Gravesham Borough Council

2022 Annual Status Report

July 2022

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Document Control Sheet

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	Name	Job Title	Signature
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Gravesham Borough Council

2022 Air Quality Annual Status Report (ASR)

In fulfilment of Part IV of the Environment Act 1995

Local Air Quality Management

Date: June, 2022

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Executive Summary: Air Quality in Our Area

Air Quality in Gravesham Borough Council

Air pollution is associated with a number of adverse health impacts. It is recognised as a contributing factor in the onset of heart disease and cancer. Additionally, air pollution particularly affects the most vulnerable in society: children, 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 ages[3], with a total estimated healthcare cost to the NHS and social care of £157 million in 2017[4].

Gravesham Borough Council has two automatic monitoring stations located in AQMA No.1 (A2 Trunk Road) and No.2 (adjacent to the Northfleet Industrial Area AQMA). Both automatic monitors demonstrate long-term compliance with the air quality standard (AQS) objective for Nitrogen Dioxide (NO_2), with regards to annual mean and 1 – hourly exceedance objectives. Particulate Matter (PM_{10}) also shows long term compliance, regarding the annual mean and the 24 – hour mean PM_{10} AQS objectives (i.e., the principal pollutants of concern for air quality).

During 2021, all passive monitoring locations, except five were compliant with the NO_2 AQS objective, thirty-seven sites reported increases from 2020, with the remaining twenty-four sites reporting decreases. The increase in NO_2 concentrations from 2020 at 56% of sites, is likely due to the impact of the COVID-19 pandemic, whereby the UK Government enforced lockdowns and advised home working where possible. As such, traffic levels decreased, as did NO_2 concentrations. 2021 did not experience a near full year of government lockdown and therefore was subject to increased levels of traffic volumes from 2020. There were five

[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

reported exceedances of the annual mean NO_2 AQS objective of 40µg/m^3 within Gravesham. These sites include GR13, GR24, GR47, GR119 and GR142 all situated on the one way system in Gravesend. Sites GR13, GR24, GR47 and GR119 were not exceeding the AQS objective in 2020, however the year 2020 was subject to decreased traffic volumes due to the COVID – 19 pandemic. Therefore within 2021, the exceedances of the AQS objective reported at these sites is representative of pre pandemic NO_2 concentrations.

The National Highways (NH) has responsibility for the management of the A2 Trunk Road and as such is responsible for any direct actions proposed for the AQMA along the A2 Trunk Road in Gravesham.

Kent County Council (KCC), as the local transport authority, is responsible for the management of the local road network and as such is responsible for any direct actions proposed for the AQMAs in the town centre in order to reduce road traffic emissions. Gravesham Borough Council works together with Kent County Highways to improve air quality within these AQMAs and throughout the Borough.

Gravesham Borough Council is continuing to review their declared AQMAs to ascertain whether any significant improvements to pollution levels have been made to allow for boundary adjustment or removal. A detailed modelling assessment has been commissioned to review the current AQMA boundaries and emission sources contributing to the exceedances. The outcomes of the detailed assessment will inform an update to the now outdated existing AQAPs which were published in 2004 and 2006.

The Council will revoke the AQMA declarations for nitrogen dioxide when possible following a suitable sustained reduction in levels however it wishes to keep the Northfleet Industrial Area AQMA declaration for windblown particulate matter (PM_{10}) in place in order to ensure PM_{10} concentrations are continually monitored. Also, that measures are implemented and maintained to ensure that the construction phases of the significant level of mixed use development in the AQMA, which is planned to take place over at least the next decade, does not cause an increase in PM_{10} levels.

Actions to Improve Air Quality

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

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

The declaration of the existing AQMAs and the adoption of Action Plans and Strategies continue to enable the Council to make progress on improving air quality within the Borough, for residents and visitors. This has been achieved by working with partners, including Kent County Council, Kent County Highways, National Highways Agency, and the Environment Agency.

Whilst there has been significant progress with the measures in the existing action plans, leading to the revocation of three of the seven AQMAs in the borough, major additional work that has been undertaken to assess air quality includes:

- The development of a new AQAP that incorporates all AQMAs into one AQAP; and
- The implementation of the Climate Change Management Plan (CCMP)

Conclusions and Priorities

In 2021, there was five exceedances of any of the relevant NO_2 or PM_{10} AQS objectives at areas of relevant exposure. It is likely that the reduced traffic volumes during the COVID-19 pandemic has influenced the increase in concentrations at 56% of passive monitoring locations in 2021. The council will continue to use their passive monitoring network to determine whether AQMAs need amending or whether there are any new identifiable areas of concern. Gravesham Borough Council are focused on reducing annual mean NO_2

[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

concentrations via the implementation of currently identified measures, but to also through development of new measures as part of the AQAP update. The Council's priorities for the next reporting year are:

- To complete and implement the new AQAP
- To implement and continue to progress the Climate Change Management Plan 2022
- Continue working with partners in the Kent and Medway Air Quality Partnership (K&MAQP) to improve air quality throughout the area; and
- Continue reviewing the NO_2 passive monitoring network, in order to identify any areas which may require additional monitoring and to identify any potential areas of exceedances.

Gravesham Borough Council are currently in the process of developing a new AQAP to cover all four AQMAs. The existing AQAPs were published in 2004 and 2006 with most of the measures having been significantly progressed or completed and are therefore the AQAPs are considered to be out-of-date. It is the intention of the Council to review and update the existing AQMAs using the most up-to-date information and analysis and to present a combined AQAP to cover all of the declared AQMAs.

Local Engagement and How to get Involved

The main source of air pollution within Gravesham Borough Council is from road traffic emissions. Gravesham currently has local initiatives to inform and educate the public on local air quality, through a number of schemes:

- Pollution Patrol – is a website, which allows access to resources that will help you understand more about air pollution and its effects on your health and the environment. The pollution patrol was jointly financed by several councils and a Department for Environment, Food and Rural Affairs (DEFRA) grant. All schools in Gravesham with kids of the relevant age are being invited to use the website. This can be accessed via https://pollutionpatrol.org.uk/
- Social Media Campaign's
    - KentAir Week (Pollution Patrol was launched during KentAir Week in April drawn up as a tool for schools in Kent in addition to Care4Air which is available through KentAir)
    - Clean Air Day (UK's largest air pollution campaign, bringing together communities, businesses, schools, and the health sector)

Further to this, the following are suggested alternatives to private travel that would contribute to improving the air quality in the borough:

- Use public transport where available – This reduces the number of private vehicles in operation reducing pollutant concentration through the number of vehicles and reducing congestion;
- Walk or cycle if your journey allows – From choosing to walk or cycle for your journey the number of vehicles is reduced and also there is the added benefit of keeping fit and healthy;
- Car/lift sharing – Where a number of individuals are making similar journeys, such as travelling to work or to school car sharing reduces the number of vehicles on the road and therefore the amount of emissions being released. This can be promoted via travel plans through the workplace and within schools;
- Alternative fuel / more efficient vehicles – Choosing a vehicle that meets the specific needs of the owner, fully electric, hybrid fuel and more fuel-efficient cars are available, and all have different levels benefits by reducing the amount of emissions being released; and
- Home working – Choosing to work from home can help to alleviate congestion on the roads during peak times and therefore reduce the amount of emissions being released. The council have supported the staff in working from home with those now able to work from home only being required to work in the office a minimum of two days per week. With many of the council's staff having a long commute by car this has significantly reduced the commuting miles.
- Remote attendance of meetings – most of the council meetings are now attended remotely including those with colleagues off site. Leading to a further reduction in business miles.

Local Responsibilities and Commitment

This ASR was prepared by the Bureau Veritas on behalf of Gravesham Borough Council with the support and agreement of the following officers and departments:

- Planning and Regeneration Services
- Parking Services
- Parks and Open Spaces
- Communication Services
- Climate Change Officer Working Group

This ASR has been approved by:

This ASR has not been signed off by a Director of Public Health.

If you have any comments on this ASR please send them to Deborah Wilders at:

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1 Local Air Quality Management

This report provides an overview of air quality in Gravesham Borough Council during 2021. It fulfils the requirements of Local Air Quality Management (LAQM) as set out in Part IV of the Environment Act (1995) and the relevant Policy and Technical Guidance documents.

The LAQM process places an obligation on all local authorities to regularly review and assess air quality in their areas, and to determine whether or not the air quality objectives are likely to be achieved. Where an exceedance is considered likely the local authority must declare an Air Quality Management Area (AQMA) and prepare an Air Quality Action Plan (AQAP) setting out the measures it intends to put in place in pursuit of the objectives. This Annual Status Report (ASR) is an annual requirement showing the strategies employed by Gravesham Borough 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 Gravesham Borough Council can be found in Table 2.1. The table presents a description of the 4 AQMAs that are currently designated within Gravesham Borough Council. Appendix D: Maps of Monitoring Locations and AQMAs provides maps of AQMAs and also the air quality monitoring locations in relation to the AQMAs. The air quality objectives pertinent to the current AQMA designations are as follows:

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

Further information related to declared or revoked AQMAs, including maps of AQMA boundaries are available on UK-AIR.

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
A2 Trunk Road AQMA	Declared 2002, Amended 2012>	NO_2 Annual Mean PM_{10} 24 – Hour Mean	The A2 Trunk Road AQMA. An area extending either side of the length of the A2 within the borough	YES	50.5µg/m^3	41.1µg/m^3	Local Air Quality Management – Final Action Plan 2004	Visit the AQAP for the A2 Trunk Road AQMA
Northfleet Industrial Area AQMA	Declared 2005	PM_{10} Annual Mean	An area encompassing the Northfleet Industrial Area in Gravesham	NO	40.8µg/m^3	31.1µg/m^3	Local Air Quality Management – Final Action Plan 2004	Visit the AQAP for the Northfleet Industrial Area AQMA
A226 One-way system in Gravesend AQMA	Declared 2005	NO_2 Annual Mean	An area incorporating the entirety of the A226 One-way system in Gravesend	NO	57.4µg/m^3	37.4µg/m^3	Local Air Quality Management – Final Action Plan 2006	Visit the AQAP for the A226 One-way system in Gravesend AQMA
A227/B621 Wrotham Road/Old Road West Junction AQMA	Declared 2005	NO_2 Annual Mean	An area encompassing the junction of the A227 Wrotham Road and B261 Old Road West extending south to a point just beyond the Woodlands Restaurant	NO	47.3µg/m^3	33.7µg/m^3	Local Air Quality Management – Final Action Plan 2006	Visit the AQAP for the A227/B261 Wrotham Road/Old Road West Junction AQMA

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

☒ **Gravesham Borough Council confirm that all current AQAPs have been submitted to Defra.**

2.2 Progress and Impact of Measures to address Air Quality in Gravesham Borough Council

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

1. *"Table 2.1 does not indicate that the A2 Trunk Road AQMA is additionally declared for 24-hour mean PM_{10} concentrations.*
2. *Trend graphs for annual mean NO_2 have been provided for all AQMAs, in addition to a graph depicting trends in concentrations outside of designate AQMAs. Detailed supporting discussion is also provided, which is commended and demonstrates a robust understanding of air quality within the borough, in addition to adhering with good practice.*
3. *Appendix F: Impact of COVID-19 upon LAQM has been completed in detail, and clearly outlines the opportunities and challenges faced by the Council as a result of the pandemic.*
4. *Whilst a significant decline in concentrations has been identified in Gravesham during 2020, it is important to note that this decline is likely attributable to reduced traffic flows as a result of national lockdowns during the COVID-19 pandemic. It is therefore important that monitoring data for 2020 be interpreted with caution. Moreover, NO_2 concentrations recorded during 2020 should not be used in isolation to determine the success of any existing AQAP measures, nor should they solely be used as grounds for progressing amendments to existing AQMAs or justifications ceasing of interventions. This is acknowledged by GBC.*
5. *All the relevant sections of the Action Plan Measures table have been completed where possible, and with substantial detail. This is commended and encouraged to continue in future reports.*
6. *The development of a revised AQAP has been identified by the Council as a priority action for the coming year. This is supported given the current AQAPs were published in 2004 and 2006, and are therefore significantly out of date. A progress update on the new AQAP is therefore expected in the Council's next ASR. When available, the Council are encouraged to provide a draft list of actions for inclusion in the updated AQAP within their ASR until the new AQAP is adopted."*

The first comment in the appraisal which refers to failure in the ASR 2021 Table 2.1 to indicate that the A2 Trunk Road AQMA is additionally declared for 24 - hour mean PM_{10} concentrations related to an incorrect entry on Defra's records that the additional declaration had been made. A copy of the AQMA order was provided to Defra to evidence the declaration being only for the annual mean PM10 concentrations and the record was corrected.

Gravesham Borough 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. Thirty measures are included within Table 2.2, with the type of measure and the progress Gravesham Borough 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, which can be accessed via KentAir. Key measures progressed in 2021 are:

- The completion of the HGV rerouting within the Gravesend City Centre AQMA and road infrastructure for Rathmore Link Road; and
- The FastTrack service has now been in operation for 17 years, with the number of customers surpassing all predictions;

Gravesham Borough Council expects the following measures to be completed over the course of the next reporting year:

- Update of the current AQAP measures and plan, by developing a new AQAP to include all four AQMAs.
- Encouragement to not drive in to work on Clean Air Day, and to use alternative methods of getting to work.

Longer term actions Gravesham Borough Council that are currently ongoing include:

- Developing emissions standards for council fleet and public, via FastTrack buses. The Thameside Fastrack routes will include 28 single decker electric buses in April 2023.
- Significant roll out of green buses will happen in April 2023 with the introduction of electric buses, for the FastTrack bus route within Gravesend.

Whilst the measures stated above and in Table 2.2 will help to contribute towards compliance, Gravesham Borough Council anticipates that further additional measures not yet prescribed, to further achieve compliance. The development of the new AQAP will provide direct and general measures to improve air quality for all four AQMAs across the borough.

Table 2.2 – Progress on Measures to Improve Air Quality

Measure No.	Measure	Category	Classification	Year Measure Introduced	Estimated / Actual Completion Year	Organisations Involved	Funding Source	Defra AQ Grant Funding	Funding Status	Estimated Cost of Measure	Measure Status	Reduction in Pollutant / Emission from Measure	Key Performance Indicator	Progress to Date	Comments / Barriers to Implementation
Measures 1 and 4	Traffic Rerouting using Variable Message Signage (VMS) AND Traffic Management (UTMC and junction improvements) (A226 One way system Gravesend AQMA)	Traffic Management	UTC, Congestion management, traffic reduction	2012	On-going	Kent County Council/Gravesham Borough Council	Kent County Council/ Gravesham Borough Council	NO	Fully funded	-	Implementation	Expected air quality improvement by 0.2µg/m^3 in AQMA	Reduction in journey time, reduction in congestion	Traffic Rerouting using Variable Message Signage (VMS) scheme has been incorporated into the Urban Traffic Management System (UTMC) and junction improvements scheme. Interlinked with FastTrack Bus priority signal control system refurbished in 2015. This enables it to remain viable. Has reduced congestion in town centre one way system. Likely to be small improvement in levels. Further development will need funding to be secured by Kent County Council, ideally through development. The Fastrack route which uses a combination of designated lanes and shared roadway with preferential use of the junctions using traffic management etc. will pass through land under the planning control of the Ebbsfleet Development Corporation (EDC) rather than GBC. A route through Northfleet Embankment West is being investigated. It will also form part of a proposed Fastrack route C. Fastrack route B will be diverted over the new Springhead Park Bridge. This bridge is partially within the borough of Dartford. The bridge is due to open in spring 2020. Fastrack is likely to use this route from April 2020.	The two measures are intrinsically linked. These schemes are reviewed each time major development comes forward and are therefore reviewed on an on-going basis. Further development will need funding to be secured by Kent County Council, ideally through development although KCC have historically not asked for these contributions.
2	HGV rerouting - Gravesend Town Centre Road Network AQMA	Freight and Delivery Management	Route Management Plans/ Strategic routing strategy for HGV's	-	COMPLETED	Kent County Council National Highways	Kent County Council	NO	Fully funded	-	COMPLETED	Expected air quality improvement by at least 0.2µg/m^3 in AQMA	Reduction in journey time, reduction in congestion	West Street Bridge removed to allow HGVs to exit the one-way system and then access the Northfleet Industrial Area or Imperial Business Park without having to go all the way around the one-way system. Other schemes devised by KCC have not been developed however they will reassess if funding becomes available.	All routes highly congested therefore any rerouting will be of limited benefit. Sat Nav routes tend to be followed by drivers rather than signage showing preferred route i.e., via Thames Way A226 which takes HGVs from A2 to western industrial areas.

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
														Springhead Road –narrowing to the middle length of the road to discourage HGV traffic. HGVs still have access from northern end to Springhead Enterprise \Park and Sainsbury's from the southern end of the road. This narrowing has discouraged /prevented the use of the new Springhead Park Bridge from the estate to Ebbsfleet station area by HGVs. The knock on effects of significant holdups on the A2/M2 through Gravesham is that the traffic rat runs through the residential areas of the borough and town centre AQMA exacerbating the existing traffic congestion. There is significant concern that the approx. 8 years of the construction of the Lower Thames Crossing east of the urban area will create a worsening of traffic congestion on the A2 and within the urban area when drivers try to avoid the holdups on the trunk road. However, the council is trying to negotiate with National Highways on how congestion can be reduced throughout the construction period. KCC and National Highways have undertaken reviews of HGV movements and a consultation in relation to the need for lorry parks and their locations particularly when there are delays at ports within Kent. Operation Brock is part of the product of this review, the implementation of which occurred in February 2019 as part of the Brexit preparations. The impact on the traffic on the A2 Trunk Road in Gravesham from Operations Stack and Brock in the future is unknown.	Both KCC and National Highways recognise there is an HGV parking issue within Kent which needs addressing and is currently examining the findings of the consultation.
3	New road infrastructure (Rathmore Link Road)	Transport Planning and Infrastructure	Public transport Improvements interchanges stations and services	2012	COMPLETED	Kent County Council	Kent County Council	NO	Fully funded	-	COMPLETED	Expected air quality improvement by at least 1µg/m^3 locally	Reduction in journey time, reduction in congestion	This scheme is one of the major strategic schemes in Kent Thameside Home and Roads programme	These phases have transport interchange to be taken forward. This has significantly improved public transport access.

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
														which are funded from various government sources and developer contributions Phase 1 and 2 now completed . Allows two-way traffic to pass south of the railway station thus removing it from the north of the station to improve pedestrian access to public transport and shopping centre. Has benefitted air quality by removing the route of the one-way system to a purpose-built road south of the station. Has delivered medium improvement in levels in some areas, and a slight increase in levels on the new route. KCC purchased land from Network Rail adjacent the railway station for new bus interchange which has now been completed. ANPR enforcement cameras are to be installed so as to prevent cars from using the bus lanes in the bus interchange.	AQ monitoring at key locations around the new Rathmore Road route have recorded an increase in NO_2 concentrations at some locations as expected however no additional exceedances of the objectives have occurred.
6	Improve emissions standards for Council Fleet and Public Service Vehicles	Promoting Low Emission Transport	Taxi Licensing conditions	-	On-going	Gravesham Borough Council / Transport operators	-	NO	Fully funded	-	Implementation	Expected air quality improvement by 0.2µg/m^3 in all AQMAs	Fleet vehicles replaced by later Euro standards	The council won a bid from central government to set up a new recycling scheme and the fleet was replaced with latest Euro standard vehicles. Local bus operator has introduced cleaner more efficient buses on some of its routes through the urban area, this was funded in part from a Local Transport Sustainability Fund. Arriva have implemented a discount arrangement for council employees who use the bus for their commute. The new Fastrack buses have lots of features for the customer to encourage use e.g., charging points, Wi-Fi, leather seats etc. A yearlong trial commenced in early 2022 of a virtually silent electric bus service on the Fastrack route between Gravesham and Dartford. This is the first stage in a roll out of green bus technology over the next two years on the Fastrack routes. The Zebra (Zero Emission Bus Regional Areas)	The council has also trialled various methods of improving fuel consumption of its fleet for example petrol additives and driver training. Taxis - The Council will keep this matter under review and continue to monitor published research, its air quality monitoring results and recommendations, and Government guidelines, etc. with a view to specifying more stringent vehicle emission standards and promoting cleaner fuels in respect of licensed vehicles at the time of the next policy revision, if considered appropriate at that time.

