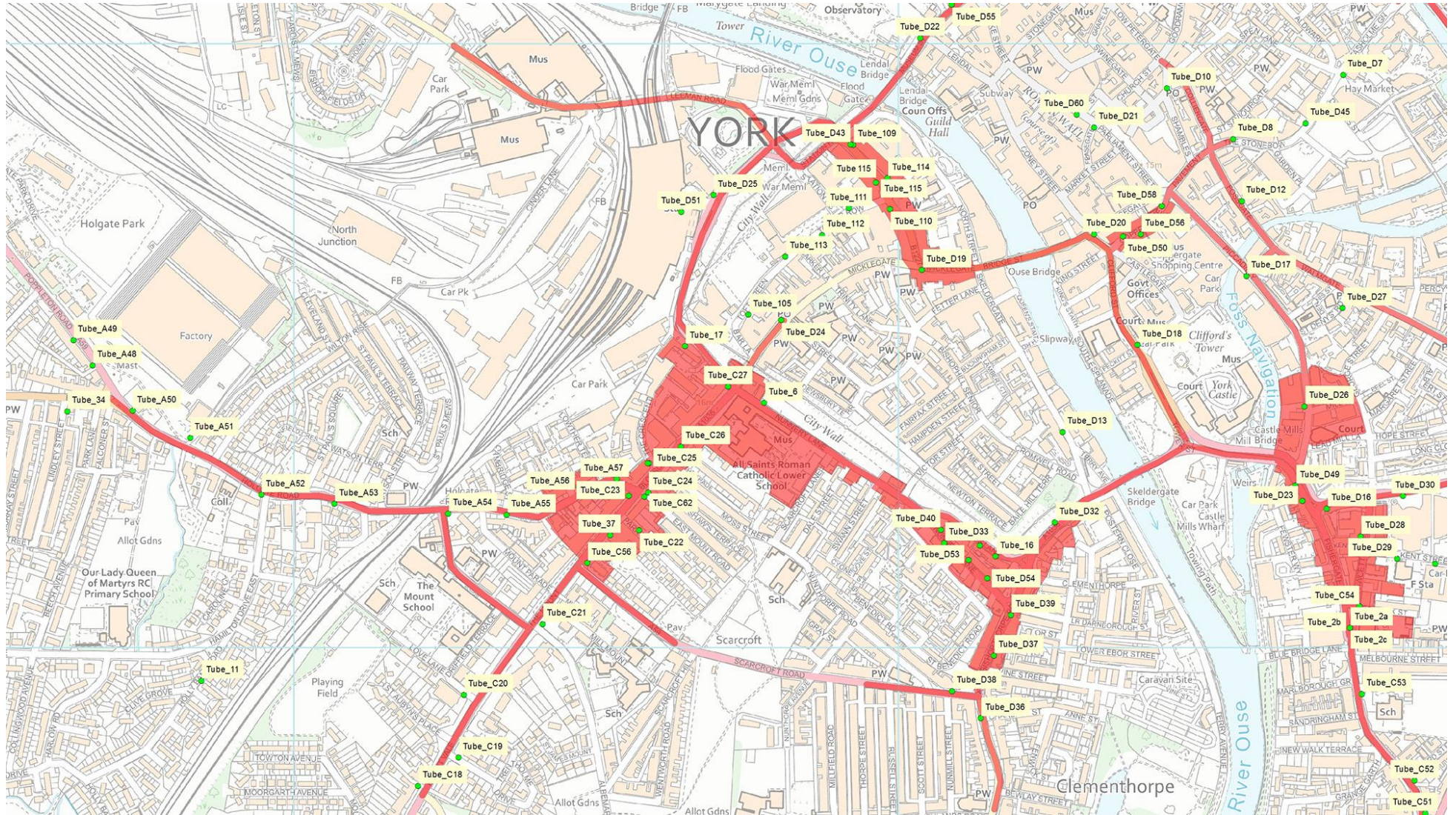
Figure D.1 – Maps of Non-Automatic Monitoring Site

Due to the number of tubes operated by City of York Council, an interactive diffusion tube map showing tube reference numbers has been made available online to accompany the ASR. [View interactive diffusion tube map here.](#)



Diffusion tube locations in relation to the AQMA boundary are shown in the zoomed in maps below:





