



Working in partnership

2022 Air Quality Annual Status Report (ASR)

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

Date: June, 2022

| Information | Fareham and Gosport Borough Council Details | | | | | | |
|-------------------------|--|--|--|--|--|--|--|
| Local Authority Officer | Ethan Taylor | | | | | | |
| Department | Environmental Health | | | | | | |
| Address | Civic Offices Civic Way Fareham Hampshire PO16 7AZ | | | | | | |
| Telephone | 01329 824439 | | | | | | |
| E-mail | ETaylor@Fareham.Gov.UK | | | | | | |
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Executive Summary: Air Quality in Our Area

Air Quality in Fareham and Gosport 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 ages³, with a total estimated healthcare cost to the NHS and social care of \pounds 157 million in 2017⁴.

The Local Air Quality Management (LAQM) regime is the statutory process by which local authorities monitor, assess and take action to improve local air quality. The main emphasis is on those pollutants shown to be challenging in respect of compliance – Nitrogen Dioxide (NO₂), Particulate Matter (PM₁₀) and Sulphur Dioxide (SO₂).

By way of a summary in Fareham and Gosport, during 2021, there was only one monitored exceedance of the annual mean NO₂ AQS objective ($40\mu g/m^3$). This was at the diffusion tube monitoring site CM2 located at Cams Mill Kerb side, where an annual mean concentration of $47.4\mu g/m^3$ was reported. One additional site reported an annual mean concentration within 10% of the AQS objective – diffusion tube site A27 ($37.6\mu g/m^3$) located on the A27 by the Bath Lane Underpass. Both of these are located outside existing declared Air Quality Management Area (AQMA) boundaries, however neither are located at a site of relevant exposure. Having said that, for CM2, once fall-off with distance

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

calculations were carried out, it is predicted that there is an annual mean concentration of 30.2µg/m³ at the nearest relevant receptor.

Where monitoring data are available for more than one year, annual mean NO₂ concentrations have largely shown a decrease compared to what was reported in previous years. However, the decrease seen in annual mean NO₂ concentrations in 2021 is less significant than that in 2020, which might indicate recovery of traffic activities following impacts on movement as a result of COVID-19 measures Despite this, monitoring locations within the existing declared <u>AQMAs</u> have shown annual mean NO₂ concentrations to be below the AQS objective for more than three years, regardless of the 2020 and 2021 data. The Council will therefore review revoking these AQMAs next year.

No sites reported an NO₂ concentration in excess of $60\mu g/m^3$ in 2021 and the automatic monitoring locations indicate that there have been less than 18 instances of 1-hour NO₂ concentrations greater than $200\mu g/m^3$. Therefore, taking into account the number of allowable exceedances through the year (18), the 1-hour NO₂ AQS objective was not breached in 2021.

Monitored PM₁₀ concentrations for 2021 have shown that the annual mean concentration remains well below the AQS objective of $40\mu g/m^3$, and that there have been significantly fewer than 35 instances of 24-hour concentrations greater than $50\mu g/m^3$. Taking into account the number of allowable exceedances through the year (35), the 24-hour PM₁₀ AQS objective was not breached in 2021.

Actions to Improve Air Quality

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

The 2019 Clean Air Strategy⁵ sets out the case for action, with goals to reduce exposure to harmful pollutants. The Road to Zero⁶ sets out the approach to reduce exhaust emissions from road transport through a number of mechanisms; this is extremely

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

important given that the majority of Air Quality Management Areas (AQMAs) are designated due to elevated concentrations heavily influenced by transport emissions.

During 2021, Fareham and Hampshire County Council have progressed the following measures:

- Completion of the extension of the Eclipse Busway Bus Rapid Transit (BRT). A new, improved busway has been served from December 2021. The scheme objectives are to reduce journey time and peak hour congestion on and off the Gosport peninsula; to remove the transport barriers to growth; and to improve connectivity.
- Purchase of the Council's first electric van and installation of charging infrastructure for it.
- Addition of a bus lane to enter the railway station from A27. An additional pedestrian exit has also been added from the bus station to the underpass.
- Commission of a low emission fuel feasibility study which was conducted in December 2021. The Executive approved a 12 month trial of the use of Hydrotreated Vegetable Oil (HVO) as a fuel for our three Garden Waste Vehicles. This could reduce CO₂ emissions by around 88% compared to diesel. Most of this reduction will be made in the processing and transporting the fuel. However, there are likely be reductions in Nitrogen Oxides tailpipe emissions which would be up to 27% lower and 84% lower production of particulate matter, helping to improve air quality. Fareham Borough Councils Street Scene Team who manage and maintain the Boroughs appearance have recently purchased new exhaust monitoring equipment and will be measuring tailpipe emissions from the Garden Waste Vehicles as part of this trail.
- Joint project with Friends of the Earth and Hampshire County Council (HCC) School Travel Planning team on a project resulted in primary aged school children designing sustainable travel posters for display on lampposts on the A32, Gosport Road AQMA.
- The councils worked with Hampshire County Council Travel Team in undertaking a
 pilot road closure project for local schools. The schools involved in the trail were
 Harrison Primary School and Alverstoke Infant School, diffusion tubes were
 installed to monitor the impacts of the school closures.

These, alongside previously completed measures, continue to help improve air quality conditions throughout the boroughs, and to maintain low concentrations in the long-term.

Conclusions and Priorities

The priorities for Fareham and Gosport Borough Councils in addressing and managing air quality within their local areas in the coming year includes:

- Continued progression of schemes to encourage users of local bus services and increase numbers of people using them.
- Continued progression on the development of the Climate Change policy and associated works.
- Continued review of the monitoring network and deployment of additional monitoring locations where concentrations are believed to be elevated.
- Understanding the long-term impacts of the COVID-19 pandemic on air quality within the boroughs to aid the revocation of both of the declared AQMAs.

Local Engagement and How to get Involved

More information about air quality in Fareham and Gosport can be obtained from the following websites:

- Fareham Borough Council
- Gosport Borough Council
- Air Quality England
- WeCare4Air

A <u>leaflet is available</u> which has been produced in conjunction with the National Health Service that provides information for different air pollutants including the specific health effects relating to air pollution and what can be done to combat poor air quality.

There are a number of ways that individuals are able to get involved and help improve air quality in the local area. Some examples are shown below:

Walk or cycle: Replacing a car journey by walking or cycling helps to reduce traffic emissions and has health and mental health benefits. For example, walking, scooting, or cycling on school journeys could save money and improve health and wellbeing whilst helping to reduce congestion and pollution in the local area.
 Walkers and cyclists could try to choose routes which are not as heavily trafficked (e.g., through parks and lesser used streets) to reduce the amount of pollution that they are exposed to. Hampshire County Council has information on a number of

initiatives about walking and cycling. Information on cycle routes in <u>Fareham</u> and <u>Gosport</u> is available online from both council websites.

- Take public transport or car share: For longer journeys, public transport or car sharing can save money and reduce the impact on the environment. <u>The Eclipse</u> <u>network</u> links Fareham and Gosport with Portsmouth and other key towns and destinations, including a dedicated off-road busway between Redlands Lane in Fareham and Tichborne Way in Gosport.
- When using a car:
 - Drive smoothly to save fuel and reduce emissions. Don't rev your engine unnecessarily.
 - Stick to the speed limit. Very high speeds produce more emissions. At
 70 mph a driver could be using up to 15% more fuel than at 50 mph.
 - o Turn off the engine when stationary.
 - Ensure tyre pressures are correct lower tyre pressure increases fuel use and emissions.
 - Consider whether air conditioning is required using it increases fuel consumption by up to 30%.
 - Remove unnecessary clutter from the boot to reduce engine workload.
 - If buying a car, consider its fuel economy and emissions ultra-low emission vehicles (hybrid and electric vehicles) consume less fuel and produce fewer emissions. Whilst initial purchase costs for electric and hybrid cars may be higher, the running costs are lower. <u>Government grants</u> are available to help with the purchase of some low emission vehicles.
- Home heating:
 - If considering the use of open fires or wood burning stoves, ensure to also consider what steps can be taken to reduce emissions. Defra has produced a <u>wood-burning guide</u> providing advice on how to reduce emissions whilst saving money on fuel and maintenance costs.
 - Consider buying a boiler with low/reduced NO_x emissions.

Daily national air quality updates, pollution forecasts and advice about how to protect yourself from the impacts of poor air quality can be found on <u>UK-AIR</u>.

Local Responsibilities and Commitment

This ASR was prepared by the Environmental Health Section of Fareham and Gosport Borough Council with the support and agreement of the following officers and departments:

Ethan Taylor

This ASR has been approved by:

lan Rickman

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 Ethan Taylor at:

Fareham Borough Council, Civic Offices, Civic Way, Hampshire, PO16 7AZ

Tel: (0) 1329 236100

Email: <u>ehs@fareham.gov.uk</u>

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1 Local Air Quality Management

This report provides an overview of air quality in Fareham and Gosport Borough Councils 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 Fareham and Gosport Borough Councils to improve air quality and any progress that has been made.

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

2 Actions to Improve Air Quality

Air Quality Management Areas

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

A summary of AQMAs declared by Fareham Borough Council can be found in Table 2.1. The table presents a description of the two AQMAs that are currently designated within Fareham Borough Council. Appendix D: Map(s) 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:

• NO₂ annual mean.

We propose to revoke both the Gosport Road and the Portland Street AQMAs once the long-term impacts of COVID-19 are better understood (see monitoring/additional section).

Gosport Borough Council currently does not have any declared AQMAs.

| 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 ⁽¹⁾ | Level of Exceedance: Current Year ⁽¹⁾ | Name and Date of AQAP Publication | Web Link to AQAP |
|----------------------------|--|--|--|--|---|--|---|--|
| Portland Street AQMA | Declared 01/12/2007, Amended 01/11/2017 | NO₂ Annual Mean | An area encompassing residential properties and the Sacred Heart Catholic Church on Portland Street and the southern end of Hartland Road Fareham. | NO | 45.3µg/m³ | 25.2µg/m³ | AQAP, Gosport Road & Portland Street. Published 2008 | <u>Visit the</u> <u>AQAP for</u> <u>the</u> <u>Portland</u> <u>Street</u> <u>AQMA</u> |
| Gosport Road AQMA | Declared 01/04/2006, Amended 01/11/2017 | NO₂ Annual Mean | An area encompassing the junction of Gosport Road, Redlands Lane and Newgate Lane Fareham and the surrounding area up to the Quay Street roundabout Fareham. | NO | 47.3µg/m³ | 27.6µg/m³ | AQAP, Gosport Road & Portland Street. Published 2008 | <u>Visit the</u> <u>AQAP for</u> <u>the</u> <u>Gosport</u> <u>Road</u> <u>AQMA</u> |

Fareham and Gosport confirm the information on UK-Air regarding their AQMA(s) is up to date.

☑ Fareham and Gosport confirm that all current AQAPs have been submitted to Defra.

Notes:

(1) Please note that the level of exceedance refers to the annual mean concentration of the pollutant.