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														scheme bid, by KCC, to introduce a new fleet of electric buses in Gravesham and Dartford was successful and the funding will see 28 single decker fleet being introduced in April 2023. The new taxi policy requires that all new taxis are fully electric and from 2030 all taxis at renewal or on application for a new licence must be fully electric. All new taxis are fully electric and from 2030 all taxis at renewal or on application for a new licence must be fully electric. Emissions from taxis and PHVs can also be further reduced by encouraging better maintenance of vehicles and switching off engines when stationary or idling; particularly at taxi ranks; however, it is proposed that this aspect be tackled through education and promotion. Gravesham are taking part in a joint initiative with Medway and the Energy Savings Trusts (EST) to survey all taxi drivers to ascertain the level of knowledge and possibly take up of electric vehicles, what it would take to convert them and what infrastructure they would want and where to make it viable for them to use EVs. Gravesham are exploring opportunities for the provision of on and off street electric vehicle charging points for taxis/ private hire vehicles and implement such charging points where it is feasible to do so. This is being considered in relation to several new developments in the town centre and the transport interchange. Gravesham are taking part in the KCC Low Carbon Kent trial https://lowcarbonkent.com/kent-revs-van-trial/ and promoting it across the borough. Electric vans are being trialled, providing businesses with the opportunity to try an electric van. The aim is that organisation would see the	

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														benefits and ease of owning and running an EV van. There can be significant savings on petrol and diesel over the existing fleet which at today's high fuel costs can save significant sums for all sizes of business. Up to the end of April 13 companies include Gravesham have taken part in the trial. Gravesham also want to work with other businesses and service providers in the borough to support the provision of EV charging points within their own facilities.	
7	Road prioritisation (Bus priority)	Traffic Management	Strategic highway improvements, Re-prioritising road space away from cars, including access management, Selective vehicle priority, bus priority, high vehicle occupancy lane	2005 – FastTrack 2016 – North Embankment East route	COMPLETED	Kent County Council / GBC / Ebbsfleet Development Corporation	Kent County Council / GBC / Ebbsfleet Development Corporation	NO	Fully funded	-	COMPLETED	-	Improvements in journey time for public transport users	FastTrack service now in for 17 years – number of customers have surpassed all predictions. Has been reviewed regularly and, new Sapphire buses provided considered a success. Springhead bridge between Northfleet and Ebbsfleet station has been completed which enables Fastrack to go through Springhead to Ebbsfleet station direct saving a considerable time on the journey and avoiding residential streets. Fastrack is considered to be an integral and essential part of regeneration of the area.	
8	Public transport improvements	Transport Planning and Infrastructure	Public transport Improvements - interchanges stations and services	-	On-going	Kent County Council / Public transport operators / EDC / GBC	Kent County Council	NO	Fully funded	-	Implementation	-	Reduction in car use and congestion	A dedicated bus route for Fastrack has been created between Gravesend Town Centre, Ebbsfleet International Station along Thames Way, Bluewater, and Dartford. A significant roll out of green buses will happen in April 2023 with the introduction of electric buses. Kent County Council have won funding to add 28 electric buses to the current high specification buses with electric buses. Across the whole of the Kent Thameside in Gravesham and Dartford a yearlong trial will be done with ultra-quiet electric buses as part of a whole Kent Scheme. The Thameside Fastrack routes will include 28 single decker buses in April 2023. The funding has been awarded by the ZEBRA scheme. This	Northfleet Embankment Bulk Aggregate Import Terminal (BAIT) and the Mixed-Use Development (MUD) proposals have planning permission, to outline stage and both sites have been designed to include a predominantly dedicated bus corridor for potential future use. Work ongoing on developing and expanding the Fastrack system.

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														follows an earlier trial in Kent with two electric buses in Kent in 2018. A further bus route will be protected in the future as part of the redevelopment of Northfleet Embankment proposals. Details of Ebbsfleet Valley development will include a dedicated Fastrack Route. In 2015 a new fleet of FastTrack buses were introduced. They are the latest euro standard. The council has negotiated a discount for staff commuting to work on an Arriva bus. The operator - Arriva - has also improved the whole of their fleet on other routes. The council has negotiated a discount for all of GBC staff that use the Arriva buses to commute to work. Rathmore Road improvements were completed in late 2017 which enabled the transport interchange to go ahead and be completed in 2021. Crossrail being considered for extension to Ebbsfleet. Many of Gravesend trains stop at Ebbsfleet thus allowing easy access to trains to Heathrow and the Western routes. The river bus/ferry routes to Essex and London – the pontoon installed in vicinity of town centre to enable ferry services. New routes and services to London have started i.e., 55 minutes each way to Greenwich Peninsula and 75mins each way to London Bridge. Currently costing £20.50 per return trip. For £26.00 an all-day ticket permits the holder to make unlimited journeys on any of Uba's River Bus services between Greenwich and Battersea Power Station as well as the trip up from Gravesend.	

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														The ferry to/from Tilbury from pontoon Gravesend recommenced in 2021 and is running 6 days a week throughout year from 5.40am to 19.10pm. During ferry hours a bus service operates from Tilbury landing stage to Tilbury town centre. Then Gravesend pontoon is a short walk to the shopping centre. The ferry enhancement to Essex has been explored to make use of labour market for Ebbsfleet developments and South Essex without need to use Dartford Crossing. A new Cycle hub has been established at the redeveloped railway station to accommodate the HS1 trains. Cycle route from station to Cyclopark (south of urban area) being developed. There has been a significant drop in passengers since the beginning of lockdown No.1 due to covid19 restrictions. Gravesham have been working with Kent County Council to bring the Mobility as a Service project (MaaS) to residents in the borough (including the Electric Vehicle car club) as an alternative to car ownership. Assistance has been given to KCC on the development of a specification for awarding a contract for an “Electric Car Club” as part of the MaaS project Gravesham have been working with key partners to progress the delivery of the new Fastrack bus lane proposed to be installed alongside the taxi rank and feeder lane in the town centre, which supports a reduction in vehicle emissions.	
9	Car parking strategy	Alternatives to private vehicle use	Bus based Park & Ride	-	On-going	Gravesham Borough Council	-	NO	Fully funded	-	Implementation	-	Reduction in car use and congestion	The objectives of the car parking strategy are to have a sufficient supply of well-located safe and clean car parking spaces and to take into account any development opportunities	Any rise in parking fees could encourage the customers to go to Bluewater and other regional shopping centres and retail parks

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														for housing and or regeneration of the town centre. The Parking Manager responsible for devising new strategy which will depend on development and the location of parking allocations. Baseline work to inform the work on the new strategy has been completed. There is a distinction between the operational car parking strategy and the Local Plan long term parking provision or what happens to current car parks. Currently car parks are on all sides of town centre including the north between town and river. Planning policy will be encouraged parking to be moved from northern side so as to avoid need to drive around the one-way system to find a car parking space i.e., will improve access and reduce traffic in the one-way system AQMA. Town Centre CPZ Consultation was completed May 2019. Zoned permit parking has been introduced in the borough. Previously anyone with a permit could park anywhere one was required. This meant that those with a parking permit outside of the town centre could park in a resident's bay in the town centre to work or commute. Now a person receives the permit for a particular zone only. The objectives in the Parking Services Annual Report 2017/18 include: • maintaining the free flow of traffic across the borough through enforcement of parking restrictions. • Effectively manage and maintain on-street and off-street parking spaces throughout the borough. • Working with the Highway Authority (Kent County	that all offer free parking. Council needs to encourage shoppers and businesses to the town; affordable and competitive parking tariffs is part of the attraction.

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														• Council), ensure that bus stops are located in the most convenient locations and are enforced efficiently. • Maintain the on-street parking signs and lines and repaint or replace any missing signs/lines. The town centre Controlled Parking Zone CPZ parking review was completed in 2019 and was implemented in 2020. The rural CPZ review was completed in 2021. The CPZs will better manage the available kerb side parking and reduce congestion. The Parking Team have been considering potential permit schemes linked to carbon emissions and a report will be presented to Management Team in the future. The provision of parking for electric vehicles will also be included in any future Strategy. Provision of four EV charging points has been completed at two car parks (2 at Parrock Street and 2 at Milton Place) and an additional ten charging points will be delivered in Parrock Street under the same contract. Gravesham will continue to explore opportunities for the provision of electric vehicle charging points within GBC-owned assets and implement actions where a sound business case can be provided. Further procurement has taken place through the	

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														Kent600 project using OZEV / ORCS funding. Connected Kerb are taking forward the sites identified as suitable for installation of EV chargers (total of 8 sites providing 33 bays) Several large planning permissions have been granted in the town centre to regenerate the town in terms of new housing close to employment and to local amenities to reduce car travel into town and to regenerate commercial areas. Whilst these developments remove old open car parks they bring new parking opportunities with mandatory electric vehicle charging which would be prohibitive in the old set ups. Work on the planning policy for car parking and partnership working with the county is on-going. When development is settled within the town centre .i.e., applications are permitted and or permitted development comes forward the success of the parking strategy will be apparent and adapted going forwards. Media releases/briefings re implementation of key measures (e.g., installation of EV charging points in council-owned car parks).	
10	The Council's Travel Plan measures	Alternatives to private vehicle use Promoting Travel Alternatives	Car & lift sharing schemes Encouraging homeworking	-	On-going	Gravesham Borough Council	-	NO	Fully funded	-	Implementation	-	% modal shift to car share/public transport/walking /cycling	Current Plan adopted in February 2007. Car sharing promoted and a reduction in car business mileage. As part of the climate change review this matter will be considered and a new travel plan/way of working introduced. The council's HR service held a "Let's Talk Travel" event, in partnership with Kent County	

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														Council, to ask people to consider how they get to work and to rethink their commute to improve the environment, congestion, and the quality of peoples work and lives." The number of business miles the council HGV fleet has recorded has decreased in most years through better management although better record keeping, and the introduction of a recycling collection has increased that figure. There has been a significant improvement in emissions from the council's commercial vehicle fleet due to replacement vehicles to Euro 5 this is despite doing more miles due to their being a recycling service/collection. The introduction of the new recycling scheme has increased the mileage of the council's HGV fleet significantly. Although the tailpipe emissions of each vehicle have been identified as being reduced by a considerable percentage on previous fleet emissions the increase in mileage is likely to have negated any reduction in total emissions from the fleet. Discount on purchasing of cycles for staff Lockers now provided for cyclists and a shower. Cycle parking has been provided in the Civic Centre's basement car park. Encouragement to not drive in to work on Clean Air Day, and to test other methods of getting to work. The pandemic has resulted in most of office staff at desk-based jobs working in the office only 2 days per week and working from home for 3 days. This has cut commuting	

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														mileage down considerably as many staff live outside of the borough. Lockers and shower facilities have been provided for staff cycling in. More staff are choosing to cycle to avoid using public transport. This has given a fresh outlook to staff, with a better work life balance being considered. New senior management team at the council intend to encourage these changes in behaviour.	
11	Employer and School Travel Plans	Promoting Travel Alternatives	School Travel Plans, workplace travel Planning and encouraging homeworking	-	On-going	KCC / Gravesham Borough Council	-	NO	Fully funded	-	Implementation	-	No. of travel plans in place	KCC achieved nearly 100% success with school travel plans. On-going - Travel Plans for developments and for Academy Schools still required by the planning process when appropriate. The planning process continues to require travel plans for all large developments and is part of standard S106 agreements. Environmental Health, Parking Services and Public Health teams worked together on Clean Air Day with two schools encompassing Smoke Freedom, Idling of engines and illegal parking outside schools. An Idling of engines campaigns with a local school was started but lockdown prevented it being followed through. Ongoing restrictions relating to Covid will mean that this will not be taken forward until such time as it is considered appropriate.	Employee and School journeys create significant peak in traffic for short period. KCC's school travel plans officer post was removed once during cuts following on the success of 100% of schools in the borough implementing school travel plans. Therefore, it is understood that KCC no longer require travel plans for schools etc. due to a lack of staff to work with the schools.
12	Improve the facilities for cycling and walking	Transport Planning and Infrastructure	Cycle network and other	-	Various and ongoing	KCC / Gravesham Borough Council	-	NO	Fully funded	-	Implementation	-	%modal shift to cycling/walking On-going No. miles new cycle lanes/routes	GBC has carried out work on a cycling strategy. Working with Kent County Council to implement and publicise cycle lanes in appropriate locations across the borough. The Council has just invited tenders for the production of a draft Gravesham Cycling and Walking Infrastructure Plan.	The new transport interchange will make using the trains and buses easier and safer for the public. Delays have been caused by the pandemic.

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														The Cycle Hub at the railway station has been completed as part of the Council's plan for the Transport Quarter redevelopment. It includes cycle parking and will include a cycle shop and maintenance. Staff are offered discounts to buy cycles for work and have access to lockers and shower if they cycle to work and secure cycle parking in the basement Cycling routes are being improved and new ones brought forward e.g., Station to Cyclopark. Ebbsfleet Development Corporation are requiring developments to enable cycling routes around the Northfleet embankment area. Walking routes along riverside will be required within all new developments along Northfleet embankment and the Canal Basin area which have been dominated by industry to date with no access to the public. This will create riverside walks for people to enjoy. Natural England has formally published the coastal path route around Kent as part of their work around the country's coast. Cycle paths and provision of cycles and cycle racks continues to be sought in planning approvals. Regeneration in the borough including relocation of the trunk road in 2009 has afforded significant improvements in cycle ways. Regeneration in the borough facilitates significant improvements in cycle ways. Through the pre-application advice service, encourage applicants to submit policy compliant schemes which minimise the impacts of new development on the environment	

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														Gravesham intend to implement planning policy to ensure adequate consideration is given to the impacts on the environment of new development (residential and commercial). Ensuring that such developments support sustainable living and transport infrastructure and solutions for cycling, walking and low/zero-emission vehicles.	
13	Environmental and Public Health Services will continue to work closely with the Planning and Regeneration Services to ensure that air quality is taken into account in the planning process	Policy Guidance and Development Control	Air Quality Planning and Policy Guidance	-	On-going	Gravesham Borough Council	-	NO	Fully funded	-	Implementation	-	No. planning applications consulted on for air quality conditions/assessments	Regular meetings between Planning Officers and Regulatory Services. Development Team Approach (DTA) set up for each development as necessary so meetings with applicant and their consultants commence prior to application being submitted. Pre-App (Pre application) applications are encouraged by Planning Services so that issues are worked on before the application is submitted formally. Number of planning applications consulted on for Air Quality remains steady at between 800 to 850 /year. Currently being consulted on all routine planning applications including large developments e.g. The Charter which is now permitted as well as many major infrastructure projects including the following: • Lower Thames Crossing • Tilbury3 • A2 Junctions • Tilbury Energy Centre We request financial contributions towards ensuring the continuation of air quality monitoring in the locality of the development using S106 agreements. Air Quality conditions applied to all relevant planning decisions. Planning permissions refused when necessary to prevent the	The planning process is the strongest tool we have to implement air quality actions resulting in an effective improvement in AQ - therefore it is considered that the planning process's impact on air quality is significant to medium in that it helps prevent worsening of air quality and often allows new development that has lower emissions to replace more polluting development e.g., industrial uses. Air Quality Planning Guidance published by Kent and Medway Air Quality Partnership has raised issues with regards to whether the emphasis on Air Quality impact Assessments needs to change to emissions reductions and damage costs. No up-to-date Kent Air Quality Planning Guidance.

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														impact affecting public health significantly. Improvements have been significant enough for the council to be able to revoke, with Defra's permission, three AQMAs declared for NO2 from urban traffic. A fourth AQMA is no longer in exceedance however, with 25 years plus of development to take place within the area, the decision remains to maintain the declaration in order to influence the mitigation measures and type of design in the new developments etc. Gravesham intend to implement planning policy to ensure adequate consideration is given to the impacts on the environment of new development (residential and commercial). Ensuring that such developments support sustainable living and transport infrastructure and solutions for cycling, walking and low/zero-emission vehicles. Gravesham support residents, through the planning process, where it is possible to do so, in the introduction of domestic electric vehicle charging points in individual properties. There are permitted development rights that enable the installation of a wall mounted electrical outlet or an upstand with an electrical outlet mounted on it for recharging of electric vehicles without planning permission. Through Planning Services, the council will ensure, in its formal consultee role, that all planning applications and applications for Development Consent Orders, have due consideration to air quality, climate change mitigation and adaption such as EV charging points, traffic management considerations etc	
14	Improve sustainable	Transport Planning and Infrastructure	Public transport Improvements interchanges	-	On-going	Gravesham Borough Council	-	NO	Fully funded	-	Implementation	-	No. planning applications where improvements secured	On-going – included in Planning Policy CS12.	The Ebbsfleet Development Corporation (EDC)

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	transport links serving new developments.		stations and services											However, implementation is complex as KCC is the transport authority and the Master Plan for the regeneration of the brown field sites on the Parts of Northfleet Embankment East have changed from residential to industrial and back to residential over the last 10 years which has prevented any confidence in what the long-term plan will be. Dependent on development scale however discussions have gone ahead with Arriva. The plans for the regeneration area will include FastTrack as well as Arriva bus routes. Fastrack is so successful that consideration in all new planning applications for large developments with new buses coming forward with better euro standards. A yearlong trial commenced in early 2022 of a virtually silent electric bus service on the Fastrack route between Gravesham and Dartford. This is the first stage in a roll out of green bus technology over the next two years on the Fastrack routes. These routes will be amended to include the new developments on the Northfleet Embankment as they are developed. If the development is on an existing route, then a bus stop will be installed. New development is required to do highway improvements e.g., junction lights, new lanes etc to ensure the nearby junctions can cope with the development traffic. The proposed Lower Thames Crossing will be a three-lane motorway from the A2 Trunk Road east of Gravesend to M25 junction 29. This will introduce a new route for people to access southern Essex more easily and vice	Implementation Framework now exists. This includes the master plan for the regeneration of the western and eastern embankment areas as such it includes what sustainable transport links can be planned for and supported. GBC unfortunately now only a consultee in the planning process for many large scale developments in the brown field regeneration sites along the riverside Many of these large new developments have ability to improve or worsen AQ. The proposed LTC will introduce traffic into areas previously without any i.e., it will be a new source of air pollution.