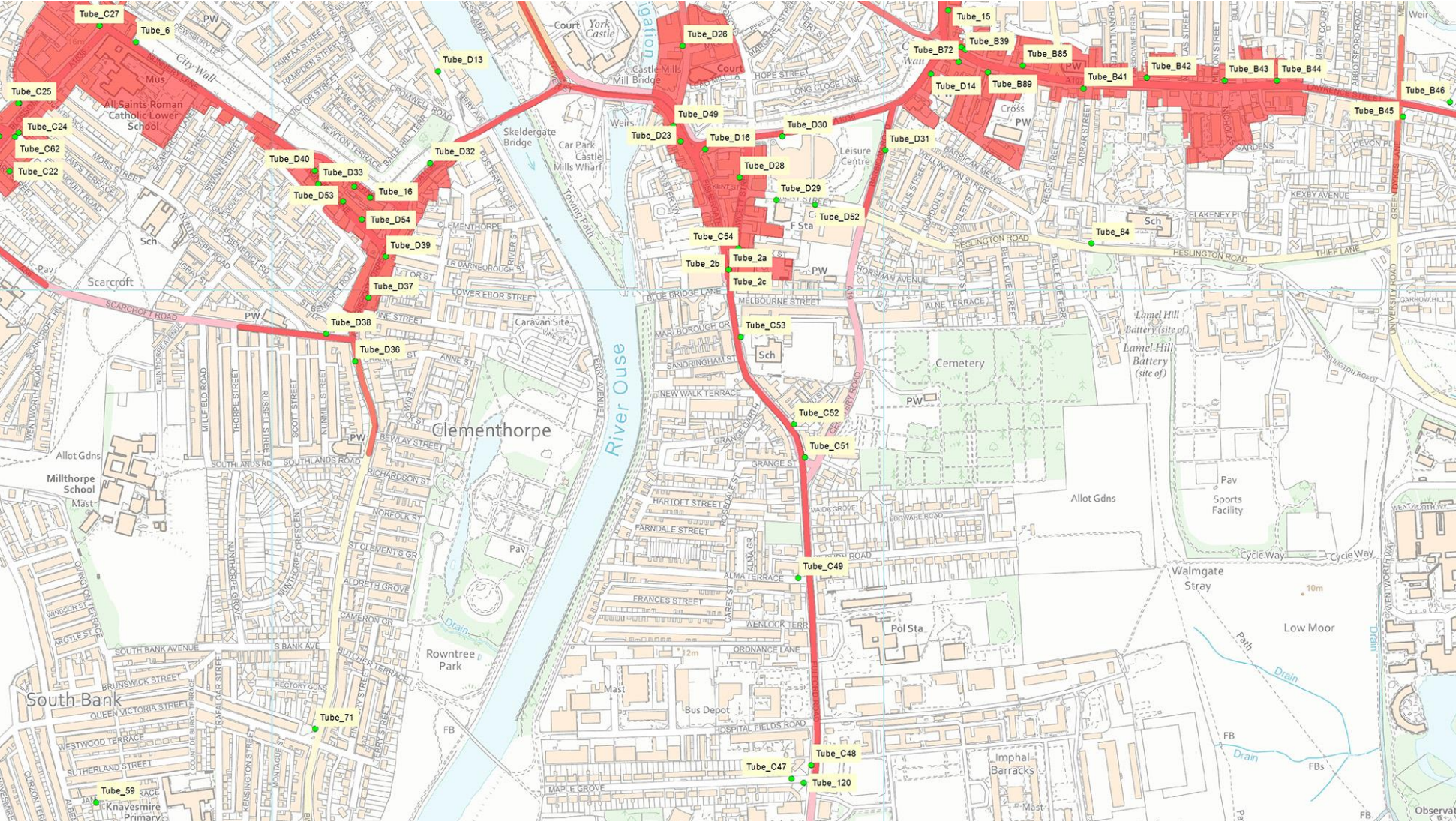
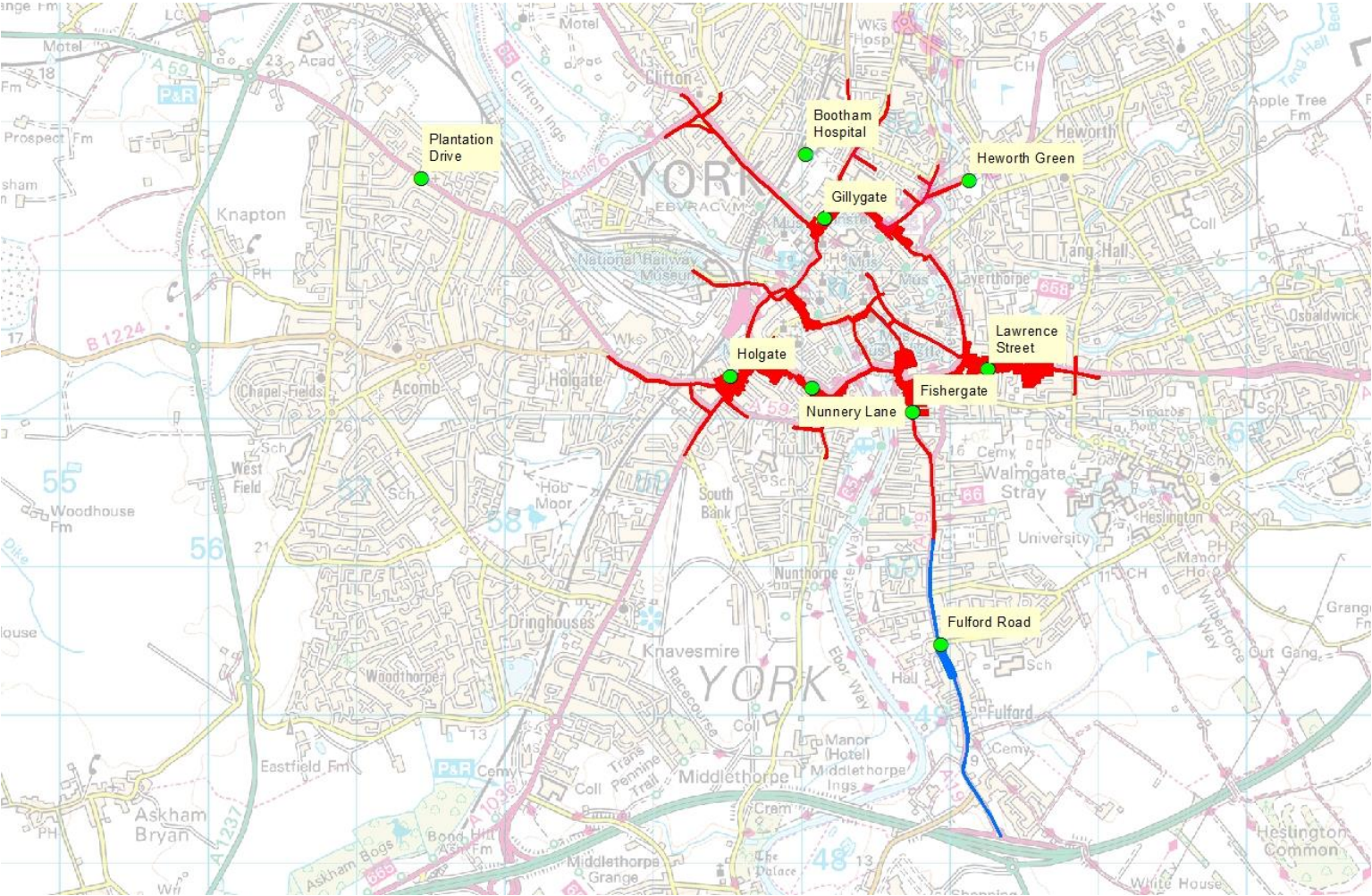


Figure D.2 – Map of Automatic Monitoring Sites in relation to AQMA

Air Quality Management Area (AQMA) shown in red. Note that the Fulford Road AQMA was revoked on 14/2/2020 and is shown in blue for information. Precise locations of automatic monitors are shown online at the [Air Quality England website](https://www.airqualityengland.co.uk/).



Appendix E: Summary of Air Quality Objectives in England

Table E.1 – Air Quality Objectives in England⁷

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

⁷ The units are in microgrammes of pollutant per cubic metre of air (µg/m³).

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
- All City of York Council's previous LAQM Review and Assessment reports can be found on [City of York Council's website](#)