Progress and Impact of Measures to address Air Quality in Fareham and Gosport Borough Councils

Defra's appraisal of last year's ASR concluded "*the report is well structured, and provides all of the information specified in the Guidance*". Additional comments made are as follows:

- 1. Trends are presented and discussed, and a robust comparison to air quality objectives is provided.
- The Council has added 7 new diffusion tube sites to their monitoring network.
 This is welcomed and will help define hotspot areas.
- 3. The Council has provided comprehensive list of action plan measure and all the relevant fields have been completed with detailed comments. This is encouraging to see as it shows the Council's commitment to achieving the measures to improve air quality.
- 4. Robust and accurate QA/QC procedures were applied. Calculations for bias adjustment and the annualisation completed were outlined in detail which enhances the reader's understanding. The deliberation over the choice of bias adjustment used was appropriate and considered robust.
- 5. The Council has carried out additional short term monitoring at schools to understand air quality conditions in these areas. Preliminary results of three months do not show high concentrations at these locations.
- 6. The Council has responded to last year's appraisal comments and made changes to the report based on the comments. This is encouraging to see.
- 7. It is understood that COVID-19 pandemic caused delays to several air quality action plan measures due to staff shortages and increased workload, including update on the new Air Quality Action Plan. It is recommended to progress the new AQAP as the previous one was published in 2008 and is out of date.

With consideration of the impacts of the COVID-19 pandemic, the status of the AQMAs will continue to be kept under review and await further data from future years to understand whether compliance observed is to be long term. Progress of the AQAP is continued to be delayed further due to the pandemic, and until its impacts can be better understood.

Fareham and Gosport have 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. 22 measures are included

within Table 2.2, with the type of measure and the progress Fareham and Gosport Borough Councils 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 Plan, the Gosport Road & Portland Street AQAP. Key completed measures are:

- Completion of the taxi replacement incentive scheme, whereby a total of 68 vehicles have been replaced.
- Completion of the provision of Real Time Passenger Information (RTPI) at bus stops, whereby these have been implemented at 55 bus shelters across Fareham and Gosport.
- Improvement of the operation of traffic signals on Markey Quay, improving the flow of traffic along the Eastern Way.
- Both Council websites have been updated to include subsections on air quality topics, with the aim to act as an air quality hub with various links for more specific information.
- Completion of the extension of the Eclipse Busway Bus Rapid Transit (BRT). A new, improved busway has been served from December 2021. The scheme objectives are to reduce journey time and peak hour congestion on and off the Gosport peninsula; to remove the transport barriers to growth; and to improve connectivity.
- The Councils have purchased the first electric van and installed charging infrastructure for it.
- A pilot road closure project for local schools. The schools involved in the trail were Harrison Primary School and Alverstoke Infant School, diffusion tubes were installed to monitor the impacts of the school closures.

Fareham and Gosport expect the following measures to be processed over the course of the next reporting year:

• Continued progression of schemes to encourage users of local bus services and increase numbers of people using them.

- Continued progression on the development of the Climate Change policy and associated works.
- The Stubbington Bypass has opened in the spring of 2022 which should reduce the traffic and air pollution levels within the current hotspots.
- A 12 month trial of the use of Hydrotreated Vegetable Oil (HVO) as a fuel for three Garden Waste Vehicles has been approved. There are likely be reductions in Nitrogen Oxides (NO_x) tailpipe emissions which would be up to 27% lower and 84% lower production of particulate matter, helping to improve air quality.
- In February 2022, the Councils have moved over the small vehicle fleet road sweepers, ride on mowers etc. to the use of HVO.

Fareham and Gosport worked to implement these measures in partnership with the following stakeholders during 2021:

- Hampshire County Council (HCC).
- Transport for South Hampshire (TfSH).
- Fareham Borough Council (FBC) and Gosport Borough Council (GBC).
- FirstGroup.

The principal challenges and barriers to implementation that the Councils anticipate facing are understanding the long-term impacts of the COVID-19 pandemic. This impacts the progression and development of an updated AQAP and associated measures.

The Councils anticipate that the measures stated above and in Table 2.2 will ensure that the annual mean NO₂ air quality objective is achieved in both the Portland Street and Gosport Road AQMAs and the Councils will review revoking both AQMAs next year based on the current air quality situation.

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 |
|----------------|--|--|--|-------------------------------|---|---|---|---------------------------------|-------------------|---------------------------------|----------------|--|--|--|--|
| 1 | Development of Fareham Borough Council's Local Air Plan to comply with the EU Limit Value for NO ₂ in the shortest possible time | Policy Guidance and Development Control | Regional Groups Co- ordinating programmes to develop area wide strategies to reduce emissions and improve air quality | 2019 | Complete | FBC and HCC; Funded by Defra/DfT | Defra/DfT (Joint Air Quality Unit) | NO | Not Funded | £10k - £50k | Completed | Reduction of NO _X (and PM) emissions | Submission of Outline Business Case to Defra/DfT and subsequent funding of measures | Outline Business Case submitted in Dec-18 and confirmation that four measures would be funded received in Mar19. | Measures were selected with the aim to be implemented in 2019, to reduce NO ₂ concentrations as quickly as possible. The approach achieved compliance in 2020. |
| 2 | To implement a taxi replacement incentive scheme as part of Local NO ₂ Plan | Promoting Low Emission Transport | Taxi emission incentives | 2018 | 2018- 2021 | FBC | Defra/DfT (Joint Air Quality Unit) | NO | Fully Funded | £100k - £500k | Completed | Reduction of NOx emissions from taxis | Decrease in proportion of pre-Euro 6 diesel taxis in local taxi fleet compared with lower emission alternatives | Jan-18: Secured funding for taxi replacement initiative scheme, to replace pre- Euro 6 diesel vehicles with ultra-low emission vehicles Mar-19: Secured funding to extend the incentive scheme. Euro 5 or earlier diesel taxi owners can now replace them with a Euro 6 and obtain up to £2,450 towards running costs. Up to 130 older taxis could be replaced. June-20: Scheme was in place up to 31st December 2019, a total of 38 Euro 5 or earlier diesel taxis upgraded in that period. The fleet started at 225 older diesel taxis, and this was reduced to 145 at the end of scheme. This has reduced further to 103. The scheme has now ended with a total of 68 | Funding was secured in Jan- 18 and was used to establish an early scheme. Unfortunately, take up was low, this was thought to be due to stringency of the terms. Since securing new funding via the Local NO ₂ Plan in Mar-19, FBC has been working with Defra/DfT to explore how the schemes can be joined together and how take up can be improved. The scheme was in place up to 31 Dec 2019. A total of 38 Euro 5 or earlier diesel taxis upgraded in that period. The fleet started at 225 older diesel taxis, and this was reduced to 145 at the end of the scheme. This has since further reduced to 103. A licensing change meant that no more vehicles plated for the first time |

| 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 |
|----------------|--|---|--|-------------------------------|---|---------------------------|---|---------------------------------|-------------------|-----------------------------------|----------------|--|---|---|---|
| | | | | | | | | | | | | | | vehicles replaced. | or plate transfers could be to a standard lower than Euro 6. A number of drivers have retired and their vehicles with them. |
| 3 | To improve infrastructure for walking and cycling as part of Local NO ₂ Plan | Transport Planning and Infrastructure | Cycle network | 2019 | Complete | нсс | Defra/DfT (Joint Air Quality Unit) | NO | Fully Funded | £1 million - £10 million | Completed | Reduction of NO _X (and PM) emissions | Complete works on four route corridors. Growth in cycling mode share. To continue to provide specific information on the Councils website of cycle routes in and around the AQMAs. | Secured funding for cycle infrastructure improvement measures along four route corridors, extending HCC work via its Local Cycling and Walking Implementation Plan (LCWIP). All of the schemes were delivered by January 2020. | The potential impact has been appraised as regards the potential growth of cycling mode share. At the same time, it is noted that this is a voluntary measure requiring individuals to opt to change their travel habits, for which uptake cannot be guaranteed. |
| 4 | To provide Real Time Passenger Information (RTPI) at bus stops as part of Local NO ₂ Plan | Transport Planning and Infrastructure | Public transport improvements/interchanges stations and services | 2019 | Complete | HCC | Defra/DfT (Joint Air Quality Unit) | NO | Fully Funded | £500k - £1 million | Completed | Reduction of NOx (and PM) emissions | Installation of RTPI at additional bus stops. Growth in public transport mode share. Annual number of passenger trips. | Secured funding for provision of RTPI at additional bus stops. 55 bus stops across the local area have been identified that do not currently have RTPI, which is acknowledge as an enabler of increasing public transport uptake. These schemes were delivered by January 2020. The scheme was completed early 2020 with 55 bus shelters across Fareham and Gosport | This measure builds on existing RTPI provision at other bus stops. It is noted that this is a voluntary measure requiring individuals to opt to change their travel habits, for which uptake cannot be guaranteed. |
| 5 | To improve operation of traffic signals on Market Quay and improve traffic flow along Eastern Way as | Traffic Management | UTC, Congestion management, traffic reduction | 2019 | Complete | нсс | Defra/DfT (Joint Air Quality Unit) | NO | Fully Funded | £10k - £50k | Completed | Reduction of NOx (and PM) emissions | Install SCOOT signal optimisation Increase traffic speeds at Quay Street | Secured funding for SCOOT traffic signal optimisation at Quay Street junction of A27 and A32. This | A feasibility study indicated that congestion will be reduced at approaches to the roundabout, but it is less likely |

| 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 |
|----------------|---|--|---------------------------|-------------------------------|---|---------------------------|--------------------|---------------------------------|-------------------|---------------------------------|----------------|--|---|--|--|
| | part of Local NO₂ Plan | | | | | | | | | | | | roundabout approaches | should reduce congestion and therefore traffic emissions. This was delivered by January 2020. The scheme has been effective where the priority route is to the M27 where exceedance was predicted and the subject of the Ministerial Direction. | to influence vehicle speeds on the A27 / Gosport Road, and would have a negligible influence on traffic flows. Any benefits may therefore by highly localised. |
| 6 | To review the regulation of private hire and hackney carriage emissions and where appropriate, integrate improvements into the taxi licensing regime | Promoting Low Emission Transport | Taxi Licensing Conditions | 2018 | Ongoing | FBC | Local Authority | NO | Fully Funded | <£10k | Implementation | Reduction of NOx (and PM) emissions | Taxi standards for new licenses set at a minimum of Euro 6 for diesel vehicles | Amendments made to taxi licensing such that licenses are no longer be granted to diesel vehicles which do not meet Euro 6 emission standard. Provision of "Switch off your engine" signage in taxi ranks and bus station. Articles in taxi and private hire newsletters on air quality issues. | The air quality impact of the scheme depends on the rate at which the local taxi vehicle fleet is renewed and the relative difference in real-world emissions between Euro 6 and older diesel vehicles. There is significant uncertainty regarding the on- road performance of these vehicles. Estimates have been made using the latest emission factors from Defra |
| 7 | To examine the feasibility of erecting signs to identify the AQMAs | Public Information | Other | 2017 | Complete | FBC | Local Authority | YES | Fully Funded | | Completed | Reduction of NOx (and PM) emissions | To erect air quality awareness signs along the A32 Gosport Road in Fareham | Complete | Joint project with Friends of the Earth and HCC School Travel Planning team on a project resulted in primary aged school children designing sustainable travel posters for display on lampposts on the A32, Gosport Road AQMA |