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														versa and will avoid congestion at the Dartford Crossing.	
15	The development of supplementary planning guidance for air quality assessments of developments	Policy Guidance and Development Control	Air Quality Planning and Policy Guidance	-	On-going	Gravesham Borough Council / Kent and Medway Air Quality Partnership	-	NO	Fully funded	-	Implementation	-	Completion of a Supplementary Planning Document	The K&MAQ Partnership published the 2015 version of the air quality and planning guidance entitled, "Air Quality Planning Guidance" with two Options A and B relating to a borough wide approach or AQMA only. Due to the complex and lengthy situation with adoption of SPDs Gravesham were not able to adopt this document as an SPD but refer to the document as recommended good practice. The guidance was reviewed at which time the emphasis was changed away from air quality impact assessments – although these still have their place - with the intention of adding information on electric vehicle infrastructure, damage costs, emissions reduction etc. The new guidance was published in December 2015. and has emphasis on emissions reduction. Due to the poor formal adoption rate of the new document the Partnership ran a workshop for Planning Officer in Feb 2017. Gravesham's Planners attended and are keen that revised guidance is drawn up as they felt that the published document would soon need reviewing again. A reviewed version may fit GBC better. The K&MQP is referred to in planning applications made to Gravesham and consideration given to the contents as well as guidance provided by the Institute of AQ Management (IAQM). The ELES (Energy and Low Emission Strategy) that KCC are leading on with the support of the AQ Partnership is completed with county wide buy in.	K&M AQ Partnership working with KCC on new regional Energy and Low Emissions Strategy for councils to sign up to. This may introduce a stronger stance on emission from new developments. KCC are keen to champion ELES in Kent. K&M AQP no longer review the existing planning guidance leaving it up to each authority to do so if they wish to better suit their needs.

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														Gravesham Planning Services have consulted on detailed Development Management Policies. Gravesham Planning Services are keen to have policies that cover air quality such that it enables the restriction of in appropriate development, enables electric vehicle infrastructure to be installed and protects Gravesham residents against the impact of developments in neighbouring boroughs or in the area of the borough which comes under the Ebbsfleet Development Corporation.	
16	Develop a local air quality strategy	Policy Guidance and Development Control	Air Quality Planning and Policy Guidance	-	COMPLETION	Gravesham Borough Council	-	NO	Fully funded -	-	COMPLETION	-	Completion of air quality strategy	The finalised report was adopted by Cabinet in July 2006. The fifteen policies within the Strategy are being progressed details of which are included in this ASR report The review of this will be carried out in parallel with the two action plans commenced in early 2022	
17	Local air quality monitoring within the GBC Borough	Policy Guidance and Development Control	Air Quality Planning and Policy Guidance	-	On-going	Gravesham Borough Council / Kent and Medway Air Quality Partnership	-	YES	Fully funded	-	Implementation	-	No. monitoring sites % data capture	Gravesham's air quality monitoring network is comprehensive and has been in place since 1993 with two stations installed in 1998. Network of background and hotspot monitoring. Currently monitoring at two continuous air stations monitoring both PM10 an NO2, including collocation, three background locations and an increase to 71 sites to include areas around potential and existing development sites as well as including hotspots, along the edge of the A2 Trunk Road AQMA in the east of the corridor to help validate the model and around new development sites e.g. Rathmore Road link, locations along the A226 from Gravesend to Strood and near the houses in Thong Lane adjacent the new route of the Lower Thames Crossing. High data capture on diffusion tubes with less than 3 % of	

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														tubes missing at time of collection. Continuous data capture remains high (95%+) year on year. Monitoring data plays a large role in determining what planning comments and conditions are required for planning permissions contributing significantly to the improvement in air quality or preventing worsening of air quality across the borough. Passive monitoring in all AQMAs has seen a significant reduction in NO2 over the last 10 years resulting in the revocation of three AQMAs. The monitoring in these areas will remain to ensure the quality of the air continues to improve. Collocation tubes are sited at the two air stations in order for a local bias adjustment to be calculated. Additional passive monitoring has gone up in locations relevant to Lower Thames Crossing. Small amounts of money are requested through S106 agreements for contributions towards both passive and continuous monitoring of air quality.	
18	Make details of the Action Plan measures and annual progress reports GBC available on the Website to ensure broad access to the consultation and implementation process.	Public Information	Via the Internet	-	On-going	Gravesham Borough Council	-	NO	Fully funded	-	Implementation	-	Availability of recently published reports on the Website	Gravesham has a webpage for air quality with details of the air quality strategy, action plans and consultations on it with a link to KentAir where all of the council's reports are published as well as the monitoring data. Advice posted on website and available to any caller in person or by telephone/email The council's reports are published on KentAir and the continuous monitoring data is posted daily, and the diffusion tube data is regularly posted. The School Air Quality Toolkit – Care For Air – is available to teachers and parents through the KentAir website, financed by Kent County Public Health. The Pollution Patrol educational toolkit is available	

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														at https://pollutionpatrol.org.uk/	
19	Work together the Kent and Medway Air Quality Partnership GBC on promotional activities to raise the profile of air quality in Gravesham	Policy Guidance and Development Control	Regional Groups Coordinating programmes to develop Area wide Strategies to reduce emissions and improve air quality	-	On-going	Gravesham Borough Council	-	YES	Fully funded	-	Implementation	-	Promotional activities undertaken with the Partnership	Gravesham take an active role in the air quality partnership. The partnership carries out work with partners e.g., Kent County Public Health. The partnership also delivered, with the finance from Kent Public Health, a school's toolkit – Care For Air - relating to air quality and the co-benefits of exercise, cycling, walking etc. it is available through the KentAir Website www.kentair.org.uk Gravesham helped to fund, along with a Defra grant, the partnership creates a second educational toolkit called the Pollution Patrol which was launched during KentAir week in April 2022. https://pollutionpatrol.org.uk/ Social media and internal email campaign on Clean Air Day.	
20	Promote and implement energy efficiency measures	Policy Guidance and Development Control	Other policy	-	On-going	Gravesham Borough Council	-	NO	Fully funded	-	Implementation	-	% improvement in energy efficiency SAP rating	Gravesham is actively involved in giving advice, support, and funding for energy efficient schemes in the borough. PV panel installation to 1100 council homes continues to reduce the carbon emission. Emissions of CO2 continue to identify as being reduced by overall percentage on the council's own estates and operations. The Council has piloted new schemes to look into innovative technologies. In particular renewal energy, solar PV battery storage and also in house monitoring systems for energy use. The council also delivered measures to reduce carbon emission in the council's own estate and the private sector through insulation and heating programmes and reducing energy bills through a collective switching scheme. Gravesham has adopted reporting on the Home Energy	

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														Conservation as was required by BEIS. This will enable progress being monitored on all areas of energy efficiency work in Housing. All lights are now on sensors to ensure lights are not on in areas where no one is present. Programme in place for lighting replacement in own estates and also Housing stock. Emissions of CO2 continue to identify as being reduced by overall percentage on the council's own estates and operations. There is an emphasis on "green" issues with the council's properties service researching and trialling and implementing low energy schemes as well as giving consideration to whole of life, significant reduction in the use of plastics including an inhouse staff scheme. The council has a strong Climate Change Officer Working Group with senior management and councillor support. The Climate Change Action Plan has been adopted and due to the influence of the Environmental Protection Team the emphasis on the reduction of all emissions include those relating to LAQM i.e., the climate change actions cannot be at the expense of local air quality e.g. the introduction of biomass CHP etc. Active engagement in Phase Two of the Solar Together Scheme. Phase 1 had 25 registrations with 2 progressing to installation. However, 753 households in the Borough have registered during phase II; 723 for Solar PV, 30 for battery storage. Gravesham intend to actively engage with organisations such as the Greater Southeast	

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														Energy hub to bring forward initiatives intended to improve efficiency in domestic properties. There is also an intention that in line with the Communications Strategy, there will be regular updates to residents to assist them in reducing their own energy usage and renewable energy options. Gravesham work with businesses to identify funding opportunities to support improvements to energy efficiency within their business.	
21	The council will encourage the planting of trees which benefit air quality within the borough through the planning process, Gravesham's Open Space Strategy and green initiative partnerships.	Policy Guidance and Development Control	Other policy	-	On-going	Kent County Council/Gravesham Borough Council / Groundwork	-	NO	Fully funded	-	Implementation	-	No. of trees planted	Advice given on planting trees beneficial for air quality to developers and to other council services on a regular basis. Tree and other green planting schemes are expected on major developments including highways schemes e.g., Lower Thames Crossing. Lower Thames Crossing is keen to plant trees to help ensure the mental wellbeing of the local residents. Gravesham's own horticultural services. Have planted a total of 8201 trees since 2014 with 3209 of them being planted in 2022 to date. The benefit to air quality is small but it is aesthetically important.	
22	Provide advice to the public and pursue an advocacy role to assist in minimising the effects of poor air quality in public buildings.	Policy Guidance and Development Control	Air Quality Planning and Policy Guidance	-	On-going	Kent County Council/Gravesham Borough Council	-	NO	Fully funded	-	Implementation	-	Number utilising the service	Advice is posted on the website and available to any caller in person or by telephone/email. Customers directed to the purpose built KentAir website for up-to-date air quality matters, health guidance, and reports for all councils in Kent as well as the Care4Air education toolkit Review of the KentAir website content is regularly carried out to provide more user friendly and focussed.	

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														Members of the public often contact the council to find out what the air quality is like at their address. Advice is always given, and also passive monitoring installed for a short period to offer reassurance to residents that the air quality is not in exceedance in the locality in which they live. If, however, exceedances were to be found monitoring would continue although this has not occurred to date. The School Air Quality Toolkit – Care4Air – is available to teachers and parents through the KentAir website, financed by Kent County Public Health and available through KentAir. During January to March 2022 the Development of a 'Stay Safe, Shop Local' campaign using EU Welcome Back funding has bene used as an ongoing publicity tool in order to e and encourage people to reduce travel to shopping centres. Advice is given by engaging with local schools through various channels to promote and encourage awareness and measures. Schools being encouraged to sign up to national Eco Schools programme. Two schools have been approached. Advice is provided through the use of Your Borough and Your Home magazines to reach all residents with updates and educational material re council's efforts to lower emissions and how residents and businesses can contribute Media releases/briefings re implementation of key measures (e.g., installation of EV charging points in council-owned car parks).	
23	Adequate enforcement of on-street	Traffic Management	UTC,	-	On-going	Kent County	-	NO	Fully funded	-	Implementation	-	No. on street parking offences	Parking enforcement is carried out in in all congested areas in	There is always a balance needed between high car park

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	parking restrictions		Congestion management, traffic reduction			Council/Gravesham Borough Council / Groundwork								the urban area and Air Quality Management Areas. The one-way system remains the main area of focus in respect of ensuring parked cars that obstruct the traffic flow are moved on straight away. Parking Services attend regular meetings with County to ensure that the local perspective is put forward. The objectives in the Parking Services Annual Report 2017/18 include maintaining the free flow of traffic across the borough through enforcement of parking restrictions. The number of on street parking tickets issued are as follows: 19/20 was 18,822 20/21 was 13,139 21/22 was 16, 039.	charges to dissuade people bringing their cars into town and the need to encourage residents and visitors to come into the town to keep it vibrant.
24	Speed Regulation	Traffic Management	UTC, Congestion management, traffic reduction	-	COMPLETED	National Highways	Highways England	NO	Fully funded	-	Implementation	-	Improved journey times with improved traffic flows	Traffic management on the A2 Trunk Road was implemented despite the historical reluctance on the part of the Highways England however traffic growth has been significant, and the A2 Trunk Road at Gravesend is often queuing due to weight of traffic at peak times. The congestion caused by the Dartford Crossing can also impacts on the A2's congestion. The Lower Thames Crossing is of concern in terms of causing congestion during construction however the road itself should reduce congestion on the A2/M2 considerably. The council are involved in regular consultations on the scheme. Despite significant queues at peak times and severe congestion caused by the more frequent disruption at the Dartford Crossing, and sheer weight of traffic, the exceedances previously	The proposed Lower Thames Crossing is involving the council in discussions with Highways England on the route and speed of the traffic. HE intends to have it designated as 70 mph which is of concern to Gravesham as it is considered that a well-managed 50mph limit is safer and will cause less congestion due to lower numbers of accidents etc. The LTC is considered by Highways England to be a key way of reducing congestion at the Dartford River Crossing. LTC construction works are likely to create traffic issues on the A2/M2 for many years up tits opening year.

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
														experienced before the re-routing of the A2 Trunk Road have not returned however some houses remain in the area of marginal exceedance at Pepperhill and Marling Cross where the existing route of the A2 remains.	
25	Reduction in overall background levels	Policy Guidance and Development Control	Other policy	-	On-going	Central Government / Kent County Council / Gravesham Borough Council	-	NO	NA	-	Implementation	Air quality improvement by at least 1.8µg/m^3 at background monitoring sites since 2012. Concentrations have decreased further in 2020, however this is likely a resulting impact of the COVID-19 pandemic.	Decline in monitored NO2 concentrations at background sites	All background monitoring locations in Gravesham Borough Council have reported a decline in NO2 concentrations on a yearly basis. NO2 concentrations have declined by up to 5.5µg/m3 between 2012 and 2019 at background monitoring locations. Concentrations decreased further in 2020, however this was likely a resulting impact of the COVID-19 pandemic. PM10 background concentrations have remained relatively stable between 2012 and 2020 at the industrial background site. The following measures have been completed which are likely to have contributed significantly to the improvement in AQ: Minimise releases at Lafarge Cement UK Northfleet Works (PM10) Relocation of the Lafarge Cement UK Northfleet Works (PM10) Reduction in PM10 emissions from the combined impact of industrial processes in Northfleet due to improved technologies and or relocation	Improvements in the background levels throughout the Borough could be achieved, but the impact on NOx and PM10 emissions within the AQMA is likely to be small without National Policies. Socio-economic impacts: Tighter standards and controls could affect industry, businesses, and the public Dependent of the measures introduced. Tighter controls and fiscal measures are likely to be viewed negatively. Local measures such as through travel plans and quality partnerships are likely to be viewed more positively. Major infrastructure developments may well contribute to background levels in future even if they do not create an exceedance: • Tilbury2 & 3 • Tilbury Energy Centre • Lower Thames Crossing • A2 junctions • Lower Thames Crossing
29	Reduction in PM_{10} emissions from combined impact of	Environmental Permits	Other measure through permit	-	On-going	GBC, the Environment	-	NO	Fully funded -	-	Implementation	Level of PM_{10} below objective	Reduction in PM10 to below objective	Significant reduction in emissions to below objectives therefore measure has been completed but work carries on	Although the objective for PM10 has not been exceeded for 10 years in

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
	industrial processes in Northfleet		systems and economic instruments			Agency, the Local Business Partnership, local industries								ensuring the levels of PM10 are kept as low as possible.	the Northfleet Industrial AQMA the PM10 levels have increased slightly in the last four years, including the number of days of exceedance. Whilst the levels are still currently low following a significant improvement in PM10 levels in Northfleet. This is likely due to the introduction of new infrastructure developments along the river in Essex, an increase in open hold ships at the Cement Terminal as well as a significant amount of construction of mixed use development in the locality. The latter will be completed eventually however there is still to be a significant number of years of development to come. Gravesham is now only a Consultee on major development along its riverside as Ebbsfleet Development Corporation is now the Planning Authority.
30	Rail Freight Strategy	Freight and Delivery Management	Other	2012	On-going	Kent County Council/ Gravesham Borough Council	-	NO	Partially funded	-	Implementation	-	-	Rail use of Northfleet sidings has ceased after dealing with Crossrail spoil KCC have produced a Freight Action Plan for Kent – which includes Operation Stack, lorry routing, rail freight which sets out the vision to: “Promote safe and sustainable freight distribution networks into, out of and within Kent, which support local and national economic prosperity and quality of life, whilst working to address any negative impacts on local communities and the environment both now and in the future.” Although not relating to freight usage, the rail station redevelopment at Gravesham has rejuvenated the rail use in GBC especially with its access to HS1 and the new Cycle Hub, with bus interchange to come. It is hoped that the temporary influence of the pandemic will not impact the long term use of the passenger services	

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
														from the nearby towns which help to reduce the number of cars in the town.	

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.

Gravesham Borough Council is taking the following measures to address $PM_{2.5}$:

- Regulatory Services will continue to work closely with the Planning and Regeneration Services to ensure that air quality is taken into account in the planning process;
- Continue to improve emissions standards for Council Fleet and Public Service Vehicles;
- Further public transport improvements;
- Further improve the facilities for cycling and walking;
- Continue promoting Employer and School Travel Plans;
- Public information
- HGV rerouting; and
- Continued strict implementation of the Environmental Permitting Regime at minerals sites particularly with regards to cement etc.

The majority of the urban area in Gravesham, including Gravesend and Northfleet, are designated as Smoke Control Areas (SCAs). In these areas, only authorised and smokeless fuels are allowed to be burnt, unless being used in an exempt appliance. This helps control and reduce $PM_{2.5}$ emissions in these areas. Further information on these, including advice, can be found on Gravesham Borough Council's website.

The introduction of a new policy and procedure to implement the additional enforcement powers to tackle smoke control offences are to be publicised and implemented at Gravesham including the use of fixed penalty notices which will further help to reduce $PM_{2.5}$ emissions.

The introduction of a new policy and procedure for the early use of enforcement powers to reduce the number of bonfires in the residential areas of the borough including the use of

fixed penalty notices which also help control the $PM_{2.5}$ emissions from antisocial burning of waste.

The adoption of the Kent and Medway Energy and Low Emissions Strategy across Kent will help to reduce emissions over the coming years of $PM_{2.5}$, PM_{10} and NO_2, as well as emissions of greenhouse gases such as CO_2 and Methane. This has been published and implemented in 2020.

The current Defra background maps for Gravesham Borough Council (2018 reference year) show that all 2021 background concentrations of $PM_{2.5}$ are far below the recommended annual mean AQS objective for $PM_{2.5}$ of 25µg/m^3, with an average of 10.0µg/m^3. The highest concentration is predicted to be 12.5µg/m^3 within the 1km x 1km grid square with the centroid grid reference of 563500, 173500. This is largely a residential area within Gravesham located near Dover Road East.

The Department of Health's Public Health Outcomes Framework[7] has a number of public health indicators that are used for public health actions, to identify areas of health inequality and concern, and monitor the differences in health impacts across regions in the UK. This framework includes an indicator "D01- Fraction of Mortality Attributable to Particulate Air Pollution" which is calculated using background annual average $PM_{2.5}$ concentrations, modelled at a 1km^2 resolution based on measured concentrations from the AURN. Gravesham has a 6.8% fraction of mortality calculated for 2020, which is above both the average for England overall (5.6%), and the South East Region (6.0%). The 2020 data is presented as the 2021 dataset has not been made available at the time of writing, and is available via the Fingertips Public Health Outcomes Framework website.

Gravesham Borough Council does not undertake monitoring of $PM_{2.5}$ within its designation, however as per LAQM.TG(16)[8] Sections 7.107 to 7.111, $PM_{2.5}$ concentrations can be estimated from PM_{10} concentrations which are monitored by two automatic monitoring stations within Gravesham. Using the PM_{10} annual averages, the estimated $PM_{2.5}$ annual averages for both automatic monitoring sites in 2021 is as follows:

- ZG2 (A2 Roadside) – 11.2µg/m^3
- ZG3 (Northfleet Industrial Area) – 14.4 µg/m^3

[7] Public Health Outcomes Framework: D01- Fraction of Mortality Attributable to Particulate Air Pollution

[8] Local Air Quality Management Technical Guidance (TG16)

Both estimated $PM_{2.5}$ concentrations are well below the recommended $PM_{2.5}$ annual mean objective of 20µg/m^3.