| 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 |
|----------------|---|---|---|-------------------------------|---|---------------------------|-------------------|---------------------------------|-------------------|-----------------------------------|----------------|--|--|---|---|
| 8 | To assist the Highway Authority in promoting and implementing those schemes identified within the Highway Authority's "Strategic Access to Gosport (2010- 2026)" (STAG) transport study for the Gosport peninsula. | Traffic Management | Strategic highway improvements Reprioritising road space away from cars, including Access management, Selective vehicle priority, bus priority, high vehicle occupancy lane | Ongoing | Ongoing | HCC | County | | | | Implementation | Reduction of NO _X and PM emissions | Annual progress towards the programmed 19 schemes listed in the study. | Key road schemes: (i) Funding has been secured for the Stubbington Bypass. Progress delayed by a Public Inquiry. In May 2019, the scheme was given go ahead. Construction currently underway, although some delays due to covid-19. (ii) The Wellborne planning application was submitted to the Council in 2017. Amendments to the application were received in Jan-19, including a redesigned J10 layout for the M27 and revisions to the local road network. Outline planning permission was granted in Oct 2019. The works are still ongoing in 2021. | The STAG transport study informed the Local Transport Plan (LTP3, 2011) and the subsequent Fareham and Gosport Transport Statements (2013)9. |
| 9 | Provide a bus/rail interchange facility at Fareham rail station | Transport Planning and Infrastructure | Public transport improvements/interchange stations and services | Ongoing | Complete | HCC/TfSH | County | NO | Fully Funded | £1 million - £10 million | Completed | Reduction of NO _X and PM emissions | Provision of a transport interchange at Fareham rail station | An extra bus lane has been added to enter the railway station from A27. An additional pedestrian exit has also been added from the bus station to the underpass. | Work completed under the Transforming Cities Fund, led by HCC. |

| 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 |
|----------------|---|---|---------------------|-------------------------------|---|---------------------------|-------------------|---------------------------------|-------------------|---------------------------------|----------------|--|---|--|--|
| 10 | To provide a suitable alternative to the light rapid transit system linking Fareham, Gosport and Portsmouth | Promoting Travel Alternatives | Other | Complete | Complete | HCC/TfSH | County | NO | Fully Funded | >£10 million | Completed | Reduction of NOx emissions | Annual progress against the key measures and timeframes set out for the BRT phases | The Eclipse Busway extension is completed and has extended the existing BRT 1 km further into Gosport. A new, improved busway has been served since December 2021. | The enhanced scheme will retain Rowner Road bridge and the existing shared-use route for pedestrians and cyclists under Rowner Road. The revision will also avoid the need for a prolonged closure of Rowner Road whilst the new busway connection is constructed. A further £1.4m of additional funding from DfT's Transforming Cities Fund, has been secured to meet the additional cost. |
| 11 | Increase numbers of people using local bus services | Transport Planning and Infrastructure | Other | Complete | 2021 | HCC/First | County | NO | Not Funded | £10k - £50k | Completed | Reduction of NOx and PM emissions | Annual number of passenger trips using BRT services | The 1 km extension of the Eclipse Busway will target new passengers and increase ridership of the service as a whole. Also enhanced by new measure to implement additional RTPI at bus stops. | N/A |
| 12 | To continue to work with schools in Fareham close to the AQMAs for the development, implementation | Promoting Travel Alternatives | School Travel Plans | Ongoing | Ongoing | нсс | County | NO | Not Funded | £10k - £50k | Implementation | Reduction of NO _X emissions | All schools in Fareham close to the AQMAs have implemented School Travel Plans | Continued liaison with HCC School Travel Planning group. Diffusion tubes have been sited at several locations | Diffusion tube data has been collected at schools for two month periods during 2017, 2018 and 2019. All raw monthly |

| 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 |
|----------------|--|--|---|-------------------------------|---|---------------------------|-------------------------------|---------------------------------|-------------------|---------------------------------|----------------|---|--|--|--|
| | and the annual review of School Travel Plans | | | | | | | | | | | | | adjacent to local schools. | results recorded were below the level of the annual mean air quality objective for NO ₂ . The results were not included in the ASR, as they do not meet data capture requirements for annualisation |
| 13 | To implement the Fareham Town Access Plan proposals where they have an impact on air quality in the AQMAs | Traffic Management | Other | Ongoing | HCC/FBC | HCC/FBC | Local Authority, County | NO | Not Funded | £10k - £50k | Implementation | Reduction of NOx emissions | Implementation of proposals | The Town Access Plan (TAP) includes cycling measures, which are listed in Air Quality Action Plan Progress Reports. A number of schemes highlighted in the plan have been re-emphasised through the Green Infrastructure Strategy and the Active Travel Strategy. | The Town Access Plan informed the Fareham Transport Statement (2013) 10. |
| 14 | To continue to inspect premises and take appropriate enforcement action in respect of the Environmental Permit risk assessment regime | Environmental Permits | Other | Ongoing | Ongoing | FBC | Local Authority | NO | Not Funded | £10k - £50k | Implementation | Reduction of emissions from permitted activities | Submission of Defra return | All due inspections undertaken in 2018/19. Return submitted to Defra on time | Continuing programme for inspections. |
| 15 | Promote the use of planning policies, alongside other planning and transport measures, to promote sustainable transport choices and reduce reliance on the car | Policy Guidance and Development Control | Air Quality Planning and Policy Guidance | Ongoing | Ongoing | FBC/GBC | Local Authority | NO | Not Funded | £10k - £50k | Implementation | Reduction of NO _X and PM emissions | Examples of where FBC requires higher provision of cycle facilities or lower car parking facilities than the HCC standards for new developments. | Planning updates: (i) Ongoing implementation of LDF policies to influence air quality. (ii) Fareham's Draft Local Plan 2036 will require new development to offer maximum flexibility in travel modes, minimise | Planning processes ongoing |

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|----------------|---|--|----------------|-------------------------------|---|---------------------------|--------------------|---------------------------------|-------------------|---------------------------------|----------------|--|--|---|--|
| | | | | | | | | | | | | | | emissions and contribute to reduction of transport impacts on local air quality, and provide electric vehicle charging infrastructure. | |
| 16 | To continue to review and consult on air quality in the Borough in line with statutory requirements | Policy Guidance and Development Control | Other policy | Ongoing | Ongoing | FBC | Local Authority | NO | Not Funded | £10k - £50k | Implementation | N/A | a) To ensure compliance with the Defra timetable. (b) To maintain air quality reports on the FBC website. | FBC submitted a Local NO ₂ Plan to Defra/DfT (Dec-18) to achieve compliance with the annual mean EU Limit Value for NO ₂ in the shortest possible time. Confirmation of funding was received Mar-18. | The work is ongoing and guidance and legislation is regularly checked to ensure compliance. |
| 17 | To continue to work in partnership with neighbouring authorities and others for the control of air pollution and continued improvement of air quality | Policy Guidance and Development Control | Other policy | Ongoing | Ongoing | FBC | Local Authority | NO | Not Funded | £10k - £50k | Implementation | Reduction of NO _X and PM emissions | Minutes of meetings | A technical working group was established to develop and implement FBC's Local NO ₂ Plan, including FBC (Environmental Health, Planning and Transport Planning), GBC, HCC and First Bus. | Meetings were postponed due to the pandemic but have started again and are ongoing |
| 18 | To monitor the performance of the AQAP and review actions regard to the air quality objectives and implement additional actions where necessary | Policy Guidance and Development Control | Other policy | Ongoing | Annual progress reports to Defra | FBC | Local Authority | NO | Not Funded | £10k - £50k | Implementation | Reduction of NOx emissions | Outcomes of the annual LAQM reporting of annual mean improvements. Also set out a position statement within the annual action plan progress report on any required changes to the existing measures and the need for further actions | Progress is reported in ASRs, available on Fareham Borough Council's website. | Defra feedback on the 2018 ASR noted that FBC may consider revoking both AQMAs. The situation will be monitored following implementation of the Local NO ₂ Plan. |

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|----------------|---|-----------------------|------------------|-------------------------------|---|---------------------------|--------------------|---------------------------------|-------------------|---------------------------------|----------------|--|--|---|---|
| 19 | To continue to place air quality reports on the FBC website | Public Information | Via the Internet | Ongoing | Ongoing | FBC | Local Authority | NO | Not Funded | £10k - £50k | Implementation | N/A | Annually (or as required) e-mail stakeholder bodies send a message each time there is a website report update | The 2021 ASR is listed on FBC website. | N/A |
| 20 | To investigate the most effective method of disseminating air quality information to the public and assess the feasibility of employing this method for FBC | Public Information | Other | Ongoing | Ongoing | FBC | Local Authority | NO | Not Funded | £10k- £50k | Implementation | N/A | Annual review of information dissemination options in line with UK best practice and discussions with neighbouring authorities | Seeking to raise awareness of local and national air quality matters: (i) Link to all three monitoring stations on FBC website. (ii) Advice to the public on reducing emissions and avoiding exposure on FBC and GBC websites. (iii) Comms undertaken and planned as part of the Local NO ₂ Plan: public reports were submitted to the Council Executive; consultation was undertaken in association with specific measures. Using media and social media to advertise support for clean air day. | N/A |

| 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 |
|----------------|---|--|------------------|-------------------------------|---|---------------------------|--------------------|---------------------------------|-------------------|---------------------------------|----------------|--|--|---|---|
| 21 | To promote awareness via the FBC website of other air quality information web site | Public Information | Via the Internet | Ongoing | Ongoing | FBC | Local Authority | NO | Not Funded | £10k - £50k | Implementation | N/A | Annual review of the Council website content in line with accepted UK best practice | Ongoing process of updating FBC website with the aim of providing an up to date, useful and informative public resource for air quality and to raise awareness of local and national air quality matters. FBC & GBC websites were updated to include several subsections on air quality topics, the aim being to act as an air quality hub with various links for more specific information. | N/A |
| 22 | Development of a Climate Change policy via an new Climate Change Officer Post and accompanying Steering Group. | Policy Guidance and Development Control | Other policy | 2019 | Ongoing | FBC | FBC | NO | Not Funded | £10k - £50k | Implementation | Reduction of NOx (and PM) emissions | Review of Climate Change Plan | Implementation on-going - The climate briefing has been produced and is going to be sent to committee. In order to provide a baseline upon which to measure improvements, the Council must first establish its current carbon footprint. This work will then inform the Carbon Reduction Action Plan | Lengthy Timescale - work in very earlier stages. |

Notes:

The efficacy of the measures is indicated by the colour in the "Measure No." column, whereby: green = most effective, yellow = moderately effective, red = least effective.

Funding information is provided where available and accessible.

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.

Fareham and Gosport currently monitor PM_{10} concentrations at the Tichborne Way automatic monitoring station, but $PM_{2.5}$ concentrations are not currently monitored. Therefore, concentrations of $PM_{2.5}$ have been estimated from PM_{10} measurements in line with guidance specified in <u>LAQM.TG(16)</u>. There are no nearby roadside monitoring stations part of the Automatic Rural and Urban Network (AURN) whereby both PM_{10} and $PM_{2.5}$ concentrations are measured. Therefore, in accordance with <u>LAQM.TG(16)</u> paragraphs 7.109 – 7.113, the annual mean PM_{10} concentration measured at Tichborne Way has been multiplied by the nationally derived correction factor of 0.7 to estimate an annual average $PM_{2.5}$ concentration of $11.4\mu g/m^3$ at this site. This estimated annual mean concentration is below to the recommended 2021 annual mean objective for $PM_{2.5}$ ($25\mu g/m^3$).

The current <u>Defra background maps</u> for both Fareham and Gosport Borough Councils (2018 reference year) show that all 2021 background concentrations of PM_{2.5} are below the recommended 2021 annual mean AQS objective for PM_{2.5} of $25\mu g/m^3$. The highest concentration is predicted to be $11.5\mu g/m^3$ within the 1km x 1km grid square with the centroid grid reference of 460500, 101500. This is an area in Gosport Borough Council, to the north of Gosport and includes a section of the A32. It is important to note that these estimations do not take into consideration any impacts as a result of the COVID-19 pandemic.

The Public Health Outcomes Framework data tool compiled by Public Health England quantifies the mortality burden of $PM_{2.5}$ within England on a county and local authority scale. The 2020 fraction of mortality attributable to $PM_{2.5}$ pollution (indicator D01) across England is 5.6%. In contrast the fractions within Fareham and Gosport are marginally higher the national average at 6.0% and 6.2% respectively. The regional average for the

South East of England is 6.0%. The 2020 fraction of mortality has been used as opposed to the 2021 fraction as the data has not been made available at the time of writing.

Defra estimates in <u>the Clean Air Strategy 2019</u> that 70-75% of annual average background PM_{2.5} concentrations are attributable to secondary particulates and natural sources. Of the remaining primary particulate, 15-20% is from domestic home heating, with approximately 3% from both industrial and road traffic sources, and a further 5% from 'other' sources, which include shipping, aircraft and off-road emissions.

Measures to improve air quality often have shared wins with other public health indicators, a good example being the encouragement of active travel and commuting leading to increased physical activity and increased wellbeing. Both Fareham and Gosport Borough Councils work closely with public health specialists to share information and deliver improvements in air quality. A joint <u>public information leaflet</u> has been produced with NHS Hampshire to outline the health impacts of air pollution and set out practical steps that the public can take to improve air quality and reduce their own exposure.

LAQM.TG(16) Table A.1 Action toolbox presents a list of measures that can be implemented to help reduce concentrations of PM_{2.5}. Some of the actions carried out by Fareham and Gosport Borough Councils, shown in Table 2.2, included in both Fareham's AQAP and the Local NO₂ Plan, focus on promoting sustainable transport, whilst also reducing traffic volumes, improving traffic flow, switching to alternative modes of transport, and promoting the uptake of alternative fuels. Although not designed specifically for the reduction of PM_{2.5}, improvements in NO₂ concentrations will lead to a net reduction of PM_{2.5} concentrations from combustion-based sources where both pollutants arise, and therefore have a direct and proportional impact on PM_{2.5}.

Whilst neither Councils have designated any Smoke Control Areas, Council guidance with regards to domestic wood burning is available. Information on this can be found on both <u>Fareham</u> and <u>Gosport</u> Council websites. Both <u>Fareham</u> and <u>Gosport</u> Councils also provide guidance with regards to bonfires.

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

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

Summary of Monitoring Undertaken

3.1.1 Automatic Monitoring Sites

Fareham and Gosport Borough Councils undertook automatic (continuous) monitoring at three sites during 2021. Table A.1 in Appendix A shows the details of the automatic monitoring sites. The <u>WeCare4Air</u> website presents automatic monitoring results for Fareham and Gosport.

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 have been adjusted are included in Appendix C.

3.1.2 Non-Automatic Monitoring Sites

Fareham and Gosport Borough Councils undertook non- automatic (i.e., passive) monitoring of NO₂ at 47 sites during 2021. Table A.2 in Appendix A presents the details of the non-automatic sites.

Additional short-term monitoring was carried out in 2021 at one site. Details of this site is presented separately from the LAQM data in Appendix C and have not been used for LAQM reporting purposes due to only being in operation for one month.

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

Individual Pollutants

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

3.1.3 Nitrogen Dioxide (NO₂)

Table A.3 and Table A.4 in Appendix A compare the ratified and adjusted monitored NO₂ annual mean concentrations for the past five years with the air quality objective of $40\mu g/m^3$. Note that the concentration data presented represent the concentration at the location of the monitoring site, following the application of bias adjustment and annualisation, as required (i.e., the values are exclusive of any consideration to fall-off with distance adjustment).

For diffusion tubes, the full 2021 dataset of monthly mean values is provided in Appendix B. Note that the concentration data presented in Table B.1 include distance corrected values, only where relevant.

Table A.5 in Appendix A compares the ratified continuous monitored NO₂ hourly mean concentrations for the past five years with the air quality objective of $200\mu g/m^3$, not to be exceeded more than 18 times per year.

During 2021, only one monitoring location reported an annual mean NO₂ concentration exceeding the AQS objective of $40\mu g/m^3$. Monitoring location CM2 is located on the kerbside of Cams Hill, adjacent to the Delme Roundabout, and reported an annual mean concentration of $47.4\mu g/m^3$ in 2021. This monitoring location is not located at a site of relevant exposure. Following fall-off with distance correction calculations, there is a predicted annual mean NO₂ concentration of $30.2\mu g/m^3$ at the nearest relevant receptor. The next highest reported concentration is $37.6\mu g/m^3$ at monitoring location A27, a kerbside site by the Bath Lane Underpass. There are no relevant receptors located near to this site.

Across all the monitoring locations in both Fareham and Gosport, there is a general decrease in the annual mean NO₂ concentration reported over the past five years, with a few sites remaining relatively stable and below the AQS objective. The average decrease observed from 2020 to 2021 is 0.7 μ g/m³, which is less significant than the average

decrease of 4.2 μ g/m³ observed from 2019 to 2020. This can be a sign of traffic levels gradually recovering from the impacts of COVID-19 through 2020.

There have been five years running where annual mean NO₂ concentrations in both AQMAs have been reported to be below the AQS objective. Fareham Borough Council will review revoking these AQMAs following maintained compliance next year.

In regard to the 1-hour NO₂ AQS objective, all three automatic monitoring locations have reported less than 18 hourly concentrations greater than $200\mu g/m^3$. Additionally, as no diffusion tube location reported an annual mean concentration in excess of $60\mu g/m^3$, it is unlikely that there has been an exceedances of the 1-hour NO₂ AQS.

3.1.4 Particulate Matter (PM₁₀)

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 $40\mu g/m^3$.

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 $50\mu g/m^3$, not to be exceeded more than 35 times per year.

Only one automatic monitoring location monitors concentrations of PM_{10} – Tichborne Way in Fareham. The annual mean PM_{10} concentration reported in 2021 is $16.3\mu g/m^3$, well below the AQS objective of $40\mu g/m^3$. In addition to this, there have been no reported 24-hourly concentrations where a concentration of $50\mu g/m^3$ was observed.

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) |
|------------|-----------------|-----------|-------------------------------|--------------------------------|-----------------------------------|---------------------------|-------------------------------|---|--|------------------------|
| GOS1 | Tichborne Way | Roadside | 458987 | 102786 | NO ₂ /PM ₁₀ | No | Chemiluminescence and TEOM | 15 | 5 | 3 |
| FAR1 | Gosport Road | Roadside | 457594 | 105280 | NO ₂ | Yes, Gosport Road AQMA | Chemiluminescence | 3.5 | 1.5 | 2 |
| FAR2 | Portland Street | Roadside | 457954 | 106027 | NO ₂ | No | Chemiluminescence | 5 | 1.5 | 1.5 |

Notes:

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

(2) N/A if not applicable

Table A.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) |
|----------------------|--|-----------|-------------------------------|--------------------------------|-------------------------|----------------------------|--|--|--|-----------------------|
| BL1 | 11 Bath Lane | Other | 458376 | 106109 | NO ₂ | No | N/A | 16.0 | No | 2.9 |
| G1A/G30 | 30 Old Gosport Road | Roadside | 457732 | 105625 | NO ₂ | Y - Gosport Road AQMA | 0.0 | 10.0 | No | 2.3 |
| G2A | 138 Gosport Road | Other | 457627 | 105138 | NO ₂ | Y - Gosport Road AQMA | 0.0 | 9.5 | No | 1.8 |
| G3 | 202 Gosport Road | Roadside | 457726 | 104869 | NO ₂ | No | 0.0 | 9.0 | No | 2.0 |
| G4 | 122 Gosport Road | Roadside | 457598 | 105213 | NO ₂ | Y - Gosport Road AQMA | 0.0 | 6.0 | No | 2.5 |
| G6 | 171 Gosport Road | Roadside | 457599 | 105410 | NO ₂ | Y - Gosport Road AQMA | 0.0 | 6.0 | No | 2.3 |
| G7 | 193 Gosport Road | Roadside | 457583 | 105354 | NO ₂ | Y - Gosport Road AQMA | 0.0 | 6.5 | No | 3.0 |
| G8Z | 156 Gosport Road | Roadside | 457656 | 105049 | NO ₂ | No | 0.0 | 4.0 | No | 1.9 |
| G10 | 107 Gosport Road | Roadside | 457675 | 105616 | NO ₂ | Y - Gosport Road AQMA | 0.0 | 14.0 | No | 2.6 |
| G11 | 2 Earls Road | Roadside | 457668 | 105461 | NO ₂ | Y - Gosport Road AQMA | 0.0 | 5.0 | No | 2.1 |
| G12 | Two Saints,101 Gosport Road | Roadside | 457684 | 105630 | NO ₂ | Y - Gosport Road AQMA | 0.0 | 15.0 | No | 2.6 |
| G14 | Bottom of Beaconsfield Road | Other | 457631 | 105494 | NO ₂ | Y - Gosport Road AQMA | 5.0 | 6.9 | No | 2.5 |
| GR/RL | Corner of Gosport Rd and Redlands Lane | Roadside | 457564 | 105300 | NO ₂ | Y - Gosport Road AQMA | 11.0 | 1.5 | No | 2.1 |
| E1, E2, E3 | Co-located with Gosport Road Monitor | Roadside | 457590 | 105281 | NO ₂ | Y - Gosport Road AQMA | 3.5 | 1.5 | Yes | 1.9 |
| RM1 | Runnymede | Roadside | 455745 | 107825 | NO ₂ | No | N/A | 49.0 | No | 2.7 |
| DC1 | Maytree Drive Opposite Delme Court | Roadside | 457182 | 106203 | NO ₂ | No | N/A | 0.5 | 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) |
|-----------------------|---|-----------|-------------------------------|--------------------------------|-------------------------|-----------------------------|--|--|--|-----------------------|
| PS1, PS1A, PS1B | 1 Sentinel Cottages | Roadside | 457939 | 106012 | NO ₂ | Y - Portland Street AQMA | 0.0 | 6.5 | No | 2.5 |
| PS2 | 2 Sentinel Cottages | Roadside | 457937 | 106021 | NO ₂ | Y - Portland Street AQMA | 0.0 | 6.5 | No | 2.7 |
| PS3 | 38 Portland Street | Roadside | 457935 | 106033 | NO ₂ | Y - Portland Street AQMA | 0.0 | 3.5 | No | 2.3 |
| PS4, PS5, PS6 | Co-located with Portland St Monitor | Roadside | 457954 | 106027 | NO ₂ | No | 5.0 | 1.8 | Yes | 1.2 |
| HR2 | 17 Hartlands Road | Roadside | 457822 | 106107 | NO ₂ | No | N/A | 11.0 | No | 1.9 |
| HR3A | 7 Hartlands Road | Roadside | 457787 | 106140 | NO ₂ | No | 0.0 | 7.0 | No | 2.5 |
| HR4 | 25 Hartlands Road | Roadside | 457860 | 106077 | NO ₂ | No | 0.0 | 6.5 | No | 1.9 |
| AQ8A | Rosemary House/Botley Road Suburban | Suburban | 451618 | 109015 | NO ₂ | No | 0.0 | 8.0 | No | 2.1 |
| BR1 | Bridge Road | Roadside | 449694 | 109264 | NO ₂ | No | 2.3 | 3.3 | No | 2.4 |
| BR2 | Bridge Road | Roadside | 449664 | 109278 | NO ₂ | No | 1.0 | 3.2 | No | 2.5 |
| BR3 | Bridge Road | Roadside | 449500 | 109465 | NO ₂ | No | 2.2 | 1.5 | No | 2.5 |
| SL1 | Swanwick Lane Top | Roadside | 449574 | 109651 | NO ₂ | No | 4.6 | 2.5 | No | 2.5 |
| SL2 | Swanwick Lane Bottom | Roadside | 451272 | 109530 | NO ₂ | No | 6.0 | 1.0 | No | 2.4 |
| WW1 | Western Way (Fareham town end) | Roadside | 457845 | 106008 | NO ₂ | No | 17.0 | 1.0 | No | 2.1 |
| WW2 | Western Way (Half way up Road) | Roadside | 457443 | 106087 | NO ₂ | No | 27.0 | 1.0 | No | 2.4 |
| WW3 | Corner of Avenue and Gudge HL | Roadside | 456837 | 106220 | NO ₂ | No | 4.2 | 2.0 | No | 2.1 |
| CM1 | Cams Hill, Near the Bridge | Roadside | 458775 | 106228 | NO ₂ | No | 20.0 | 0.7 | No | 2.2 |
| CM2 | Cams Mill Kerb side | Roadside | 458775 | 106273 | NO ₂ | No | 8.4 | 0.2 | No | 2.2 |
| СМЗ | On Cams Hill, near Delme Arms | Roadside | 458828 | 106243 | NO ₂ | No | 7.0 | 1.0 | No | 2.3 |