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

This section sets out the monitoring undertaken within 2021 by Gravesham Borough 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

Gravesham Borough Council undertook automatic (continuous) monitoring at 2 sites during 2021. Table A.1 in Appendix A shows the details of the automatic monitoring sites. 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 KentAir website presents automatic monitoring results for Gravesham Borough 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.

3.1.2 Non-Automatic Monitoring Sites

Gravesham Borough Council undertook non- automatic (i.e., passive) monitoring of NO_2 at 66 sites during 2021, inclusive of 5 triplicate sites. Table A.2 in Appendix A presents the details of the non-automatic sites.

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

3.2 Individual Pollutants

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

3.2.1 Nitrogen Dioxide (NO_2)

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

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

Both automatic monitoring sites within Gravesham continue compliance to the AQS objective, additionally, neither of the automatic monitoring sites reported 1-hour concentration exceedances more than 18 times/year of 200µg/m^3.

For passive monitoring sites, 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.

During 2021, 37 sites reported an increase in NO_2 and 24 reported decreases in NO_2, there was five exceedances of the annual mean NO_2 AQS objective of 40µg/m^3, this was at GR13 (41.2µg/m^3), GR24 (40.0µg/m^3), GR47 (41.0µg/m^3), GR119 (41.7µg/m^3) and GR142 (41.1µg/m^3). The maximum concentration is reported at GR119, which is located outside of the A226 One Way System in Gravesend's AQMA. The remaining sites reported NO_2 concentrations below the AQS objective, and 2 monitoring locations reported annual mean concentrations with 10% of the AQS objective.

- GR31, within the A226 One-way System AQMA – 37.4µg/m^3
- GR40, within the A226 One-way System AQMA – 38.3µg/m^3

Figure A.1 – Figure A.4, displays NO_2 concentration trends for the last 5 years, there is a general trend of decrease in all passive monitoring locations until 2020 – 2021. An increase

in NO_2 concentrations has been reported at 37 passive monitoring sites from 2020 - 2021. This is likely due to the effect COVID – 19 pandemic had on traffic volumes across the UK, responsible for reduced concentrations in 2020, whereby 2021 monitoring was induced to pre-pandemic traffic volumes, therefore subject to increases in NO_2 concentrations. Therefore, there is currently no intention to revoke any AQMA designations.

Prior to 2021, the majority of monitoring locations within declared AQMAs had shown minor decreases over the past few years, especially those which had reported exceedances. The AQAP is due to be updated, where additional measures will be developed and introduced, intended to further bring all areas into compliance with the annual mean NO_2 AQS objective.

No passive monitoring sites reported an annual mean NO_2 concentration greater than 60µg/m^3 in 2021, therefore it can be assumed that there are no sites where there is likely to be a risk of exceeding the 1-hour mean NO_2 AQS objective, as per guidance provided in LAQM.TG(16).

3.2.2 Particulate Matter (PM_{10})

Table A.6 in Appendix A: Monitoring Results compares the ratified and adjusted monitored PM_{10} annual mean concentrations for the past five years with the air quality objective of 40µg/m^3.

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

Compliance of both the annual mean PM_{10} AQS objective (40µg/m^3) and 24-hour PM_{10} AQS objective (no more than 35 24-hourly concentrations greater than 50µg/m^3) has been achieved in 2021 at both automatic monitoring locations.

Over the last 5 years of annual PM_{10} monitoring, PM_{10} concentrations have remained stable at both the A2 Roadside and Industrial Background sites. Both sites underwent minimal changes from 2020 – 2021, with a slight reduction at the A2 Roadside site of 0.3µg/m^3, and 0.7µg/m^3 at the Industrial Background site.

The 24 – hour mean PM_{10} monitoring for 2021 shows no exceedances of the 50 µg/m^3 AQS objective, which continues the same trend over the last 5 years of monitoring.

Whilst compliance of the annual mean PM_{10} AQS objective has been maintained for over 5 years in the Northfleet Industrial Area AQMA, the Council does not wish to revoke this designation as there is a significant amount of development taking place, or due to take

place, within it. These include industrial and mixed-use developments, designation as an AQMA facilitates the requirement of additional mitigation measure in the planning process, particularly during the construction phase, so as to ensure that PM_{10} concentrations do not increase in coming years. The Council will look to revoke the AQMA once much of this development has been completed, and a better understanding of whether compliance will continue to be maintained.

3.2.3 Particulate Matter ($PM_{2.5}$)

Gravesham Borough Council does not undertake monitoring of $PM_{2.5}$ within its designation, however as per LAQM.TG(16) Sections 7.107 to 7.111, $PM_{2.5}$ concentrations can be estimated from PM_{10} concentrations. This uses a nationally derived correction ratio of 0.7, which has been calculated as the average of all ratios of $PM_{2.5}/PM_{10}$ reported for years 2010 to 2014 for 40 sites within the AURN where both PM_{10} and $PM_{2.5}$ are measured.

Using the PM_{10} annual averages, the estimated $PM_{2.5}$ annual averages for both continuous monitoring sites in 2021 is as follows:

- ZG2 (A2 Roadside) – 11.2µg/m^3
- ZG3 (Northfleet Industrial Area) – 14.4 µg/m^3

Both estimated $PM_{2.5}$ concentrations are well below the recommended $PM_{2.5}$ annual mean objective of 20µg/m^3.

Appendix A: Monitoring Results

Table A.1 – Details of Automatic Monitoring Sites

Site ID	Site Name	Site Type	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Pollutants Monitored	In AQMA? Which AQMA?	Monitoring Technique	Distance to Relevant Exposure (m) (1)	Distance to kerb of nearest road (m) (2)	Inlet Height (m)
ZG2	Gravesham A2 Roadside	Roadside	562589	172076	NO_2, PM_{10}	Y – AQMA A2 Trunk Road	Chemiluminescent BAM	0	72	3
ZG3	Gravesham Industrial Background	Industrial	562155	174360	NO_2, PM_{10}	Y – AQMA Northfleet Industrial Area	Chemiluminescent BAM	3.7	24	3

Notes:

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

(2) N/A if not applicable

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

Diffusion Tube ID	Site Name	Site Type	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Pollutants Monitored	In AQMA? Which AQMA?	Distance to Relevant Exposure (m) (1)	Distance to kerb of nearest road (m) (2)	Tube Co-located with a Continuous Analyser?	Tube Height (m)
GR08a, GR08b, GR08c	Painters Ash School Northfleet, Air Monitoring Station, Northfleet	Roadside	562589	172076	NO_2	Y – Gravesham A2 AQMA	0.0	72.0	Yes	3.0
GR13	88 West Street, Gravesend, Kent, DA11 0BX Pelican Crossing	Roadside	564696	174431	NO_2	Y – Gravesham A226 One Way System AQMA	0.1	2.0	No	2.9
GR19a, GR19b, GR19c	Lawn Primary School, Air Monitoring Station, Highstreet, Northfleet, DA11 9HB	Urban Background	562155	174360	NO_2	NO	3.7	20.0	No	2.0
GR24	28- 29 Milton Road (Lamp post),, Gravesend, Kent, DA12 2RF	Roadside	565128	174049	NO_2	Y – Gravesham A226 One Way System AQMA	0.2	2.2	No	2.5
GR31	32 Harmer Street GF (façade), Gravesend, DA12 2AX	Roadside	565052	174149	NO_2	Y – Gravesham A226 One Way System AQMA	0.0	2.0	No	2.7
GR39	19 Stone Street (Downpipe), Gravesend, DA12 1AP	Roadside	564730	174030	NO_2	Y – Gravesham A226 One Way System AQMA	0.1	2.0	No	2.5
GR40	Somerset Public House (sign post), 10 Darnley Road,	Roadside	564486	174095	NO_2	Y – Gravesham A226 One	0.1	1.5	No	2.5

Diffusion Tube ID	Site Name	Site Type	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Pollutants Monitored	In AQMA? Which AQMA?	Distance to Relevant Exposure (m) (1)	Distance to kerb of nearest road (m) (2)	Tube Co-located with a Continuous Analyser?	Tube Height (m)
	Gravesend, DA11 0RU					Way System AQMA				
GR45	Princes Street (Sign Post) (Opp Jury Street), Gravesend, Kent, DA11 0AA	Roadside	564708	174266	NO_2	NO	6.8	2.0	No	2.5
GR47	29- 31 Harmer Street (façade), Gravesend, DA12 2AP	Roadside	565043	174173	NO_2	Y – Gravesham A226 One Way System AQMA	0.0	2.0	No	2.5
GR52	32 The Hill (Lampost), Northfleet, DA11 9EX	Roadside	562449	174191	NO_2	NO	0.2	1.5	No	2.5
GR55	Butchers (façade) 140 Pelham Road, Gravesend	Roadside	563943	173378	NO_2	NO	0.0	2.5	No	2.7
GR56	Junies (façade), Parrock Road, Gravesend, DA12 1QF	Roadside	565210	172980	NO_2	NO	0.4	2.0	No	2.5
GR57	61 Old Road West (Hairdressers - façade), Gravesend, Kent, DA11 0LW	Roadside	564472	173158	NO_2	Y – Gravesham A227 Wrotham Road/Old Road West AQMA	0.3	2.2	No	2.0
GR58	The Venue (Lampost), Milton Road, Gravesend, DA12 2rf	Roadside	565166	174036	NO_2	Y – Gravesham A226 One Way System AQMA	0.0	3.0	No	2.7

Diffusion Tube ID	Site Name	Site Type	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Pollutants Monitored	In AQMA? Which AQMA?	Distance to Relevant Exposure (m) (1)	Distance to kerb of nearest road (m) (2)	Tube Co-located with a Continuous Analyser?	Tube Height (m)
GR59	44 Old Road West (Façade - Pharmacy), Gravesend, Kent, DA11 0LJ	Roadside	564530	173171	NO_2	Y – Gravesham A227 Wrotham Road/Old Road West AQMA	0.4	2.0	No	2.5
GR60	Bookmakers (Down Pipe), 188 Old Road West, Gravesend	Roadside	563899	173368	NO_2	NO	0.0	4.3	No	2.7
GR61	62 New Road (Pounce - Down Pipe), Gravesend, Kent, DA11 0AD	Roadside	564429	174152	NO_2	Y – Gravesham A226 One Way System AQMA	0.2	2.6	No	3.0
GR62	The Terrace (façade), Gravesend, DA12 2BB	Roadside	565004	174324	NO_2	Y – Gravesham A2 AQMA	0.0	4.0	No	2.8
GR66	Russell Quay (Lampost), West Street, Gravesend, DA11 0BE	Roadside	564512	174448	NO_2	NO	0.1	2.5	No	2.5
GR67	Echo Public House (Façade), Old Road East, Gravesend, DA12 1NR	Roadside	565214	172958	NO_2	NO	3.3	2.0	No	2.5
GR68	Opp The Old Prince of Orange (Lampost), Old Road West, Gravesend, DA12 1NG	Roadside	564808	173086	NO_2	NO	1.6	1.5	No	2.7

Diffusion Tube ID	Site Name	Site Type	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Pollutants Monitored	In AQMA? Which AQMA?	Distance to Relevant Exposure (m) (1)	Distance to kerb of nearest road (m) (2)	Tube Co-located with a Continuous Analyser?	Tube Height (m)
GR69a, GR69b, GR69c	Golf Driving Range (Fencing), Thong Lane, Gravesend, DA12 4LF	Urban Background	567270	171925	NO_2	NO		410.0	No	2.5
GR72a, GR72b, GR72c	Northfleet Cemetry (Post), Northfleet, DA11 8HW	Urban Background	562437	173175	NO_2	NO	41.0	157.0	No	2.8
GR75a, GR75b, GR75c	Gravesend Cemetery, Gravesend, DA11 7LY	Urban Background	564087	173080	NO_2	NO	79.0	110.0	No	2.0
GR78	Canal Tavern Public House, Canal Road, Gravesend, DA12 2RS	Roadside	565658	174195	NO_2	NO	0.2	1.8	No	2.5
GR92	1 Hall Road, Northfleet, Kent, DA11 8AW	Roadside	562323	172589	NO_2	Y – Gravesham A2 AQMA	0.0	7.9	No	1.5
GR94	Opp The George PH, Wrotham Road, Meopham, DA13 0AJ	Roadside	564392	166012	NO_2	NO	0.9	0.7	No	2.8
GR96	Parrock Street, Gravesend, DA12 1EZ	Roadside	564963	173717	NO_2	NO	2.0	1.7	No	2.3
GR98	The Leather Bottle PH, Dover Road, Northfleet, DA11 9PH	Roadside	562529	174049	NO_2	NO	0.0	2.0	No	2.8
GR104	8 Roman Road (Downpipe), Northfleet	Roadside	562465	172153	NO_2	Y – Gravesham A2 AQMA	0.0	8.7	No	2.6

Diffusion Tube ID	Site Name	Site Type	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Pollutants Monitored	In AQMA? Which AQMA?	Distance to Relevant Exposure (m) (1)	Distance to kerb of nearest road (m) (2)	Tube Co-located with a Continuous Analyser?	Tube Height (m)
GR107	46 Pepper Hill (Façade), Northfleet	Roadside	562272	172281	NO_2	Y – Gravesham A2 AQMA	0.0	8.5	No	2.0
GR109	30 Old Road East (Façade) DA11 8EP	Roadside	565229	172955	NO_2		0.0	7.3	No	1.6
GR110	Nells Café, Valley Drive, Gravesend	Roadside	566149	170436	NO_2	Y – Gravesham A2 AQMA	0.0	20.0	No	1.9
GR112	50 Stonebridge Road (Façade), Northfleet	Roadside	561502	174682	NO_2	NO	0.0	4.0	No	2.5
GR116	Saxon Close, Northfleet, Lamp post opposite No.38.	Roadside	562480	172225	NO_2	NO	7.5	1.0	No	2.7
GR118	40 Windmill Street, Gravesend DA12 1BA (Façade)	Roadside	564755	173862	NO_2	NO	0.0	9.0	No	2.4
GR119	Woodville Place (lamp post)	Roadside	564729	173824	NO_2	NO	0.0	2.0	No	2.5
GR122	King & Taylor 10-12 Wrotham Road (façade) DA11	Roadside	564667	173891	NO_2	NO	0.0	8.0	No	2.5
GR123	City Praise Centre Lower Higham Road, Gravesend, Kent, DA12 2LY	Roadside	566538	173109	NO_2	NO	0.0	9.0	No	2.0
GR124	Stonebridge Road Telegraph Post Opposite No.67	Roadside	561338	174925	NO_2	Y – Northfleet Industrial Area AQMA	1.5	4.7	No	2.6
GR125	Café Taj (Façade), 170 Parrack Street, Gravesend	Roadside	564877	173937	NO_2	Y – Gravesham A2 AQMA	0.0	4.9	No	2.4
GR127	17 Darnley Road	Roadside	564456	173979	NO_2		0.0	8.8	No	2.5

Diffusion Tube ID	Site Name	Site Type	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Pollutants Monitored	In AQMA? Which AQMA?	Distance to Relevant Exposure (m) (1)	Distance to kerb of nearest road (m) (2)	Tube Co-located with a Continuous Analyser?	Tube Height (m)
GR128	1a Railway Place (façade)	Roadside	564727	174002	NO_2	Y – Gravesham A226 One Way System AQMA	0.0	1.5	No	2.4
GR129	20 Stone Street (façade)	Roadside	564694	173969	NO_2	NO	0.0	2.6	No	2.5
GR130	6 Wrotham Road, The Hair Shop (Façade)	Roadside	564687	173934	NO_2	NO	0.0	5.2	No	2.2
GR131	7 Wrotham Road, Martin Tolhurst Solicitors (façade)	Roadside	564661	173940	NO_2	NO	2.2	34.4	No	1.8
GR133	23 Wrotham Road (façade)	Roadside	564657	173799	NO_2	NO	0.0	5.8	No	1.9
GR134	17 Wrotham Road (façade)	Roadside	564659	173831	NO_2	NO	0.0	5.8	No	2.0
GR135	25 Wrotham Road (lamp post adjacant to building)	Roadside	564657	173764	NO_2	NO	6.0	1.6	No	2.6
GR136	Woodville Place, Lamp Post opp 17 Wrotham Road	Roadside	564686	173828	NO_2	NO	0.2	1.8	No	2.7
GR137	Lamp post Opposite 2 Peartree Place, Gravesend Road	Roadside	570719	171143	NO_2	NO	6.0	2.1	No	0.7
GR138	Telegraph Post, Foxbury Manor, Old Watling Street, Rochester	Roadside	570583	169549	NO_2	Y – Gravesham A2 AQMA	6.1	32.0	No	1.8
GR139	Rosherville Way, Lampost near Compass Court	Roadside	563178	173976	NO_2	NO	14.1	4.3	No	2.3
GR140	Nuxley Toys, 13-14 Milton Road	Roadside	564955	174098	NO_2	Y – Gravesham	0.0	4.0	No	2.4

Diffusion Tube ID	Site Name	Site Type	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Pollutants Monitored	In AQMA? Which AQMA?	Distance to Relevant Exposure (m) (1)	Distance to kerb of nearest road (m) (2)	Tube Co-located with a Continuous Analyser?	Tube Height (m)
						A226 One Way System AQMA				
GR141	Park Pale, Telegraph Post	Roadside	569588	169603	NO_2	Y – Gravesham A2 AQMA	9.4	29.5	No	2.0
GR142	Inn on the Lake, Watling Street, Shorne DA12 3HB (Light post)	Roadside	567500	169836	NO_2	Y – Gravesham A2 AQMA	25.2	21.4	No	2.4
GR143	29 Wrotham Road (Façade)	Roadside	564646	173745	NO_2	NO	0.0	3.0	No	2.0
GR144	43 Singlewell Road (Downpipe)	Roadside	564728	172826	NO_2	NO	0.0	2.3	No	3.7
GR145	Lamp post adjacent Chantry Community Academy, Ordnance Road	Roadside	565336	174066	NO_2	NO	17.0	1.5	No	2.6
GR146	Lamp post adjacent 354 Thong Lane DA12 4LH	Roadside	567150	171231	NO_2	NO	12.0	4.8	No	2.4
GR147	36/38 The Street, Cobham DA12 3BZ (façade)	Roadside	567051	168432	NO_2	NO	0.0	9.2	No	2.1
GR148	Byeways, Lower Rochester Road, Higham (Façade) ME3 7HD	Roadside	571572	172847	NO_2	NO	0.0	5.8	No	1.7
GR149	Telegraph Post, adjacent Chequers Court, Canal Road, Higham ME3 7HD	Roadside	571445	172881	NO_2	NO	1.0	1.9	No	2.5
GR150	Telegraph Post, adjacent 10 Michele Cottages, Chalk	Roadside	571250	172933	NO_2	NO	7.0	1.6	No	2.2

Diffusion Tube ID	Site Name	Site Type	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Pollutants Monitored	In AQMA? Which AQMA?	Distance to Relevant Exposure (m) (1)	Distance to kerb of nearest road (m) (2)	Tube Co-located with a Continuous Analyser?	Tube Height (m)
	Road, Higham ME3 7JZ									
GR151	Telegraph Post, Higham Primary School, School Lane, Higham ME3 7JL	Roadside	571371	172270	NO_2	NO	0.0	-	No	
GR152	235 Dover Road (Façade), Northfleet DA11 9QN	Roadside	562974	173653	NO_2	NO	0.0	4.6	No	1.7

Notes:

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

(2) N/A if not applicable.