| 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) |
|----------------------|--|-----------|-------------------------------|--------------------------------|-------------------------|----------------------------|--|--|--|-----------------------|
| A27 | On sign post on the A27 by the Bath Lane Underpass | Roadside | 458400 | 106075 | NO ₂ | No | N/A | 0.1 | No | 1.4 |
| WPS | Whitley Primary School | Kerbside | 452360 | 109357 | NO ₂ | No | 0.0 | 1.0 | No | 2.2 |
| WR | Warsash Road | Kerbside | 451321 | 106457 | NO ₂ | No | 0.0 | 1.5 | No | |
| G | Military Road/Brockhurst Road | Roadside | 459572 | 101800 | NO ₂ | No | 41.0 | 3.5 | No | 2.7 |
| Q, I, R | Fareham Way/Tichborne Way | Roadside | 458985 | 102785 | NO ₂ | No | 16.0 | 6.0 | Yes | 2.7 |
| J | Fareham Road/Lederle Lane | Roadside | 458282 | 104110 | NO ₂ | No | 46.0 | 3.0 | No | 2.7 |
| V | Wych Lane/Fareham Road | Roadside | 458064 | 104235 | NO ₂ | No | 12.0 | 5.0 | No | 2.8 |
| W | Bus StopWych Lane | Roadside | 457977 | 104185 | NO ₂ | No | 84.0 | 4.5 | No | 2.7 |
| U | Daedalus | Roadside | 456564 | 101572 | NO ₂ | No | 15.0 | 3.0 | No | 2.8 |
| S | Bury Cross 1 | Roadside | 460046 | 99618 | NO ₂ | No | 2.3 | 3.3 | No | 2.5 |
| Т | Bury Cross 2 | Roadside | 460061 | 99604 | NO ₂ | No | 2.3 | 3.3 | No | 2.5 |
| Р | Lees Lane/Forton Road Junction | Roadside | 460631 | 100435 | NO ₂ | No | 11.0 | 3.0 | No | 2.7 |

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.

| 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 |
|---------|-------------------------------|--------------------------------|-----------|---|---|------|------|------|------|------|
| GOS1 | 458987 | 102786 | Roadside | 96 | 96 | 32.8 | 26.6 | 31.9 | 20.4 | 18.4 |
| FAR1 | 457594 | 105280 | Roadside | 99 | 99 | 25.9 | 29 | 26.9 | 28.3 | 25.6 |
| FAR2 | 457954 | 106027 | Roadside | 98 | 98 | 36.6 | 34.4 | 31.8 | 29.6 | 27.8 |

Table A.3 – Annual Mean NO₂ Monitoring Results: Automatic Monitoring (µg/m³)

□ 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 $\mu g/m^3$.

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

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

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.

| 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 |
|-----------------------|-------------------------------|--------------------------------|-----------|---|---|------|------|------|------|------|
| BL1 | 458376 | 106109 | Other | 92.3 | 92.3 | 31.4 | 31.3 | 33.0 | 27.6 | 26.6 |
| G1A/G30 | 457732 | 105625 | Roadside | 100.0 | 100.0 | 29.4 | 28.5 | 27.0 | 21.7 | 22.1 |
| G2A | 457627 | 105138 | Other | 92.3 | 92.3 | 27.7 | 25.8 | 26.0 | 22.3 | 19.9 |
| G3 | 457726 | 104869 | Roadside | 61.5 | 61.5 | 24.4 | 23.7 | 23.1 | 18.7 | 19.0 |
| G4 | 457598 | 105213 | Roadside | 100.0 | 100.0 | 24.8 | 25.2 | 24.0 | 19.9 | 18.5 |
| G6 | 457599 | 105410 | Roadside | 92.3 | 92.3 | 26.6 | 31.3 | 27.3 | 21.4 | 22.8 |
| G7 | 457583 | 105354 | Roadside | 100.0 | 100.0 | 34.5 | 37.4 | 36.5 | 30.4 | 30.7 |
| G8Z | 457656 | 105049 | Roadside | 84.6 | 84.6 | 27.2 | 25.8 | 25.6 | 21.8 | 21.5 |
| G10 | 457675 | 105616 | Roadside | 100.0 | 100.0 | 33.4 | 33.2 | 31.6 | 26.3 | 26.5 |
| G11 | 457668 | 105461 | Roadside | 100.0 | 100.0 | 23.5 | 23.1 | 22.7 | 20.2 | 19.8 |
| G12 | 457684 | 105630 | Roadside | 100.0 | 100.0 | 34.0 | 30.8 | 30.5 | 27.0 | 25.1 |
| G14 | 457631 | 105494 | Other | 100.0 | 100.0 | 26.3 | 26.4 | 26.8 | 23.1 | 22.9 |
| GR/RL | 457564 | 105300 | Roadside | 100.0 | 100.0 | 21.4 | 23.2 | 21.2 | 18.4 | 17.7 |
| E1, E2, E3 | 457590 | 105281 | Roadside | 100.0 | 100.0 | 32.4 | 29.8 | 28.2 | 22.8 | 23.4 |
| RM1 | 455745 | 107825 | Roadside | 100.0 | 100.0 | 26.3 | 24.8 | 24.0 | 16.2 | 16.0 |
| DC1 | 457182 | 106203 | Roadside | 82.7 | 82.7 | 22.5 | 23.9 | 21.9 | 20.1 | 18.1 |
| PS1, PS1A, PS1B | 457939 | 106012 | Roadside | 100.0 | 100.0 | 30.1 | 29.6 | 27.8 | 23.5 | 23.2 |
| PS2 | 457937 | 106021 | Roadside | 100.0 | 100.0 | 33.3 | 33.8 | 28.2 | 21.9 | 22.6 |
| PS3 | 457935 | 106033 | Roadside | 100.0 | 100.0 | 33.9 | 32.3 | 33.8 | 27.7 | 28.0 |
| PS4, PS5, PS6 | 457954 | 106027 | Roadside | 100.0 | 100.0 | 34.4 | 34.8 | 33.1 | 27.2 | 26.6 |
| HR2 | 457822 | 106107 | Roadside | 100.0 | 100.0 | 25.0 | 24.5 | 23.7 | 19.9 | 18.5 |
| HR3A | 457787 | 106140 | Roadside | 100.0 | 100.0 | 22.8 | 23.3 | 21.1 | 18.1 | 17.1 |
| HR4 | 457860 | 106077 | Roadside | 90.4 | 90.4 | 24.8 | 25.0 | 22.4 | 19.6 | 19.3 |
| AQ8A | 451618 | 109015 | Suburban | 100.0 | 100.0 | 24.3 | 22.3 | 20.3 | 15.7 | 14.9 |
| BR1 | 449694 | 109264 | Roadside | 100.0 | 100.0 | 28.2 | 31.0 | 29.0 | 25.1 | 24.5 |
| BR2 | 449664 | 109278 | Roadside | 90.4 | 90.4 | 25.0 | 26.8 | 25.8 | 21.9 | 22.1 |
| BR3 | 449500 | 109465 | Roadside | 90.4 | 90.4 | 35.7 | 31.5 | 28.6 | 22.6 | 24.9 |
| SL1 | 449574 | 109651 | Roadside | 100.0 | 100.0 | 28.0 | 24.4 | 24.1 | 19.1 | 18.3 |
| SL2 | 451272 | 109530 | Roadside | 100.0 | 100.0 | 24.3 | 24.1 | 22.5 | 16.5 | 17.0 |
| WW1 | 457845 | 106008 | Roadside | 100.0 | 100.0 | 23.9 | 26.7 | 24.9 | 21.2 | 21.1 |
| WW2 | 457443 | 106087 | Roadside | 92.3 | 92.3 | 30.3 | 28.8 | 28.3 | 28.2 | 23.7 |

Table A.4 – Annual Mean NO₂ Monitoring Results: Non-Automatic Monitoring (µg/m³)

| Diffusion Tube ID | X OS Grid Ref (Easting) | Y OS Grid Ref (Northing) | Site Type | Valid Data Capture for Monitoring Period (%) ⁽¹⁾ | Valid Data Capture 2021 (%) ⁽²⁾ | 2017 | 2018 | 2019 | 2020 | 2021 |
|----------------------|-------------------------------|--------------------------------|-----------|---|---|-------------|------|------|------|------|
| WW3 | 456837 | 106220 | Roadside | 90.4 | 90.4 | 40.4 | 33.4 | 36.1 | 31.0 | 28.8 |
| CM1 | 458775 | 106228 | Roadside | 100.0 | 100.0 | 29.8 | 30.0 | 27.6 | 22.6 | 22.6 |
| CM2 | 458775 | 106273 | Roadside | 100.0 | 100.0 | <u>68.0</u> | 57.7 | 53.1 | 47.6 | 47.4 |
| CM3 | 458828 | 106243 | Roadside | 100.0 | 100.0 | 27.4 | 27.3 | 24.7 | 22.3 | 20.1 |
| A27 | 458400 | 106075 | Roadside | 100.0 | 100.0 | - | - | 44.4 | 38.3 | 37.6 |
| WPS | 452360 | 109357 | Kerbside | 25.0 | 25.0 | - | - | - | 16.7 | 18.2 |
| WR | 451321 | 106457 | Kerbside | 57.7 | 57.7 | - | - | - | - | 18.1 |
| G | 459572 | 101800 | Roadside | 84.6 | 84.6 | 32.8 | 31.4 | 30.2 | 28.1 | 28.4 |
| Q, I, R | 458985 | 102785 | Roadside | 100.0 | 100.0 | 23.9 | 25.7 | 23.9 | 19.5 | 19.3 |
| J | 458282 | 104110 | Roadside | 90.4 | 90.4 | 32.6 | 30.7 | 30.5 | 24.4 | 24.2 |
| V | 458064 | 104235 | Roadside | 76.9 | 76.9 | 24.9 | 27.0 | 24.6 | 19.9 | 20.5 |
| W | 457977 | 104185 | Roadside | 76.9 | 76.9 | 16.5 | 18.1 | 17.0 | 18.1 | 13.0 |
| U | 456564 | 101572 | Roadside | 100.0 | 100.0 | 19.4 | 16.8 | 16.1 | 13.2 | 12.8 |
| S | 460046 | 99618 | Roadside | 100.0 | 100.0 | 38.1 | 38.3 | 32.0 | 28.7 | 26.3 |
| Т | 460061 | 99604 | Roadside | 84.6 | 84.6 | 33.8 | 36.1 | 33.8 | 28.5 | 27.5 |
| Р | 460631 | 100435 | Roadside | 90.4 | 90.4 | 31.6 | 31.4 | 30.8 | 28.0 | 23.8 |

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/m³.

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

NO₂ annual means exceeding 60µg/m³, indicating a potential exceedance of the NO₂ 1-hour mean objective are shown in **bold and underlined**.

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.



Figure A.1 – Trends in Annual Mean NO₂ Concentrations in the Gosport Road AQMA













| 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 |
|---------|-------------------------------|--------------------------------|-----------|---|--|------|------|------|------|------|
| GOS1 | 458987 | 102786 | Roadside | 96 | 96 | 0 | 0 | 0 | 0 | 0 |
| FAR1 | 457594 | 105280 | Roadside | 99 | 99 | 0 | 0 | 0 | 0 | 0 |
| FAR2 | 457954 | 106027 | Roadside | 98 | 98 | 5 | 1 | 0 | 2 | 0 |

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

Notes:

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

Exceedances of the NO₂ 1-hour mean objective (200µg/m³ not to be exceeded more than 18 times/year) are shown in **bold**.

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

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

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

| Site ID | X OS Grid Ref (Easting) | Y OS Grid Ref (Northing) | Site Type | Valid Data Capture for Monitoring Period (%) ⁽¹⁾ | Valid Data Capture 2021 (%) ⁽²⁾ | 2017 | 2018 | 2019 | 2020 | 2021 |
|---------|-------------------------------|--------------------------------|-----------|---|--|------|------|------|------|------|
| GOS1 | 458987 | 102786 | Roadside | 93 | 93 | 17.5 | 19.1 | 17.4 | 13.8 | 16.3 |

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

Notes:

The annual mean concentrations are presented as μ g/m³.

Exceedances of the PM₁₀ annual mean objective of $40\mu g/m^3$ are shown in **bold**.

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

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





| 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 |
|---------|-------------------------------|--------------------------------|-----------|---|--|------|------|------|------|------|
| GOS1 | 458987 | 102786 | Roadside | 93 | 93 | 1 | 0 | 2 | 0 | 0 |

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

Notes:

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

Exceedances of the PM₁₀ 24-hour mean objective (50µg/m³ not to be exceeded more than 35 times/year) are shown in **bold**.

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

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

Appendix B: Full Monthly Diffusion Tube Results for 2021

| Table B.1 – NO ₂ 2021 | Diffusion Tube | Results | $(\mu g/m^3)$ |
|----------------------------------|-----------------------|---------|---------------|
|----------------------------------|-----------------------|---------|---------------|

| DT ID | X OS Grid Ref (Easting) | Y OS Grid Ref (Easting) | Jan | Feb | Mar | Apr | Мау | Jun | Jul | Aug | Sep | Oct | Nov | Dec | Annual Mean: Raw Data | Annual Mean: Annualised and Bias Adjusted (0.84) | Annual Me Distanc Corrected Neares Exposu |
|-------------|-------------------------------|-------------------------------|------|------|------|------|------|----------|------|------|------|------|------|------|--------------------------|---|---|
| BL1 | 458376 | 106109 | 31.8 | 36.0 | 27.3 | 30.0 | 33.6 | | 24.7 | 25.8 | 36.1 | 30.9 | 30.2 | 42.3 | 31.7 | 26.6 | |
| G1A/ G30 | 457732 | 105625 | 33.4 | 27.6 | 28.2 | 25.7 | 21.8 | 23.3 | 22.4 | 21.1 | 26.1 | 27.6 | 32.1 | 26.5 | 26.3 | 22.1 | - |
| G2A | 457627 | 105138 | 30.4 | 26.7 | 26.9 | 21.8 | 20.5 | 21.3 | 19.3 | 19.6 | 24.1 | 26.1 | | 23.5 | 23.6 | 19.9 | - |
| G3 | 457726 | 104869 | 29.3 | 28.2 | | 21.6 | | 19.8 | 19.1 | | | 24.6 | | 23.9 | 23.8 | 19.0 | _ |
| G4 | 457598 | 105213 | 27.1 | 24.9 | 25.0 | 22.4 | 18.5 | 19.5 | 18.6 | 17.3 | 22.0 | 24.1 | 22.9 | 22.7 | 22.1 | 18.5 | |
| G6 | 457599 | 105410 | 28.8 | | 58.1 | 26.9 | 26.6 | 22.4 | 24.2 | 21.0 | 27.4 | 24.1 | 12.2 | 26.5 | 27.1 | 22.8 | _ |
| G7 | 457583 | 105354 | 40.6 | 37.0 | 38.9 | 36.9 | 33.0 | 34.3 | 31.6 | 31.1 | 41.4 | 37.9 | 40.0 | 35.9 | 36.6 | 30.7 | |
| G8Z | 457656 | 105049 | 30.4 | 27.8 | 25.5 | 21.2 | 24.3 | 21.6 | 22.2 | | | 27.9 | 29.1 | 25.6 | 25.6 | 21.5 | |
| G10 | 457675 | 105616 | 34.8 | 34.6 | 31.7 | 32.9 | 29.9 | 29.1 | 25.7 | 26.8 | 35.0 | 30.3 | 35.1 | 32.0 | 31.5 | 26.5 | |
| G11 | 457668 | 105461 | 30.8 | 24.2 | 27.6 | 22.2 | 18.3 | 20.5 | 18.8 | 19.5 | 23.7 | 24.3 | 31.9 | 21.6 | 23.6 | 19.8 | |
| G12 C14 | 457684 | 105630 | 33.1 | 32.2 | 29.2 | 27.9 | 32.3 | 20.0 | 23.7 | 23.8 | 34.2 | 29.2 | 33.3 | 32.8 | 29.8 | 25.1 | |
| | 457631 | 105494 | 20.5 | 34.7 | 20.0 | 30.9 | 25.1 | 25.7 | 22.8 | 24.8 | 29.8 | 23.0 | 20.5 | 30.7 | 21.2 | 22.9 | |
| L | 457564 | 105300 | 26.0 | 25.4 | 24.3 | 24.7 | 16.0 | 18.7 | 14.9 | 15.2 | 20.3 | 19.8 | 24.7 | 22.1 | 21.0 | 17.7 | - |
| E1 | 457590 | 105281 | 32.9 | 27.6 | 30.4 | 22.9 | 22.0 | 24.2 | 24.6 | 23.8 | 29.5 | 31.5 | 31.5 | 24.4 | - | - | - |
| E2 | 457590 | 105281 | 33.4 | 28.1 | 31.3 | 25.9 | 24.3 | 27.0 | 23.2 | 21.5 | 31.4 | 29.6 | 37.1 | 26.7 | - | - | - |
| E3 | 457590 | 105281 | 31.6 | 27.7 | 30.2 | 27.3 | 23.1 | 27.0 | 24.1 | 25.5 | 30.0 | 30.5 | 33.9 | 25.5 | 27.8 | 23.4 | - |
| RM1 | 455745 | 107825 | 23.1 | 23.8 | 20.9 | 20.0 | 12.7 | 16.3 | 13.7 | 15.1 | 17.9 | 18.7 | 27.2 | 19.9 | 19.1 | 16.0 | |
| DC1 | 457182 | 106203 | 27.8 | 24.6 | 24.0 | 20.7 | 18.7 | 18.5 | 17.3 | 17.1 | 24.2 | 22.7 | | | 21.6 | 18.1 | _ |
| PS1 | 457939 | 106012 | 30.4 | 33.8 | 25.0 | 26.7 | 26.8 | 24.6 | 25.5 | 19.9 | 33.3 | 27.2 | 32.3 | 30.0 | - | - | - |
| PS1A | 457939 | 106012 | 30.4 | 32.7 | 24.9 | 30.1 | 27.5 | 24.5 | 23.5 | 22.2 | 32.4 | 26.6 | 28.5 | 28.1 | - | - | - |
| PS1B | 457939 | 106012 | 29.3 | 34.0 | 24.9 | 29.5 | 28.2 | 24.6 | 23.1 | 11.9 | 33.6 | 24.3 | 34.8 | 28.6 | 27.6 | 23.2 | - |
| PS2 | 457937 | 106021 | 30.2 | 30.4 | 25.5 | 24.0 | 27.9 | 24.3 | 24.0 | 20.2 | 31.9 | 25.3 | 32.9 | 25.7 | 26.9 | 22.6 | |
| PS3 | 457935 | 106033 | 58.2 | 34.8 | 28.3 | 25.4 | 35.9 | 27.5 | 28.1 | 23.5 | 35.2 | 27.6 | 42.6 | 32.5 | 33.3 | 28.0 | |
| PS4 | 457954 | 106027 | 33.1 | 35.6 | 27.1 | 31.5 | 30.2 | 29.2 | 27.1 | 26.0 | | 26.6 | 40.2 | 35.2 | - | - | - |
| PS5 | 457954 | 106027 | 32.7 | 39.2 | 26.6 | 29.3 | 33.1 | 28.6 | 26.8 | 24.0 | 36.1 | | 38.7 | 34.2 | - | - | - |
| PS6 | 457954 | 106027 | 31.6 | 39.3 | 25.3 | 28.6 | 34.0 | | 30.0 | 22.9 | 38.8 | 29.1 | 36.7 | 36.1 | 31.6 | 26.6 | - |
| HR2 | 457822 | 106107 | 24.9 | 23.2 | 21.6 | 22.5 | 24.0 | 19.2 | 18.8 | 14.3 | 25.0 | 20.1 | 25.4 | 25.8 | 22.1 | 18.5 | _ |
| HR3A | 457787 | 106140 | 22.6 | 25.6 | 19.9 | 20.9 | 19.4 | 16.5 | 16.8 | 13.9 | 21.4 | 17.5 | 26.5 | 23.8 | 20.4 | 17.1 | |
| HR4 | 457860 | 106077 | 25.1 | 29.2 | 21.8 | 24.3 | 20.4 | 17.9 | | 15.9 | 24.1 | 19.0 | 28.0 | 26.5 | 22.9 | 19.3 | _ |
| AQ8A | 451618 | 109015 | 20.7 | 19.8 | 18.7 | 15.8 | 14.6 | 16.1 | 15.7 | 11.6 | 19.5 | 20.1 | 22.0 | 19.0 | 17.8 | 14.9 | |
| BR1 | 449694 | 109264 | 31.1 | 29.9 | 28.9 | 29.8 | 27.3 | 25.8 | 27.6 | 23.6 | 32.4 | 30.1 | 33.8 | 29.3 | 29.1 | 24.5 | |
| BR2 | 449664 | 109278 | 27.9 | 28.5 | 26.9 | 24.0 | 23.2 | 24.5 | 23.5 | 20.6 | 28.6 | 0.4 | 59.6 | 27.2 | 26.3 | 22.1 | - |
| BK3 | 449500 | 109465 | 27.9 | 28.0 | 27.4 | 28.2 | 28.9 | 31.2 | 20.2 | 27.4 | 34.8 | 22.0 | 34.9 | 31.2 | 29.0 | 24.9 | |
| | 4490/4 | 109001 | 20.0 | 24.9 | 24.3 | 19.0 | 19.0 | 21.0 | 10.0 | 17.0 | 21.2 | 23.9 | 22.4 | 22.1 | ∠1.ŏ 20.2 | 10.3 | |
| | 4578/5 | 109000 | 22.0 | 22.1 | 20.0 | 20.2 | 23.5 | 21.1 | 20.6 | 17.0 | 21.9 | 20.9 | 20.1 | 23.3 | 20.2 | 21.0 | - |
| **** | -010-0 | 100000 | 20.2 | 00.0 | 20.4 | 22.0 | 20.0 | <u> </u> | 20.0 | 11.1 | 20.0 | | 00.0 | 21.0 | 20.1 | 21.1 | |