Table A.3 – Annual Mean NO_2 Monitoring Results: Automatic Monitoring (µg/m^3)

Site ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2021 (%) (2)	2017	2018	2019	2020	2021
ZG2	562589	172076	Roadside	100	91.6	31.6	29.9	29.1	23.7	22.8
ZG3	562155	174360	Industrial	100	97.3	23.9	23.5	24.5	22.0	21.0

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

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

Notes:

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

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

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

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

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

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

Table A.4 – Annual Mean NO_2 Monitoring Results: Non-Automatic Monitoring (µg/m^3)

Diffusion Tube ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2021 (%) (2)	2017	2018	2019	2020	2021
GR08a, GR08b, GR08c	562589	172076	Roadside	100	100.0	31.7	30.4	30.9	24.3	23.9
GR13	564696	174431	Roadside	100	100.0	**44**	**47.1**	**46.1**	38	**41.2**
GR19a, GR19b, GR19c	562155	174360	Urban Background	100	100.0	23.2	23.3	23.2	20.6	20.9
GR24	565128	174049	Roadside	100	100.0	**42.9**	**45.4**	**42.7**	36.7	**40.0**
GR31	565052	174149	Roadside	100	100.0	**43.2**	**42.9**	**43.7**	38.2	37.4
GR39	564730	174030	Roadside	100	100.0	34.1	35.8	35	28.3	31.0
GR40	564486	174095	Roadside	100	100.0	**41.3**	**45.2**	**43.4**	35	38.3
GR45	564708	174266	Roadside	100	100.0	26.8	27	29.3	24.1	24.4
GR47	565043	174173	Roadside	100	100.0	**41.9**	**45.4**	**42.9**	36.3	**41.0**
GR52	562449	174191	Roadside	100	100.0	34.7	36.4	32.6	27.5	30.1
GR55	563943	173378	Roadside	100	82.7	32.8	34.1	32.1	27.3	28.9
GR56	565210	172980	Roadside	100	92.3	33.6	27.5	30.3	27	27.7
GR57	564472	173158	Roadside	100	100.0	38.5	38.4	40.2	31.1	33.7
GR58	565166	174036	Roadside	100	100.0	39.5	37.6	38	31.2	33.0
GR59	564530	173171	Roadside	100	100.0	39.2	39.5	37.7	30.2	32.4
GR60	563899	173368	Roadside	100	90.4	34.4	36.9	36.5	30.5	33.7
GR61	564429	174152	Roadside	100	100.0	34.5	35.5	35.1	27.7	30.7
GR62	565004	174324	Roadside	100	100.0	31.2	30.7	30.8	25.8	25.6
GR66	564512	174448	Roadside	100	100.0	31	31.9	31.6	27.9	28.2
GR67	565214	172958	Roadside	100	100.0	36.5	34.9	36.3	28.6	29.6
GR68	564808	173086	Roadside	100	100.0	35.8	34.7	35.8	28.4	28.6
GR69a, GR69b, GR69c	567270	171925	Urban Background	100	100.0	21.3	19.1	20.7	16.3	15.8
GR72a, GR72b, GR72c	562437	173175	Urban Background	100	100.0	25.2	23.9	24.4	20.8	21.4
GR75a, GR75b, GR75c	564087	173080	Urban Background	100	82.7	21.7	21.8	21.8	17.2	19.5
GR78	565658	174195	Roadside	100	100.0	30.3	31.3	32.5	26.2	27.5

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
GR92	562323	172589	Roadside	100	100.0	37.8	36.9	38.6	33.3	33.0
GR94	564392	166012	Roadside	100	92.3	34.3	37.2	36.1	27.2	25.5
GR96	564963	173717	Roadside	100	100.0	30.8	32.4	31.4	27.3	25.5
GR98	562529	174049	Roadside	100	92.3	32	33.5	33.2	28.5	30.3
GR104	562465	172153	Roadside	100	100.0	36.7	33.4	34.2	29.2	28.3
GR107	562272	172281	Roadside	100	100.0	34.9	35	36.3	30.6	29.8
GR109	565229	172955	Roadside	100	100.0	34.7	33.9	34.3	28.8	27.3
GR110	566149	170436	Roadside	100	100.0	40.4	35.3	38.7	32.1	29.7
GR112	561502	174682	Roadside	100	100.0	34.3	34.8	35.7	30.1	31.1
GR116	562480	172225	Roadside	100	100.0	35.9	32.2	32.3	28.3	29.3
GR118	564755	173862	Roadside	100	92.3	32.5	34.8	34.9	29	30.9
GR119	564729	173824	Roadside	100	100.0	**49.2**	**53.4**	**49.5**	37.6	**41.7**
GR122	564667	173891	Roadside	100	100.0	35.9	36.1	37	30.7	32.6
GR123	566538	173109	Roadside	100	100.0	26.1	24	26.3	21.5	21.2
GR124	561338	174925	Roadside	100	84.6	32.7	30.4	31	29	27.6
GR125	564877	173937	Roadside	100	100.0	32.7	32.1	33.2	27.5	29.6
GR127	564456	173979	Roadside	100	100.0	29.9	30.1	30.4	24.9	26.6
GR128	564727	174002	Roadside	100	100.0	29.6	30.9	31.8	26	29.6
GR129	564694	173969	Roadside	100	100.0	29	27.8	28.4	24.7	25.0
GR130	564687	173934	Roadside	100	100.0	29.1	30.6	31.3	26	27.0
GR131	564661	173940	Roadside	100	100.0	25.6	24.9	26.4	22.5	22.1
GR133	564657	173799	Roadside	100	100.0	36.9	36.3	36.2	28.7	28.3
GR134	564659	173831	Roadside	100	100.0	31.4	32.8	33.7	24.9	25.2
GR135	564657	173764	Roadside	100	92.3	**46.8**	**44.8**	**43.9**	36.8	35.7
GR136	564686	173828	Roadside	100	100.0	35.8	39.3	37.4	32.3	31.1
GR137	570719	171143	Roadside	100	100.0	29.2	30.7	33.1	26.9	26.7
GR138	570583	169549	Roadside	100	92.3	29.2	28.8	30.2	25.3	24.1
GR139	563178	173976	Roadside	100	75.0	37.6	30.5	34	31.5	30.7
GR140	564955	174098	Roadside	100	92.3	43.1	38.1	38.5	33.7	34.2
GR141	569588	169603	Roadside	100	100.0	36.7	29.3	27.1	25.2	22.5
GR142	567500	169836	Roadside	100	100.0	**65.6**	**55**	**59.8**	**46.1**	**41.1**
GR143	564646	173745	Roadside	100	100.0	**47.5**	36.6	37	29.5	29.0
GR144	564728	172826	Roadside	100	92.3	**41.4**	33.4	34.9	28.9	30.3
GR145	565336	174066	Roadside	100	100.0	-	32.2	30.6	28.9	29.6
GR146	567150	171231	Roadside	100	100.0	-	22.8	18.5	14.9	14.3
GR147	567051	168432	Roadside	100	100.0	-	-	-	23.9	25.3
GR148	571572	172847	Roadside	100	42.3	-	-	-	-	14.3

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
GR149	571445	172881	Roadside	100	42.3	-	-	-	-	14.7
GR150	571250	172933	Roadside	100	42.3	-	-	-	-	16.1
GR151	571371	172270	Roadside	100	42.3	-	-	-	-	18.8
GR152	562974	173653	Roadside	100	17.3	-	-	-	-	-

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

☒ **Diffusion tube data has been bias adjusted.**

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

Notes:

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

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

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

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

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

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

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

Figure A.1 - Trends in Annual Mean NO_2 Concentrations: AQMA No.1 A2 Trunk

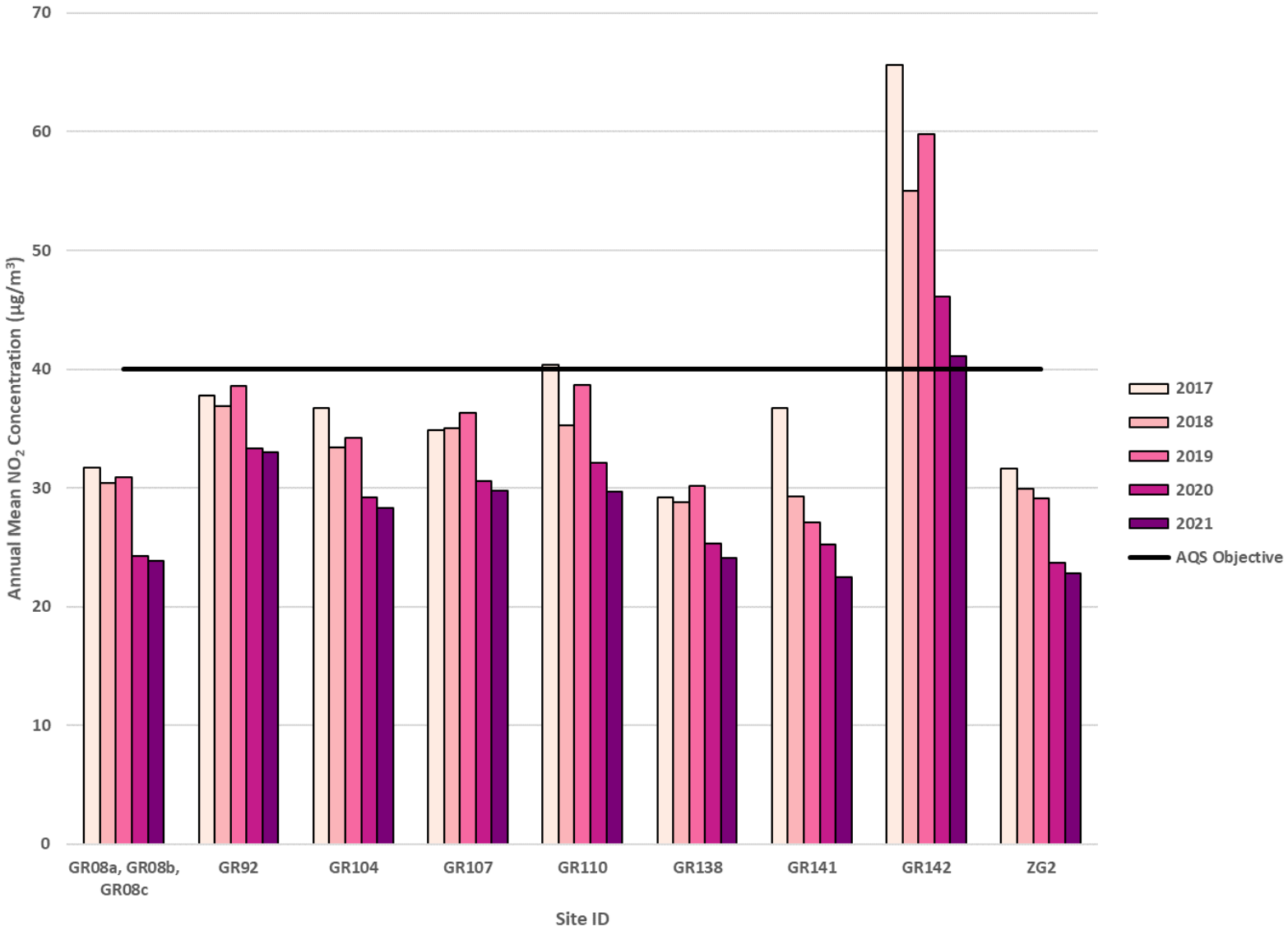


Figure A.2 - Trends in Annual Mean NO_2 Concentrations: AQMA No.3 A226 One-way System

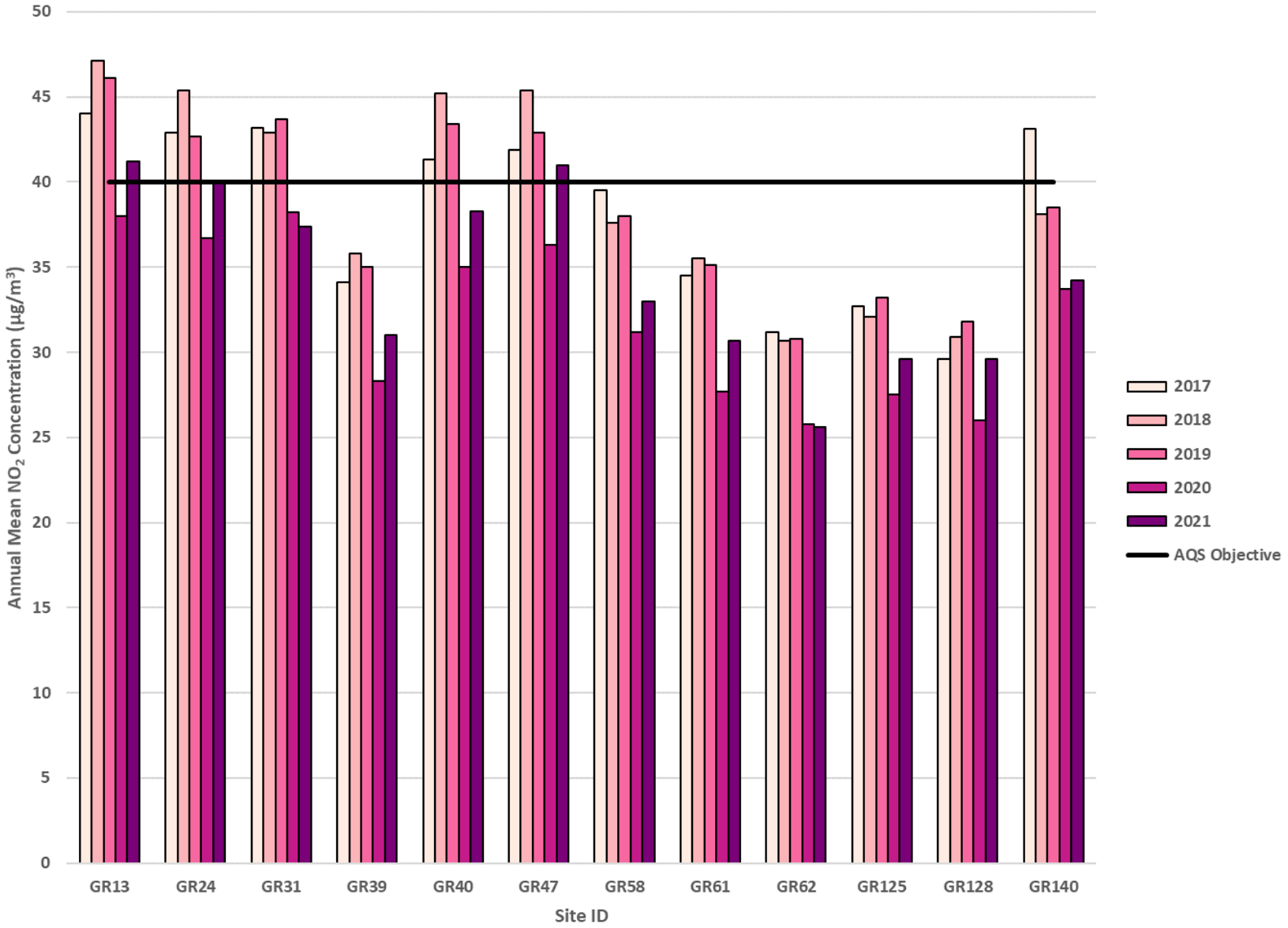


Figure A.3 - Trends in Annual Mean NO_2 Concentrations: AQMA No.4 A227 Wrotham Road/ B261 Old Road West

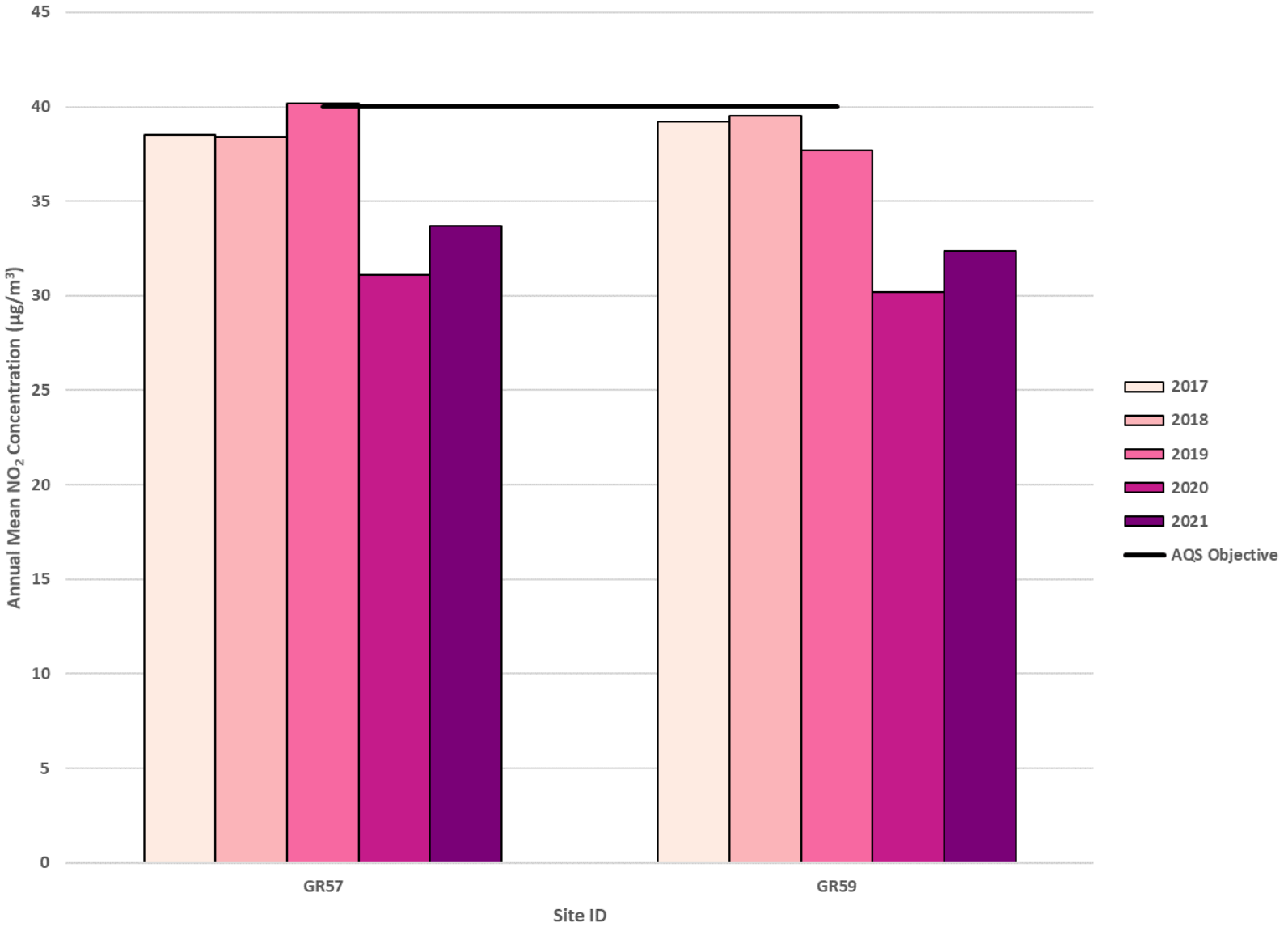


Figure A.4 - Trends in Annual Mean NO_2 Concentrations: Outside AQMAs

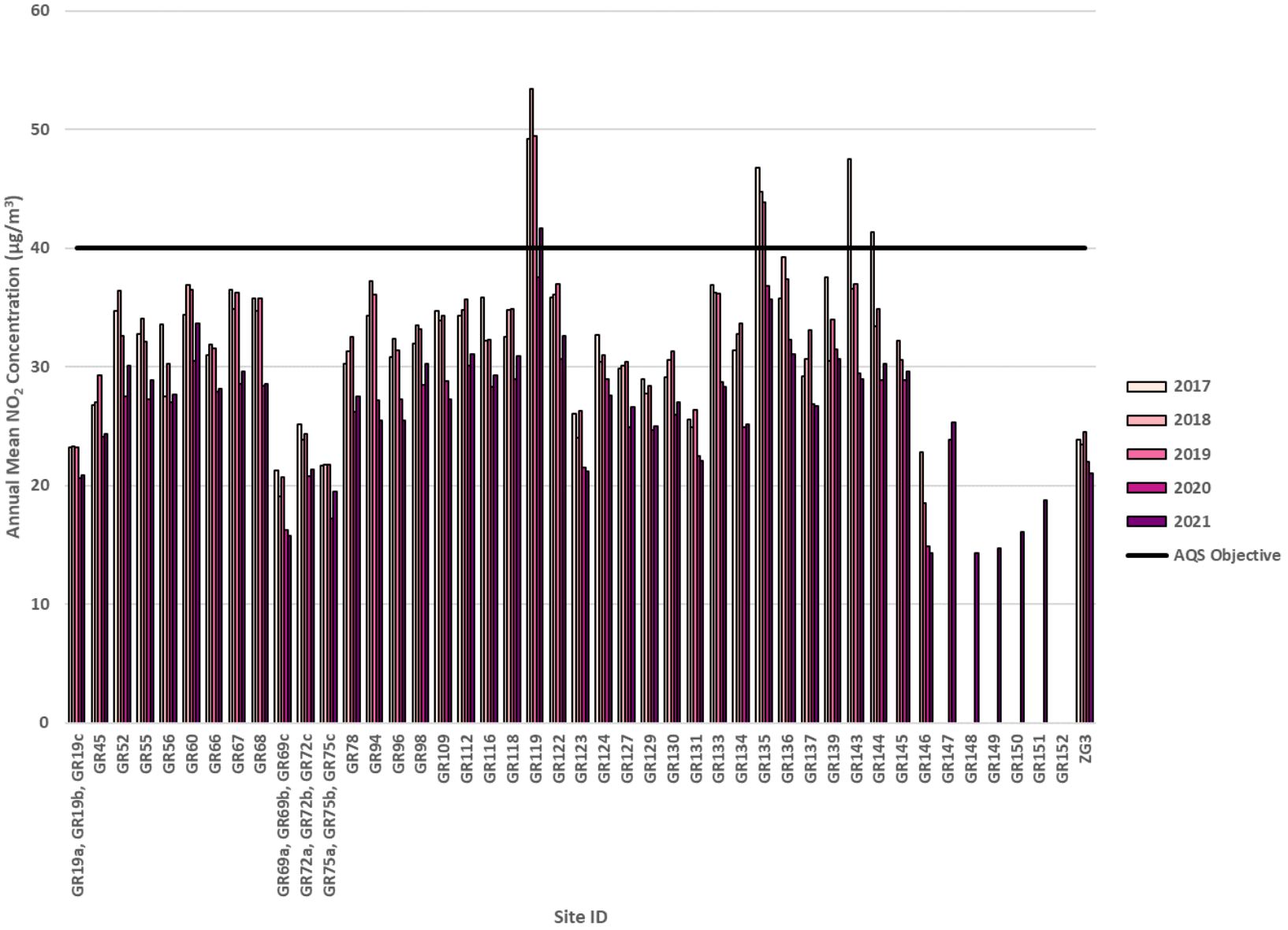


Table A.5 – 1-Hour Mean NO_2 Monitoring Results, Number of 1-Hour Means > 200µg/m^3

Site ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2021 (%) (2)	2017	2018	2019	2020	2021
ZG2	562589	172076	Roadside	91.6	91.6	0	0	0	**0**	**0**
ZG3	562155	174360	Industrial	97.3	97.3	0	0	0	**0**	**0**

Notes:

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

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

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

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

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

Table A.6 – Annual Mean PM_{10} Monitoring Results (µg/m^3)

Site ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2021 (%) (2)	2017	2018	2019	2020	2021
ZG2	562589	172076	Roadside	91.6	91.6	16.7	15.4	15.3	16.3	16.0
ZG3	562155	174360	Industrial	97.3	97.3	19.4	21.9	22.3	21.3	20.6

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

Notes:

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

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

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

(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_{10} Concentrations

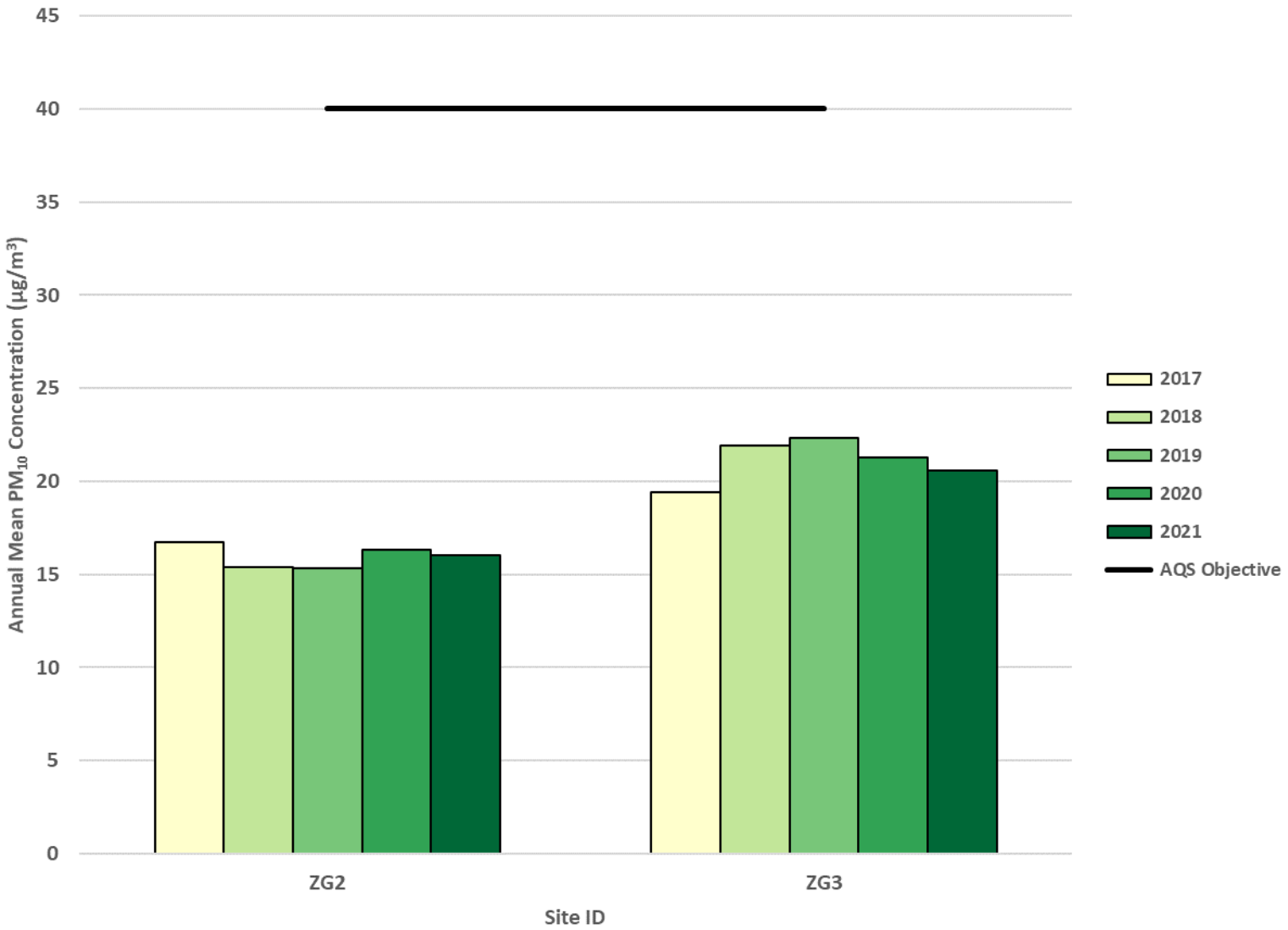


Table A.7 – 24-Hour Mean PM_{10} Monitoring Results, Number of PM_{10} 24-Hour Means > 50µg/m^3

Site ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2021 (%) (2)	2017	2018	2019	2020	2021
ZG2	562589	172076	Roadside	91.6	91.6	5	1	1	1	0
ZG3	562155	174360	Industrial	97.3	97.3	4	3	10	8	1

Notes:

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

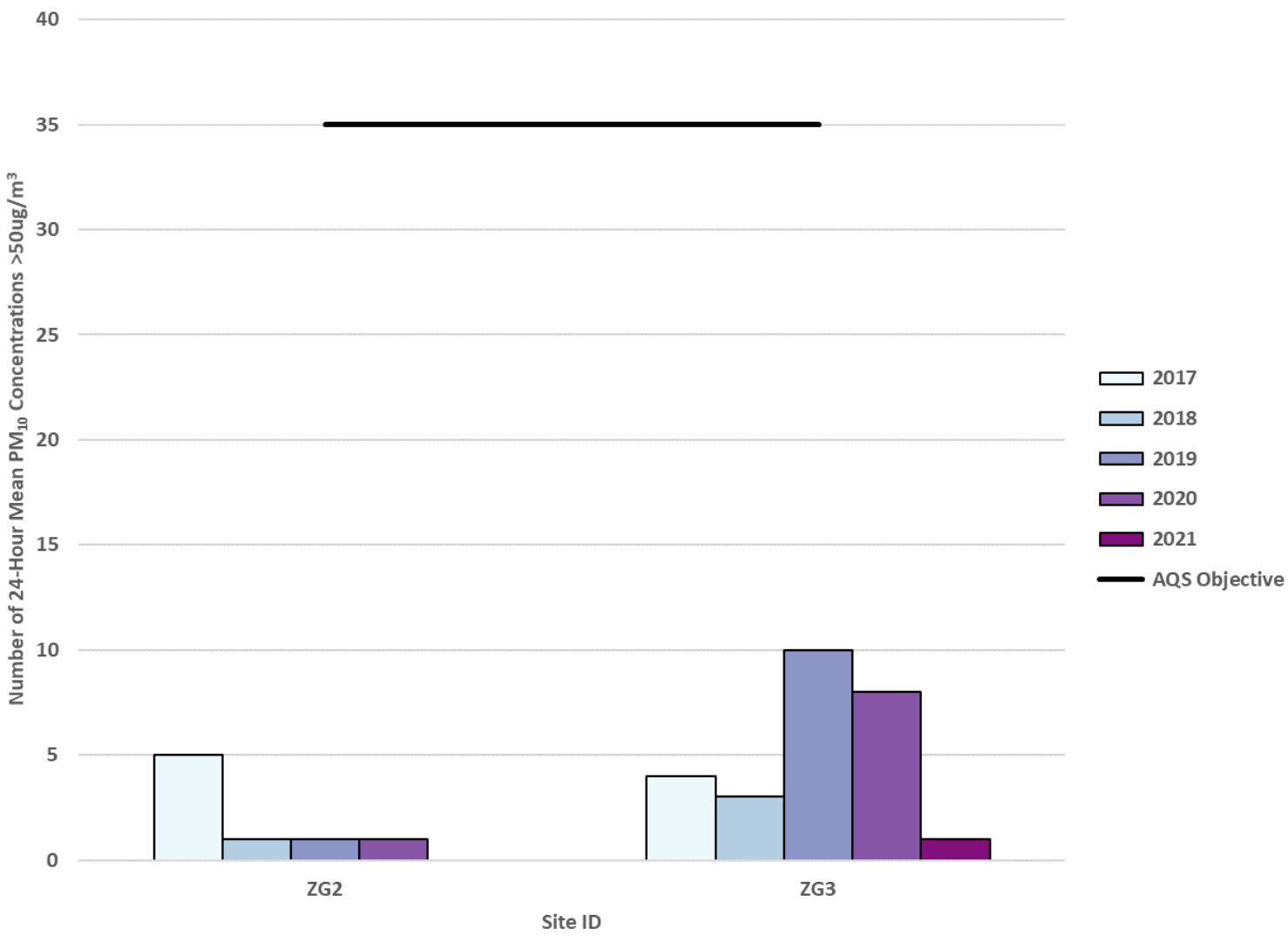
Exceedances of the PM_{10} 24-hour mean objective (50µg/m^3 not to be exceeded more than 35 times/year) are shown in **bold**.

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

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

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

Figure A.6 - Trends in Number of 24-Hour Mean PM_{10} Results > 50µg/m³



Appendix B: Full Monthly Diffusion Tube Results for 2021

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

DT ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Easting)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean: Raw Data	Annual Mean: Annualised and Bias Adjusted (0.90)	Annual Mean: Distance Corrected to Nearest Exposure	Comment
GR08a	562589	172076	35.2	29.7	29.9	18.0	22.0	22.8	21.7	20.1	20.4	29.4	33.7	28.2	-	-		*Triplicate Site with GR08a, GR08b and GR08c - Annual data provided for GR08c only*
GR08b	562589	172076	36.3	31.1	31.6	19.6	22.2	22.2	21.2	21.4	29.5	27.4	35.8	26.8	-	-		*Triplicate Site with GR08a, GR08b and GR08c - Annual data provided for GR08c only*
GR08c	562589	172076	36.2	27.2	33.5	19.0	26.4	18.3	21.7	19.1	29.5	29.2	35.1	26.4	26.6	23.9		*Triplicate Site with GR08a, GR08b and GR08c - Annual data provided for GR08c only*
GR13	564696	174431	58.3	31.3	45.4	46.2	43.4	44.8	38.4	34.0	52.4	44.9	65.6	46.0	45.9	41.2	41.0	
GR19a	562155	174360	30.9	24.8	26.0	25.1	20.2	19.4	17.7	13.5	25.1	18.8	27.3	24.9	-	-		*Triplicate Site with GR19a, GR19b and GR19c - Annual data provided for GR19c only*
GR19b	562155	174360	28.7	25.5	22.5	16.8	20.5	18.9	<0.5	34.7	27.8	22.7	31.4	23.5	-	-		*Triplicate Site with GR19a, GR19b and GR19c - Annual data provided for GR19c only*
GR19c	562155	174360	26.3	24.0	25.2	24.3	20.2	20.9	16.9	13.5	26.3	21.1	31.1	23.2	23.3	20.9		*Triplicate Site with GR19a, GR19b and GR19c - Annual data provided for GR19c only*
GR24	565128	174049	50.1	41.2	47.6	51.2	37.1	48.5	40.9	34.2	53.0	39.7	53.2	39.0	44.6	**40.0**	39.7	
GR31	565052	174149	51.5	39.2	48.2	41.9	34.4	42.0	31.0	36.6	39.3	44.2	53.9	38.4	41.7	37.4		
GR39	564730	174030	41.8	36.5	37.1	32.7	31.6	32.7	27.0	25.0	41.7	35.4	41.4	32.0	34.6	31.0		
GR40	564486	174095	40.7	39.2	42.8	43.7	42.1	45.0	43.8	36.8	50.2	42.8	48.5	37.1	42.7	38.3	38.2	
GR45	564708	174266	36.0	27.7	28.1	25.1	24.2	21.2	20.3	18.0	30.4	31.0	36.3	27.6	27.2	24.4		
GR47	565043	174173	42.7	54.2	46.5	47.9	45.3	40.7	41.9	36.1	58.3	43.4	49.1	42.0	45.7	41.0		
GR52	562449	174191	39.0	35.3	35.0	37.0	31.7	30.5	31.3	24.3	39.6	29.1	39.5	30.1	33.5	30.1		
GR55	563943	173378	38.8	33.9	33.6	36.0	26.5			22.4	34.7	30.2	38.6	27.7	32.2	28.9		
GR56	565210	172980	36.6	30.9	30.8	24.7	26.3	23.0	23.0		32.0	36.6	41.7	34.2	30.9	27.7		
GR57	564472	173158	46.3	40.1	40.1	26.1	36.2	33.5	30.4	30.0	45.1	38.2	45.3	39.4	37.6	33.7		
GR58	565166	174036	37.0	34.1	44.0	31.7	32.6	29.5	29.0	26.8	40.9	40.0	56.4	39.7	36.8	33.0		

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 (0.90)	Annual Mean: Distance Corrected to Nearest Exposure	Comment
GR59	564530	173171	43.4	37.7	38.3	40.3	35.0	35.2	27.6	20.0	38.3	35.8	47.4	35.0	36.2	32.4		
GR60	563899	173368	44.2	33.5	41.7	35.8	33.1	36.4	26.9	31.1	41.8		47.7	41.3	37.6	33.7		
GR61	564429	174152	37.1	33.5	35.3	39.2	31.1	31.3	31.0	29.0	25.7	35.1	45.6	37.2	34.3	30.7		
GR62	565004	174324	36.6	28.0	28.6	27.9	26.3	24.0	23.4	22.7	23.9	35.4	37.3	27.9	28.5	25.6		
GR66	564512	174448	42.0	29.1	34.2	35.2	28.1	22.1	25.6	23.0	31.7	31.3	41.6	32.8	31.4	28.2		
GR67	565214	172958	40.5	32.8	33.8	29.1	27.3	25.5	26.5	23.8	38.1	35.4	48.5	35.2	33.0	29.6		
GR68	564808	173086	41.8	25.6	36.5	29.5	24.5	27.6	24.9	28.0	35.0	33.3	46.6	28.7	31.8	28.6		
GR69a	567270	171925	26.3	19.3	18.4	15.6	13.8	12.8	11.2	12.3	17.0	18.4	27.6	19.8	-	-		*Triplicate Site with GR69a, GR69b and GR69c - Annual data provided for GR69c only*
GR69b	567270	171925	26.2	20.1	17.6	13.3	13.9	13.3	10.8	11.8	14.4	17.9	27.3	22.4	-	-		*Triplicate Site with GR69a, GR69b and GR69c - Annual data provided for GR69c only*
GR69c	567270	171925	35.2	18.4		14.1	14.1	11.1	10.8	11.4	16.3	15.4	26.5	22.6	17.7	15.8		*Triplicate Site with GR69a, GR69b and GR69c - Annual data provided for GR69c only*
GR72a	562437	173175	34.0	27.9	27.8	20.7	21.1	19.4	16.2	17.4	21.5	23.5	34.0	29.4	-	-		*Triplicate Site with GR72a, GR72b and GR72c - Annual data provided for GR72c only*
GR72b	562437	173175	33.9	25.4	27.2	20.1	18.0	19.8	16.5	19.6	24.7	25.6	37.4	26.1	-	-		*Triplicate Site with GR72a, GR72b and GR72c - Annual data provided for GR72c only*
GR72c	562437	173175	30.2	21.7	23.1	21.1	17.5	20.5	16.6	14.6	25.0	24.5	34.0	25.0	23.9	21.4		*Triplicate Site with GR72a, GR72b and GR72c - Annual data provided for GR72c only*
GR75a	564087	173080	30.7	20.0	27.1	19.5	16.2			11.7	20.3	17.9	25.9	21.3	-	-		*Triplicate Site with GR75a, GR75b and GR75c - Annual data provided for GR75c only*
GR75b	564087	173080	36.9	28.5	21.8	19.2	17.1			16.0	19.9	16.0	31.7	21.7	-	-		*Triplicate Site with GR75a, GR75b and GR75c - Annual data provided for GR75c only*
GR75c	564087	173080	31.4	23.2	21.5	18.8	13.6			14.8	19.2	18.1	30.4	21.1	21.7	19.5		*Triplicate Site with GR75a, GR75b and GR75c - Annual data provided for GR75c only*
GR78	565658	174195	40.5	33.9	32.7	29.7	29.5	21.9	24.1	20.0	32.6	30.8	40.3	32.2	30.7	27.5		
GR92	562323	172589	38.9	36.4	43.0	32.8	34.8	33.5	28.9	28.7	38.2	45.2	45.2	36.5	36.8	33.0		
GR94	564392	166012		29.9	28.9	33.2	29.5	30.0	24.1	22.8	23.1	30.8	35.0	25.0	28.4	25.5		
GR96	564963	173717	28.0	27.5	33.4	28.3	24.8	27.9	24.9	16.0	32.7	26.2	37.4	34.2	28.4	25.5		