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| DT ID | X OS Grid Ref (Easting) | Y OS Grid Ref (Easting) | Jan | Feb | Mar | Apr | Мау | Jun | Jul | Aug | Sep | Oct | Nov | Dec | Annual Mean: Raw Data | Annual Mean: Annualised and Bias Adjusted (0.84) | Annual M Distanc Correcter Neares Exposu |
|-------|-------------------------------|-------------------------------|------|------|------|------|------|------|------|------|------|------|------|------|--------------------------|---|--|
| WW2 | 457443 | 106087 | 34.2 | 31.1 | 26.2 | 26.9 | 29.5 | | 22.1 | 18.8 | 32.5 | 28.6 | 37.1 | 23.0 | 28.2 | 23.7 | _ |
| WW3 | 456837 | 106220 | 38.5 | 34.6 | 25.9 | 34.9 | 31.9 | 34.1 | 30.0 | 30.1 | 42.8 | 31.8 | 42.8 | | 34.3 | 28.8 | _ |
| CM1 | 458775 | 106228 | 30.5 | 27.5 | 30.2 | 28.6 | 18.9 | 25.8 | 20.3 | 23.5 | 29.4 | 25.8 | 35.1 | 27.3 | 26.9 | 22.6 | _ |
| CM2 | 458775 | 106273 | 59.1 | 50.0 | 56.0 | 57.6 | 50.3 | 62.5 | 42.6 | 61.6 | 71.1 | 53.1 | 55.7 | 56.9 | 56.4 | 47.4 | 30.2 |
| CM3 | 458828 | 106243 | 29.8 | 22.1 | 23.9 | 23.6 | 22.8 | 22.2 | 20.3 | 18.4 | 27.8 | 24.3 | 27.9 | 24.0 | 23.9 | 20.1 | _ |
| A27 | 458400 | 106075 | 51.6 | 39.1 | 44.9 | 50.5 | 36.7 | 38.7 | 34.6 | 43.1 | 54.5 | 44.8 | 56.4 | 41.7 | 44.7 | 37.6 | 19.8 |
| WPS | 452360 | 109357 | | | | | 16.0 | 16.9 | 15.3 | | | | | | 16.1 | 18.2 | |
| WR | 451321 | 106457 | | | | | 17.4 | 17.9 | | 15.8 | 22.2 | 21.3 | 24.4 | 20.9 | 20.0 | 18.1 | |
| G | 459572 | 101800 | 32.9 | 33.8 | | 45.9 | | 31.3 | 29.7 | 22.4 | 42.3 | 34.0 | 35.0 | 30.7 | 33.8 | 28.4 | |
| Q | 458985 | 102785 | 22.9 | 27.2 | 22.5 | 25.8 | 21.0 | 21.3 | 22.3 | 17.2 | 27.4 | 22.2 | 24.2 | 22.6 | - | - | - |
| I | 458985 | 102785 | 23.7 | 25.6 | 22.4 | 26.5 | 21.1 | 22.4 | 21.3 | 16.6 | 26.9 | 21.3 | 23.1 | 23.9 | - | - | - |
| R | 458985 | 102785 | 22.5 | 26.6 | 22.4 | 26.8 | 21.3 | 23.5 | 21.9 | 17.4 | 27.3 | 20.7 | 23.6 | 21.4 | 23.0 | 19.3 | - |
| J | 458282 | 104110 | 34.8 | | 30.1 | 28.1 | 26.5 | 26.6 | 25.7 | | | 33.0 | 28.1 | 26.3 | 28.8 | 24.2 | |
| V | 458064 | 104235 | 27.5 | 27.7 | 22.5 | 25.0 | | 23.9 | 20.9 | | | 27.7 | 24.1 | 19.9 | 24.4 | 20.5 | |
| W | 457977 | 104185 | 19.3 | 19.2 | 17.0 | 16.6 | 11.3 | 13.6 | 8.5 | | | 16.9 | 16.7 | 15.6 | 15.5 | 13.0 | |
| U | 456564 | 101572 | 16.5 | 20.3 | 16.0 | | 12.2 | 15.2 | 13.4 | 9.6 | 17.0 | 15.1 | 16.9 | 15.8 | 15.3 | 12.8 | |
| S | 460046 | 99618 | 31.7 | 35.9 | 31.8 | 30.4 | 31.7 | 33.2 | 28.9 | 23.6 | 32.5 | 33.0 | 32.3 | 31.1 | 31.3 | 26.3 | |
| Т | 460061 | 99604 | 37.0 | 32.5 | 34.7 | 31.3 | 26.8 | 33.9 | | 26.3 | 35.7 | 32.4 | 37.9 | 31.1 | 32.7 | 27.5 | |
| Р | 460631 | 100435 | 27.4 | 32.7 | 29.1 | 30.0 | 26.8 | 29.3 | 25.6 | 23.5 | 33.2 | 26.8 | 29.6 | 26.2 | 28.4 | 23.8 | _ |

⊠ All erroneous data has been removed from the NO₂ diffusion tube dataset presented in Table B.1.

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

⊠ Local bias adjustment factor used.

□ National bias adjustment factor used.

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

Fareham and Gosport Borough Council confirm that all 2021 diffusion tube data has been uploaded to the Diffusion Tube Data Entry System.

Notes:

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

NO₂ annual means exceeding 60µg/m³, indicating a potential exceedance of the NO₂ 1-hour mean objective are shown in **bold and underlined**.

See Appendix C for details on bias adjustment and annualisation.

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

New or Changed Sources Identified Within Fareham and Gosport During 2021

Fareham and Gosport Borough Council has not identified any new sources relating to air quality within the reporting year of 2021.

Additional Air Quality Works Undertaken by Fareham and Gosport During 2021

One additional diffusion tube site has not been used for LAQM reporting purposes due to only being in operation for one month. This site has been discontinued due to the related study concluding. Details of this site, including the monitoring results, are presented in Table C.1 and Table C.2. Annual mean concentration is not presented for this site as annualisation has not been able to be carried out (i.e., less than 25% data capture), in line with LAQM.TG(16)

Table C.1 – Details of the additional Non-Automatic Monitoring Site

| 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) |
|----------------------|--|-----------|-------------------------------|--------------------------------|-------------------------|----------------------------|--|--|--|-----------------------|
| HP | 40 Hill Park Road Fareham PO15 6HT | Roadside | 455835 | 107536 | NO ₂ | No | 1.0 | 3.0 | No | 2.6 |

Notes:

(1) Om 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 C.2 – Additional NO₂ 2021 Diffusion Tube Results (µg/m³)

| DT ID | X OS Grid Ref (Easting) | Y OS Grid Ref (Easting) | Jan | Feb | Mar | Apr | Мау | Jun | Jul | Aug | Sep | Oct | Nov | Dec | Annual Mean: Raw Data | Annual Mean: Annualised and Bias Adjusted (0.84) | Annual Mean: Distance Corrected to Nearest Exposure | Comment |
|-------|-----------------------------------|-----------------------------------|------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|--------------------------|---|---|---------|
| HP | 455835 | 107536 | 18.4 | | | | | | | | | | | | - | - | - | |

 \Box 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.

Notes:

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

NO₂ annual means exceeding 60μ g/m³, indicating a potential exceedance of the NO₂ 1-hour mean objective are shown in **bold and underlined**. See Appendix C for details on bias adjustment and annualisation.

QA/QC of Diffusion Tube Monitoring

Fareham and Gosport Borough Councils' diffusion tubes in 2021 were supplied and analysed by Gradko International Ltd., using the 20% Triethanolamine (TEA) in water preparation method. Gradko's laboratory is UKAS accredited, participating in the <u>AIR-PT</u> <u>Scheme</u> for NO₂ tube analysis and the Annual Field Inter-Comparison Exercise. These provide strict performance criteria for participating laboratories to meet, thereby ensuring NO₂ concentrations reported are of a high calibre. The lab follows the procedures set out in the Harmonisation Practical Guidance. In the latest available AIR-PT results, AIR PT AR040 (September – October 2020) and AIR PT AR042 (January – March 2021), Gradko scored 75% and 25% respectively. The results for the period between April and December 2021 are not available yet. The percentage score reflects the results deemed to be satisfactory based upon the z-score of < \pm 2.