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 (0.90)	Annual Mean: Distance Corrected to Nearest Exposure	Comment
GR98	562529	174049	36.5	33.1	36.1	35.3	29.2	28.2	27.6		39.1	32.8	41.1	32.4	33.8	30.3		
GR104	562465	172153	36.7	31.6	32.7	25.0	25.7	27.4	24.9	29.3	31.4	39.4	41.7	33.4	31.6	28.3		
GR107	562272	172281	41.0	31.9	38.1	26.8	25.9	29.1	24.2	27.3	36.4	41.0	40.9	35.6	33.2	29.8		
GR109	565229	172955	43.4	34.9	37.0	22.8	22.2	24.2	19.2	22.5	35.1	35.7	34.9	33.1	30.4	27.3		
GR110	566149	170436	41.5	32.4	35.1	33.4	29.3	26.8	27.8	26.7	35.8	34.5	40.1	33.8	33.1	29.7		
GR112	561502	174682	40.0	36.2	31.9	34.0	35.1	22.5	31.2	31.4	38.1	40.1	40.3	35.3	34.7	31.1		
GR116	562480	172225	48.4	35.9	35.7	24.5	25.1	24.6	23.9	26.1	33.7	35.5	45.1	34.1	32.7	29.3		
GR118	564755	173862	39.9	37.7		35.6	33.5	26.1	32.2	24.4	43.5	32.7	36.2	37.3	34.5	30.9		
GR119	564729	173824	57.0	57.0	55.6	45.4	47.2	35.8	35.4	30.9	50.5	50.1	57.3	36.3	46.5	**41.7**		
GR122	564667	173891	41.8	33.1	39.7	29.7	35.3	33.0	31.9	27.5	41.8	40.3	44.4	37.8	36.4	32.6		
GR123	566538	173109	32.8	23.7	25.7	21.4	21.6	17.3	16.7	11.0	24.4	26.7	34.8	27.4	23.6	21.2		
GR124	561338	174925			27.3	30.1	27.8	28.1	24.5	24.9	37.0	34.0	40.7	33.7	30.8	27.6		
GR125	564877	173937	40.0	34.3	35.5	32.3	28.2	27.0	28.2	26.6	38.1	29.9	40.4	35.3	33.0	29.6		
GR127	564456	173979	33.8	29.5	28.8	30.6	27.4	26.3	25.1	21.0	32.5	31.3	37.7	32.4	29.7	26.6		
GR128	564727	174002	40.2	33.5	35.0	30.5	28.2	29.3	25.8	25.5	36.2	35.4	40.3	35.7	33.0	29.6		
GR129	564694	173969	37.2	27.7	33.6	25.1	18.0	21.3	21.6	17.6	30.1	28.3	40.5	33.4	27.9	25.0		
GR130	564687	173934	38.8	31.1	31.6	27.6	26.5	25.9	24.5	21.1	31.4	33.0	38.0	32.0	30.1	27.0		
GR131	564661	173940	28.5	28.1	26.4	24.4	19.0	20.0	19.5	15.5	24.5	28.2	34.8	26.7	24.6	22.1		
GR133	564657	173799	30.7	32.1	40.6	34.3	29.7	32.2	26.0	17.0	27.1	33.2	42.2	33.8	31.6	28.3		
GR134	564659	173831	32.1	31.6	31.5	20.6	28.2	18.6	24.2	17.6	29.6	30.6	35.6	36.6	28.1	25.2		
GR135	564657	173764	52.8	34.1	49.0	40.5	39.8		29.9	21.1	34.7	44.3	48.2	43.7	39.8	35.7		
GR136	564686	173828	13.3	39.1	41.5	41.0	36.1	27.1	33.1	27.2	40.3	38.6	43.7	34.7	34.6	31.1		
GR137	570719	171143	34.4	33.4	27.8	31.5	28.5	23.6	28.2	20.6	32.8	32.3	33.9	29.9	29.7	26.7		

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 (0.90)	Annual Mean: Distance Corrected to Nearest Exposure	Comment
GR138	570583	169549	38.1	29.8	27.7	22.6	23.4		17.8	15.2	26.9	33.6	33.2	26.8	26.8	24.1		
GR139	563178	173976			41.3	33.0	32.5	30.3	27.0	25.1	36.4	37.1	45.6		34.3	30.7		
GR140	564955	174098	41.2	31.5	40.2	48.9	35.9		32.6	28.4	36.7	37.5	48.2	37.8	38.1	34.2		
GR141	569588	169603	34.0	31.0	23.0	20.9	23.8	18.9	20.2	17.0	22.1	31.4	30.1	28.5	25.1	22.5		
GR142	567500	169836	58.3	50.0	39.1	31.8	39.3	35.1	40.4	37.4	50.1	59.8	54.6	53.6	45.8	**41.1**	31.5	*Warning: your receptor is more than 20m further from the kerb than your monitor - treat result with caution.*
GR143	564646	173745	41.5	31.0	38.1	33.3	34.2	25.5	27.8	18.0	31.6	32.7	39.9	34.5	32.3	29.0		
GR144	564728	172826	39.2	30.8	36.6	31.0	30.7		26.9	24.4	37.8	36.8	43.3	33.6	33.7	30.3		
GR145	565336	174066	44.7	28.4	35.4	33.1	30.5	27.8	31.7	23.8	36.9	29.4	43.7	31.1	33.0	29.6		
GR146	567150	171231	21.7	18.0	18.7	10.1	14.8	12.2	9.0	10.0	16.3	19.7	24.6	16.7	16.0	14.3		
GR147	567051	168432	43.4	23.5	24.2	30.6	27.3	26.6	23.2	21.3	28.7	26.5	34.7	28.9	28.2	25.3		
GR148	571572	172847								11.5	14.1	16.8	21.3	17.6	16.3	14.3		
GR149	571445	172881								10.8	14.2	17.6	22.6	18.3	16.7	14.7		
GR150	571250	172933								12.3	15.1	18.0	24.7	21.2	18.3	16.1		
GR151	571371	172270								15.0	22.2	22.5	26.2	21.0	21.4	18.8		
GR152	562974	173653											31.7	25.3	-	-		

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

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

☒ **Local bias adjustment factor used.**

☐ **National bias adjustment factor used.**

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

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

Notes:

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

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

See Appendix C for details on bias adjustment and annualisation.

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

New or Changed Sources Identified Within Gravesham Borough Council During 2021

Gravesham Borough Council have identified the following planning applications as having the potential to impact air quality:

21/01798/PLANEP – 24/11/2021, Planning Reference: 20211416

Development:

Application for variation of condition 34 attached to planning permission reference no. 20141214 for outline planning application for the development of up to 400 new homes and associated infrastructure including provision of open space, with access off Coldharbour Road; to be varied from no more than 200 dwellings to no more than 300 dwellings shall be occupied until the completion of the improvements to the A2 (west) / A227 junction shown on drawing no**.**

Location:

Land At Coldharbour Road Northfleet Gravesend Kent

Status: Pending

08/06/2021, Planning Reference: 20210270

Development:

Hybrid planning application comprising:

Part A - Full planning application for demolition of existing buildings and structures, construction of a mixed use development comprising C3 and C2 Residential Uses and commercial floorspace (Use Class E), a new river wall, works to Swing Bridge, highway junction improvements at Milton Road and Ordnance Road, associated new public open spaces and public realm improvements, car and cycle parking, landscaping, infrastructure and earthworks and ancillary works; and

Part B - Outline planning application with all matters reserved (apart from access) for demolition of all existing buildings and structures and the construction of a mixed use development comprising C3 Uses and commercial floorspace (Use Class E) with associated vehicular access, car parking, landscaping, associated infrastructure and earthworks and ancillary works.

(The proposed development would consist of up to 1,500 homes and up to 4,500sqm (GIA) of commercial floorspace).

DEPARTURE: Application does not fully accord with the provisions of the Development Plan (Core Strategy Policy CS04).

Location:

Albion Waterside, Canal Basin , Gravesend , Kent DA12 2RN

Status: Pending

13/07/2021, Planning Reference: 20210453

Development:

*REVISED DESCRIPTION & DRAWINGS**

Repair, restoration, extension and repurposing of 11-12 King Street to provide a residents' workhub at ground floor level and 6 flats above along with the construction of a new part 6, part 7 storey building to the rear to contain 42 flats creating 48 flats in total together with car and cycle parking, refuse and recycling storage and private and communal amenity spaces.

Location:

Former Cinema Site, 11 King Street , Gravesend , Kent DA12 2EB

Status: Pending

17/09/2021, Planning Reference: 20210757

Development:

Redevelopment of the site and conversion of the existing building to provide 27 residential units (6 x 1 bed, 12 x 2 bed, and 9 x 3 bed) with associated landscaping, parking, and vehicular access.

Location:

Custom House, The Terrace , Gravesend , Kent DA12 2BW

Status: Pending

Additional Air Quality Works Undertaken by Gravesham Borough Council During 2021

Gravesham Borough Council has not completed any additional works within the reporting year of 2021.

QA/QC of Diffusion Tube Monitoring

The diffusion tubes for the year 2021 were supplied and analysed by SOCOTEC Didcot, the tubes were prepared using the 50% Triethanolamine (TEA) in acetone preparation method. All results have been bias adjusted and annualised where required before being presented in Table A.4.

SOCOTEC participates in the AIR-PT scheme which is an independent analytical proficiency-testing (PT) scheme, operated by LGC Standards and supported by the Health and Safety Laboratory (HSL).

Defra and the Devolved Administrations advise that diffusion tubes used for Local Air Quality Management should be obtained from laboratories that have demonstrated satisfactory performance in the AIR-PT scheme. Laboratory performance in AIR-PT is also assessed, by the National Physical Laboratory (NPL), alongside laboratory data from the monthly NPL Field Intercomparison Exercise carried out at Marylebone Road, central London. A laboratory is assessed and given a ‘z’ score. A score of 2 or less indicates satisfactory laboratory performance.

Additionally, the precision of the NO_2 diffusion tubes supplied by SOCOTEC have been classified as ‘good’ for all observations during 2021. This precision reflects the laboratory’s performance and consistency in preparing and analysing the tubes, as well as the subsequent handling of the tubes in the field. Precision summary results are available from the LAQM website.

Diffusion Tube Annualisation

The LAQM.TG(16) states that annualisation is required for any site which has a data capture of less than 75%, but greater than 25%. Passive monitoring sites GR148, 149, 150 and 151

recorded 42.3% data capture in 2021, therefore required annualisation. Annualisation was completed using version 2.0 of the 'Diffusion Tube Data Processing Tool'. Three continuous background monitoring locations were used, the three locations within a 50 mile radius selected to annualise the data are:

- Rochester Stoke;
- London Westminster; and
- London Bloomsbury

These continuous background monitoring sites were applicable to use as they all had >85% data capture and therefore could be used for annualisation. Table C.1 presents the annualisation summary, taken from the 'Diffusion Tube Data Processing Tool'.

Table C.1 – Annualisation Summary (concentrations presented in µg/m^3)

Site ID	Annualisation Factor Rochester Stoke	Annualisation Factor London Westminster	Annualisation Factor London Bloomsbury	Average Annualisation Factor	Raw Data Annual Mean	Annualised Annual Mean
GR148	0.9711	0.9703	1.0035	0.9816	16.3	16.0
GR149	0.9711	0.9703	1.0035	0.9816	16.7	16.4
GR150	0.9711	0.9703	1.0035	0.9816	18.3	17.9
GR151	0.9711	0.9703	1.0035	0.9816	21.4	21.0

Diffusion Tube Bias Adjustment Factors

The diffusion tube data presented within the 2022 ASR have been corrected for bias using an adjustment factor. Bias represents the overall tendency of the diffusion tubes to under or over-read relative to the reference chemiluminescence analyser. LAQM.TG16 provides guidance with regard to the application of a bias adjustment factor to correct diffusion tube monitoring. Triplicate co-location studies can be used to determine a local bias factor based on the comparison of diffusion tube results with data taken from NO_x/NO_2 continuous analysers. Alternatively, the national database of diffusion tube co-location surveys provides bias factors for the relevant laboratory and preparation method.

Gravesham Borough Council have applied a combined local bias adjustment factor of 0.90 to the 2021 monitoring data. A summary of bias adjustment factors used by Gravesham Borough Council over the past five years is presented in Table C.2. Both of the automatic monitoring sites within Gravesham report good data quality for 2021, therefore both have been used in combination to calculate a local bias adjustment factor. This was completed using the Diffusion Tube Data Processing Tool version v2.0, in line with the methodology

outlined in LAQM.TG(16) for areas where there is more than one local collocation study. Details of this calculation are shown in Table C.3.

It is recommended by Defra LAQM.TG(16) and the LAQM Helpdesk that the local bias adjustment factor should be used where available and relevant. The national bias adjustment factor for SOCOTEC Didcot using 50% TEA in acetone is 0.78 in 2021 (version 03/22, based on 23 studies). Whilst both factors are relatively in-line and consistent with the factors applied in previous years, the combined local factor is the more conservative value whilst likely being more reflective of the local conditions. Therefore, the combined local factor has been applied to the 2021 monitoring data.

Table C.2 – Bias Adjustment Factor

Monitoring Year	Local or National	If National, Version of National Spreadsheet	Adjustment Factor
2021	Local	-	0.90
2020	Local	-	0.89
2019	Local	-	0.78
2018	Local	-	0.77
2017	Local	-	0.80

Table C.3 – Local Bias Adjustment Calculation

	Local Bias Adjustment Input 1	Local Bias Adjustment Input 2
Periods used to calculate bias	11	10
Bias Factor A	0.87 (0.79 - 0.96)	0.93 (0.84 - 1.05)
Diffusion Tube Mean (µg/m^3)	26.6	23.6
Mean CV (Precision)	6.8%	5.4%
Automatic Mean (µg/m^3)	23.0	22.0
Data Capture	100%	99%
Adjusted Tube Mean (µg/m^3)	23 (21 - 25)	22 (20 - 25)

Notes:

A combined local bias adjustment factor of 0.90 has been used to bias adjust the 2021 diffusion tube results.

NO_2 Fall-off with Distance from the Road

Wherever possible, monitoring locations are representative of exposure. However, where this is not possible, the NO_2 concentration at the nearest location relevant for exposure has been estimated using the Diffusion Tube Data Processing Tool/NO_2 fall-off with distance

calculator available on the LAQM Support website. Where appropriate, non-automatic annual mean NO_2 concentrations corrected for distance are presented in Table C.4.

Fall-off with distance calculations were required at 4 passive monitoring locations, where annual mean concentrations were greater than 36µg/m^3. Distance correction was applied to passive monitoring site GR142, however annual mean concentrations should be treated with caution because the receptor is more than 20m further from the kerb than the monitoring site. Distance correction calculations were completed using the Diffusion Tube Data Processing Tool version 2.0, in line with the methodology outlined in LAQM.TG(16). Details of this calculation and results are presented in Table C.4

QA/QC of Automatic Monitoring

2020 data management and ratification for Gravesham Borough Council was carried out by Air Quality Data Management (AQDM) as part of the KentAir contract. This contract has since been handed over to Ricardo, who will take charge of all data management and ratification of automatic monitoring data from March 2021 onwards.

All LSO duties are carried out by Gravesham Borough Council.

Calibrations are carried out every three weeks. These were previously conducted every two weeks, however due to limited staff resources this was not manageable. There does not however appear to be any negative impacts on the data as a result of this. BAM tapes are changed every six weeks in order to coincide with the calibrations.

PM_{10} Monitoring Adjustment

The type of PM_{10} monitor(s) utilised within Gravesham Borough Council do not require the application of a correction factor.

Automatic Monitoring Annualisation

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

Table C.4 – NO_2 Fall off With Distance Calculations (concentrations presented in µg/m^3)

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
GR13	2.0	2.1	39.9	27.4	39.8	Predicted concentration at Receptor within 10% the AQS objective.
GR24	2.2	2.4	38.8	25.0	38.5	Predicted concentration at Receptor within 10% the AQS objective.
GR40	1.5	1.6	37.2	27.4	37.1	Predicted concentration at Receptor within 10% the AQS objective.
GR142	21.4	46.6	39.8	17.7	30.8	Warning: your monitor is more than 10m further from the kerb than your receptor - treat result with caution. Warning: your receptor is more than 20m further from the kerb than your monitor - treat result with caution.

Appendix D: Maps of Monitoring Locations and AQMAs

Figure D.1 - Map of Monitoring Sites Within/Near AQMA No.1: A2 Trunk Road

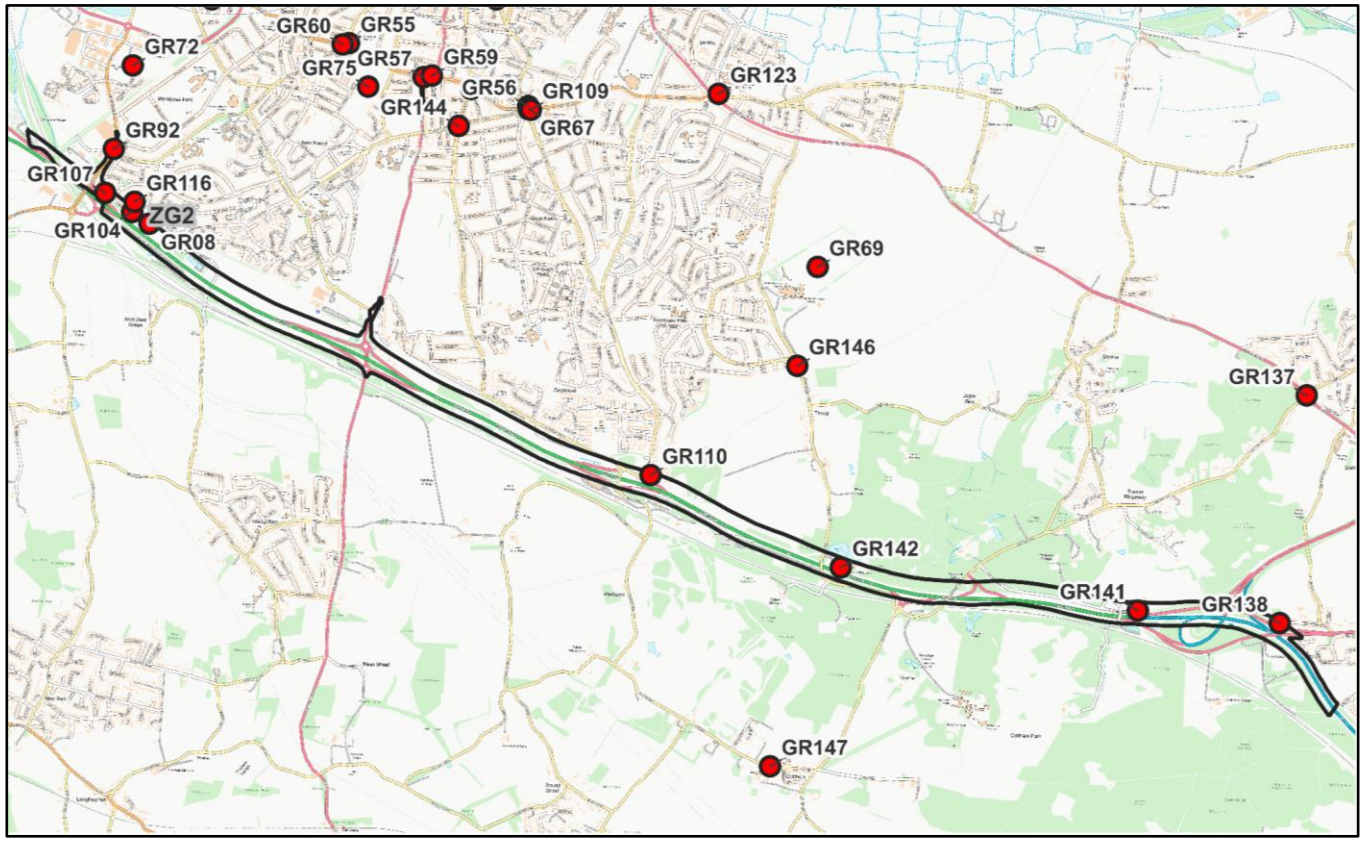


Figure D.2 – Map of Monitoring Sites Within/Near AQMA No.2: Northfleet Industrial

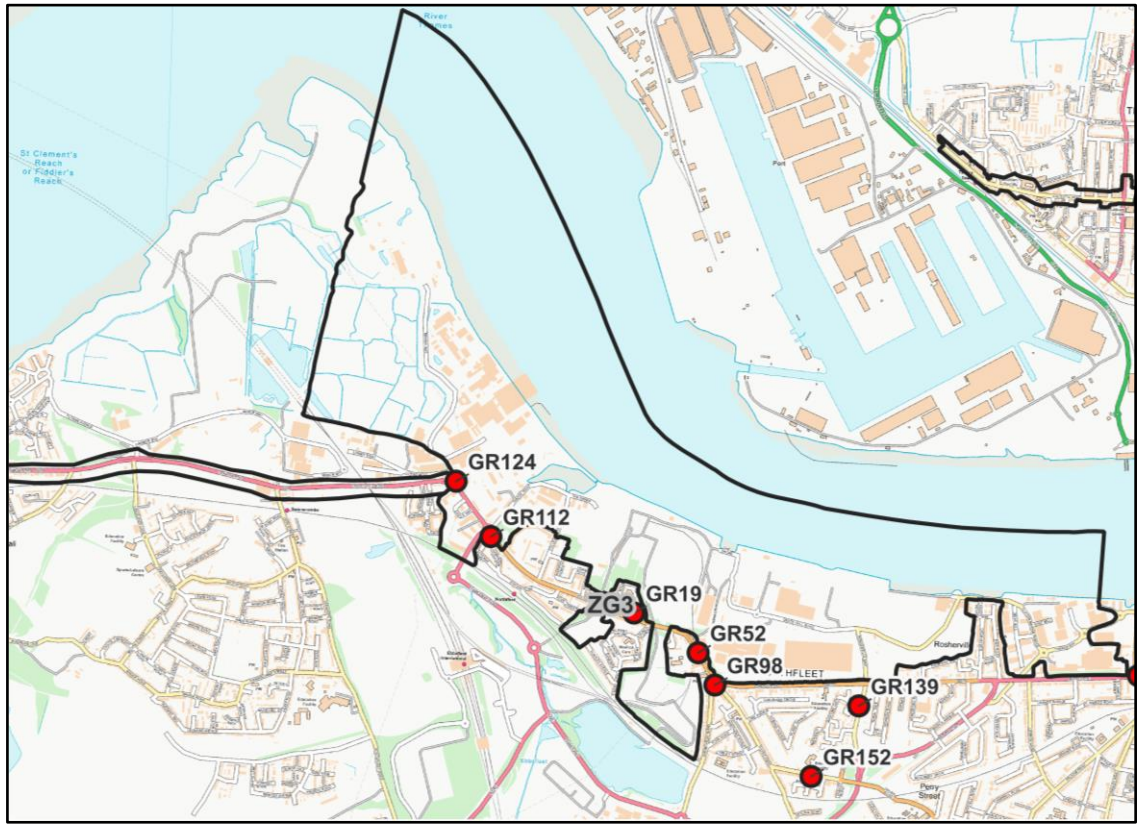


Figure D.3 – Map of Monitoring Sites Within/Near AQMA No.3: A226 One-Way System, Gravesend

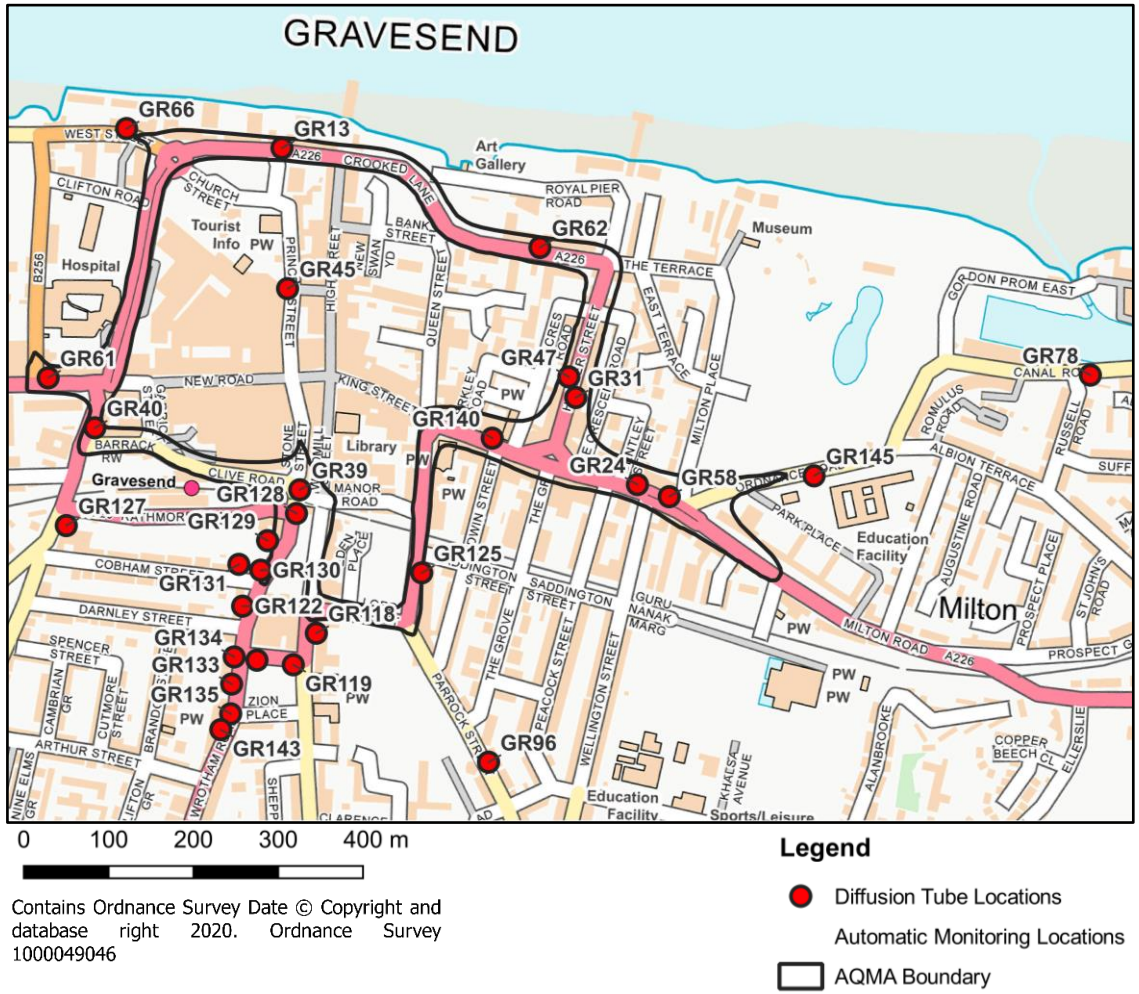


Figure D.4 – Map of Monitoring Sites Within/Near AQMA No.4: A227/B261 Wrotham Road/Old Road West Junction

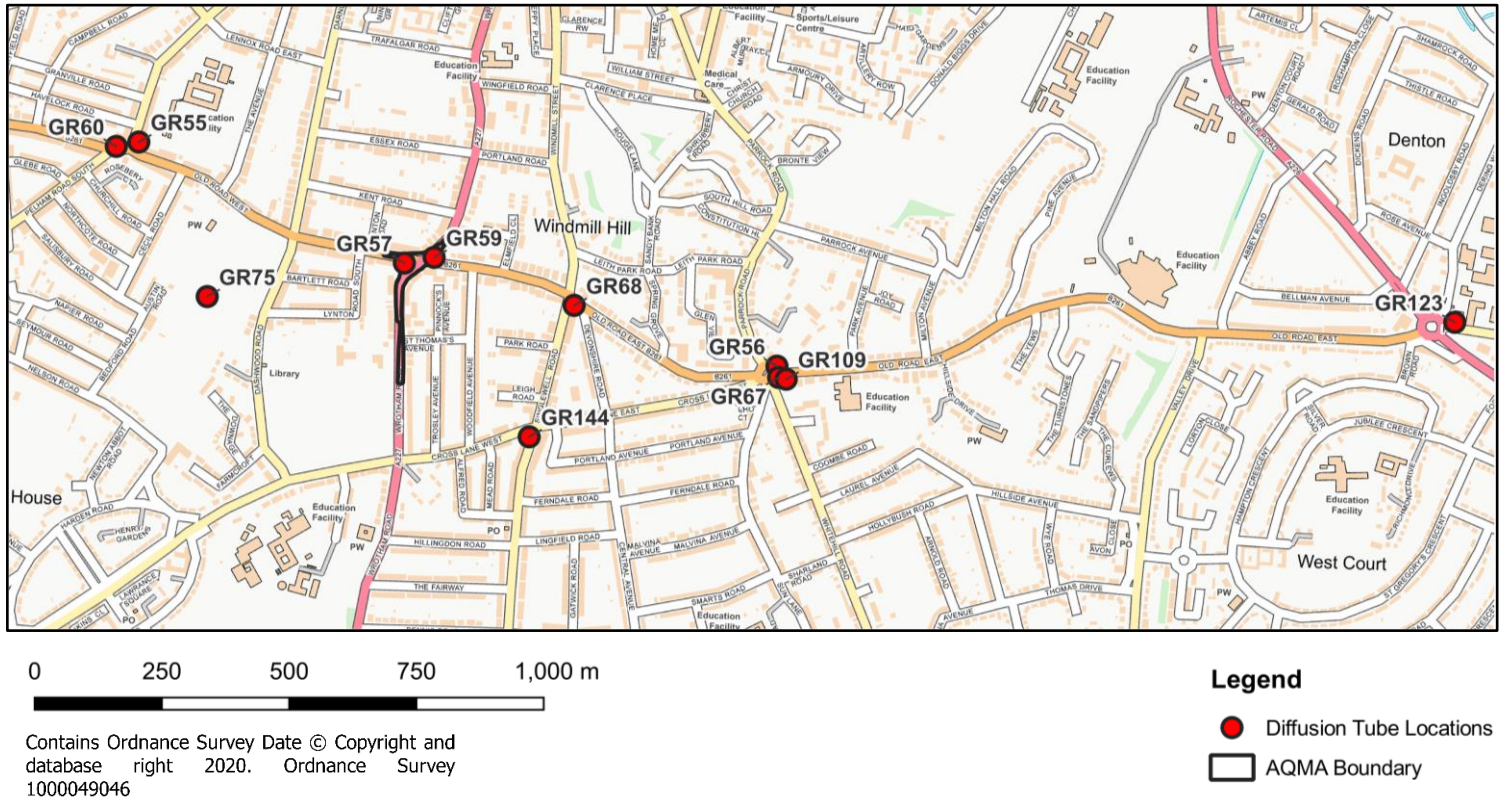


Figure D.5 – Map of Monitoring Sites Outside of Any AQMA Near Meopham

Figure D.6 – Map of Monitoring Sites Outside of Any AQMA Near Cobham

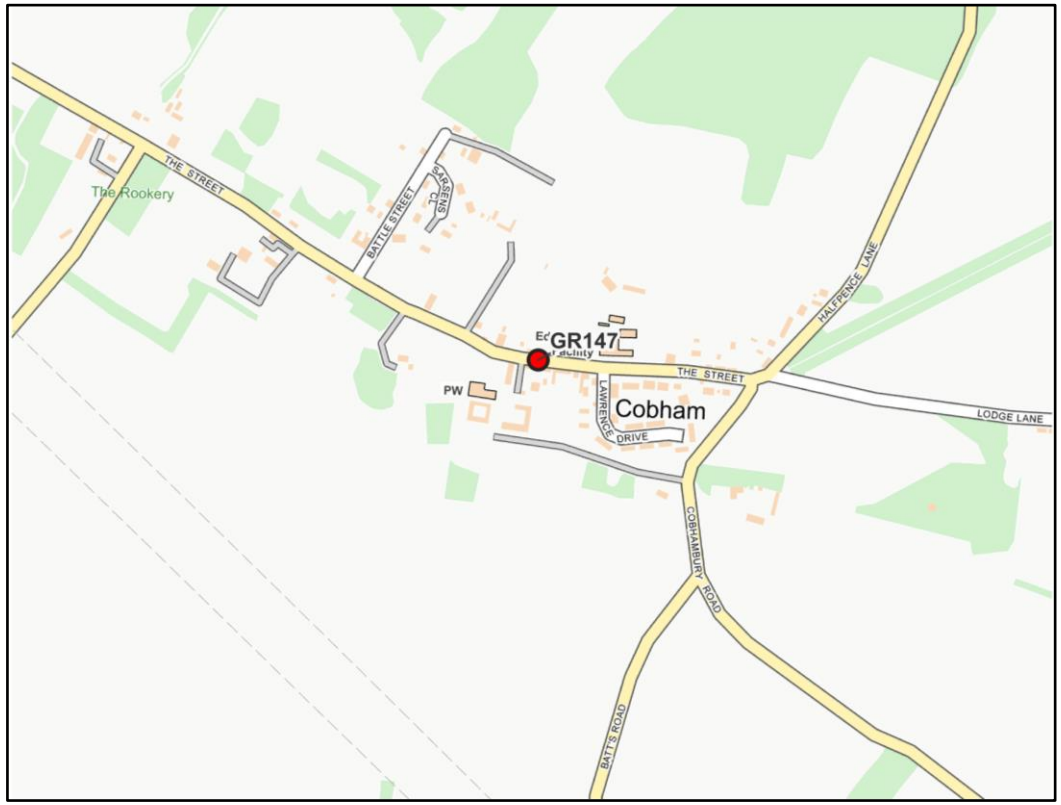
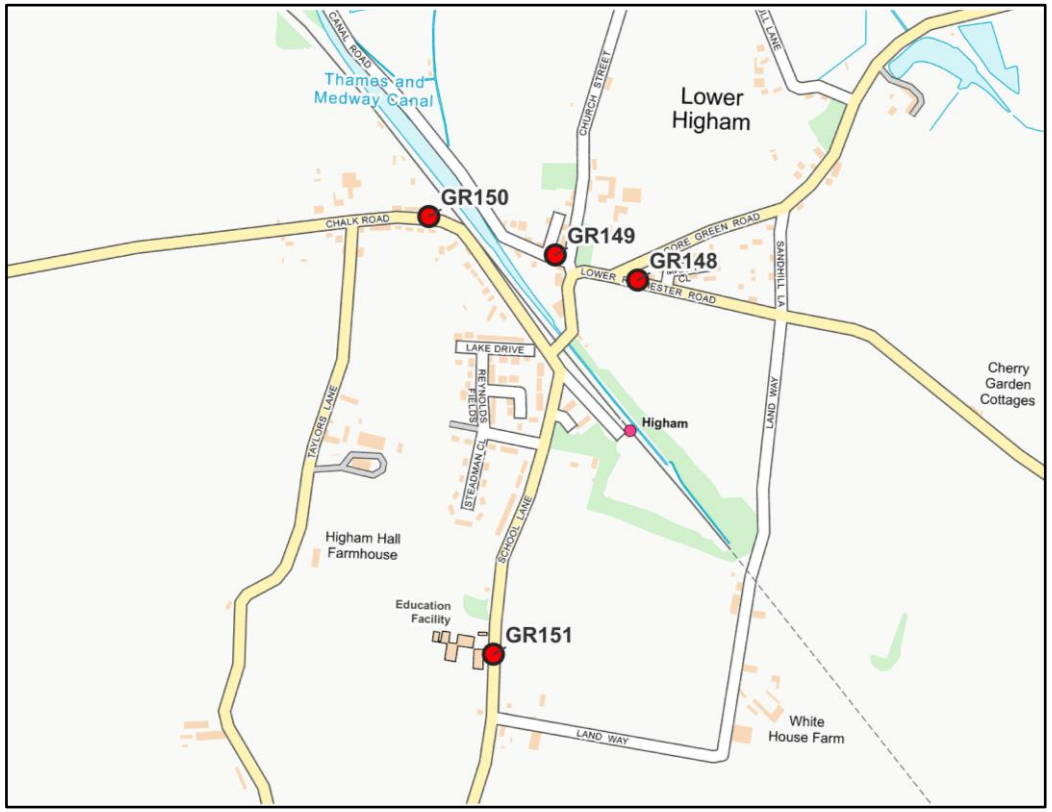


Figure D.7 – Map of Monitoring Sites Outside of Any AQMA Near Lower Higham



Appendix E: Summary of Air Quality Objectives in England

Table E.1 – Air Quality Objectives in England

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

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
AQS	Air Quality Strategy
NH	National Highways
KCC	Kent County Council
SCA	Smoke Control Area
AQDM	Air Quality Data Management
CPZ	Controlled Parking Zone
EV	Electric Vehicle
K&MAQP	Kent & Medway Air Quality Partnership

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