All local authority co-location studies which use tubes supplied by Gradko with the 20% TEA in water preparation method in 2021 were rated as 'good', as shown by the <u>precision</u> <u>summary results</u>. 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. Tubes are considered to have a "good" precision where the coefficient of variation of duplicate or triplicate diffusion tubes for eight or more monitoring periods during a year is less than 20%.

Monitoring in 2021 had been completed largely in adherence with the <u>2021 Diffusion Tube</u> <u>Monitoring Calendar</u>, where most changeovers were completed within ± 2 days of the specified date. The only exception to this is the May monitoring period, where eight tubes were changed three days later than they should have been (10/05 as opposed to 07/05).

Diffusion Tube Annualisation

Annualisation was required at three non-automatic monitoring sites as data capture was between 25% and 75%. These sites are as follows: G3, WPS, and WR. Annualisation has been completed using version 2.0 of the LAQM Diffusion Tube Data Processing Tool, which uses the most up-to-date processes and methodology as detailed in LAQM.TG(16). Urban Background and Rural Background AURN monitoring locations were used to annualise the data, and the three nearest sites with greater than 85% data capture were selected. Details and a summary of the annualisation carried out can be found in Table C.4.

Diffusion Tube Bias Adjustment Factors

The diffusion tube data presented within the 2021 ASR have been corrected for bias using an adjustment factor. Bias represents the overall tendency of the diffusion tubes to under or over-read relative to the reference chemiluminescence analyser. LAQM.TG16 provides guidance with regard to the application of a bias adjustment factor to correct diffusion tube monitoring. Triplicate co-location studies can be used to determine a local bias factor based on the comparison of diffusion tube results with data taken from NO_x/NO₂ continuous analysers. Alternatively, the national database of diffusion tube co-location surveys provides bias factors for the relevant laboratory and preparation method.

Fareham and Gosport Borough Councils have applied a local bias adjustment factor of 0.76 to the 2021 monitoring data. A summary of bias adjustment factors used by Fareham and Gosport Borough Councils over the past five years is presented in Table C.3.

Three co-location studies are carried out by Fareham and Gosport Borough Councils at the three automatic monitoring locations (GOS1, FAR1, FAR2). According to the QA/QC report, the Portland Street site (FAR2) showed high uncertainty and error in November 2021's report. Thus, site FAR2 is excluded in the calculation of local bias adjustment. Local bias adjustment calculations were completed using version 2.0 of the LAQM Diffusion Tube Data Processing Tool, which uses the most up-to-date processes and methodology as provided in LAQM.TG(16). A combined bias adjustment factor has been calculated from the two co-locations studies and is summarised in Table C.5. All co-location sites had good overall precision and data capture.

The national bias adjustment factor for Gradko International Ltd. diffusion tubes using the 20% TEA preparation method is 0.84 based on 32 studies, as presented in Figure C.1. This is taken from National Diffusion Tube Bias Adjustment Spreadsheet, version 03/22.

It was decided that the combined local factor should be applied to the 2021 monitoring data. There was overall good data capture at the two co-locations sites and good precision throughout. Additionally, these co-location sites have been in places for a number of years and reflect local the local conditions of Fareham and Gosport Borough Councils. The local factor is also the same value as the national factor derived for 2021.

| Monitoring Year | Local or National | If National, Version of National Spreadsheet | Adjustment Factor | | |
|-----------------|-------------------|---|-------------------|--|--|
| 2021 | Local | - | 0.84 | | |
| 2020 | Local | - | 0.91 | | |
| 2019 | National | 03/20 | 0.93 | | |
| 2018 | National | 03/19 | 0.93 | | |
| 2017 | National | 03/18 | 0.89 | | |

Table C.3 – Bias Adjustment Factor

NO₂ Fall-off with Distance from the Road

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

Fall-off with distance calculations was completed at one site where concentrations were greater than $36\mu g/m^3$ and the site is not located at relevant exposure – CM2. This was completed using version 2.0 of the LAQM Diffusion Tube Data Processing Tool, and the output is presented in Table C.6.

QA/QC of Automatic Monitoring

QA/QC of the automatic monitoring sites operated by Fareham and Gosport Borough Councils is undertaken by NPL on a bi-annual basis. This ensures reliability and accuracy of the measurements. The first bi-annual QA/QC check of 2021 was unable to carried out due to the COVID-19 pandemic. WeCare4Air therefore undertook an external review of the sites in June 2021. In the QA/QC check undertook by NPL in November 2021, it was reported that the NO_x analyser in Portland Road site showed high level of uncertainty and error. Thus, the automatic monitoring data of Portland Road is excluded from the Local Bias Factor calculation. As part of the LSO duties, the monitoring sites are visited on a monthly basis to ensure that the monitors are performing as required.

PM₁₀ and PM_{2.5} Monitoring Adjustment

A Tapered Element Oscillating Microbalance (TEOM) is in operation at the Tichborne Way monitoring location to record PM₁₀ concentrations. As TEOM monitors do not meet the equivalence criteria for PM₁₀ monitoring the data must be adjusted. The Tichborne Way PM₁₀ data has been corrected using the Volatile Correction Model (VCM) methodology. The VCM correction has been applied to the monitoring data by WeCare4Air.

Automatic Monitoring Annualisation

All automatic monitoring locations within Fareham and Gosport Borough Council recorded data capture of greater than 75% therefore it was not required to annualise any automatic monitoring data.

NO₂ Fall-off with Distance from the Road

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

No automatic NO₂ monitoring locations within Fareham and Gosport Borough Council required distance correction during 2021.

| Table $C.4 - Amuansation Summary (concentrations presented in \mu q/m^2$ | Table C.4 – Annualisation St | ummary (concentr | ations presented in | µq/m³) |
|--|------------------------------|------------------|---------------------|--------|
|--|------------------------------|------------------|---------------------|--------|

| Site ID | Annualisation Factor Brighton Preston Park AURN | Annualisation Factor Bournemouth AURN | Annualisation Factor Chilbolton Observatory | Average Annualisation Factor | Raw Data Annual Mean | Annualised Annual Mean | Comments |
|---------|--|--|--|------------------------------------|-------------------------|---------------------------|----------|
| G3 | 0.9701 | 0.9197 | 0.9649 | 0.9516 | 23.8 | 22.6 | |
| WPS | 1.2631 | 1.4121 | 1.3660 | 1.3471 | 16.1 | 21.7 | |
| WR | 1.0503 | 1.0186 | 1.1569 | 1.0753 | 20.0 | 21.5 | |

Table C.5 – Local Bias Adjustment Calculation

| | Local Bias Adjustment Input 1 | Local Bias Adjustment Input 2 |
|--------------------------------|-------------------------------|-------------------------------|
| Periods used to calculate bias | 12 | 11 |
| Bias Factor A | 0.89 (0.84 - 0.94) | 0.8 (0.74 - 0.87) |
| Bias Factor B | 13% (6% - 19%) | 25% (15% - 34%) |
| Diffusion Tube Mean (µg/m³) | 27.8 | 22.6 |
| Mean CV (Precision) | 4.7% | 2.5% |
| Automatic Mean (µg/m³) | 24.7 | 18.2 |
| Data Capture | 97% | 98% |
| Adjusted Tube Mean (µg/m³) | 25 (23 - 26) | 18 (17 - 20) |

Notes:

A combined local bias adjustment factor of 0.84 has been used to bias adjust the 2021 diffusion tube results.

The automatic monitoring data at Portland Road has been excluded due to high uncertainty and error reported by QA/QC check.

Figure C.1– National Diffusion Tube Bias Adjustment Factor Spreadsheet 03/22

| National Diffusion Tube Bias Adjustment Factor Spreadsheet | | | | | | | Spreads | heet Vers | sion Numbe | er: 03/22 |
|---|--|---|---|--|---------------------------------|---|--|--------------------------|--------------------------------|---|
| Follow the steps below <u>in the correct order</u> to show the results of <u>relevant</u> co-location studies Data only apply to tubes exposed monthly and are not suitable for correcting individual short-term monitoring periods Whenever presenting adjusted data, you should state the adjustment factor used and the version of the spreadsheet This spreadhseet will be updated every few months; the factors may therefore be subject to change. This should not discourage their immediate use. | | | | | | | This spreadsheet will be updated at the end of June 2022 LAOM Helpdesk Website | | | |
| The LAQM Helpdesk is operated on behalf of Defra ar and the National Physical Laboratory. | nd the Devolved Administ | trations by Burea | u Verita | is, in conjunction with contract partners AECOM | Spreadshe compiled b | et maintained by y Air Quality Cor | the National P Sultants Ltd. | hysical La | aboratory. O | riginal |
| Step 1: | Step 2: | Step 3: | ep 3: Step 4: | | | | | | | |
| Select the Laboratory that Analyses Your Tubes from the Drop-Down List | Select a Preparation Method from the Drop- Down List | Select a Year from the Drop- Down List | Wher | e there is only one study for a chosen comb more than one study, use th | ination, you le overall fact | should use the a tor ³ shown in blu | djustment factor e at the foot of th | shown wi ne final col | th caution. V umn. | Where there is |
| If a laboratory is not shown, we have no data for this laboratory. | If a preparation method is not shown, we have no data for this method at this laboratory. | lf a year is not shown, we have no data ² | a year is not wn, we have no data ² If you have your own co-location study then see footnote ⁴ . If uncertain what to do then contact the Local Air Quality Management Helpdesk LAQMHelpdesk@bureauveritas.com or 0800 0327953 | | | | Helpdesk at | | | |
| Analysed By ¹ ज | Method To undo your selection, thoose (All) from the pop-up list | Year ⁵ To undo your selection, choose (All) | Site Type | Local Authority | Length of Study (months) | Diffusion Tube Mean Conc. (Dm) (µg/m³) | Automatic Monitor Mean Conc. (Cm) (µg/m ³) | Bias (B) | Tube Precision ⁶ | Bias Adjustment Factor (A) (Cm/Dm) |
| Gradko | 20% TEA in water | 2021 | | Overall Factor ³ (32 studies) | | | | | Use | 0.84 |

Table C.6 – NO₂ Fall off With Distance Calculations (concentrations presented in µg/m³)

| Site ID | Distance (m): Monitoring Site to Kerb | Distance (m): Receptor to Kerb | Monitored Concentration (Annualised and Bias Adjusted | Background Concentration | Concentration Predicted at Receptor | Comments |
|------------|---|--------------------------------------|--|-----------------------------|---|--|
| CM2 | 0.2 | 8.6 | 47.4 | 17.3 | 30.2 | |
| A27 | 0.1 | 29.1 | 37.6 | 14.7 | 19.8 | Warning: your receptor is more than 20m further from the kerb than your monitor - treat result with caution. |

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



Figure D.1 – Map of Monitoring Sites in Fareham and Gosport⁷

⁷ Contains OS data © Crown copyright and database right 2022



















Figure D.6 – Map of Diffusion Tube Monitoring Locations in Fareham⁷



Figure D.7 – Map of Diffusion Tube Monitoring Locations in Fareham⁷



Figure D.8 – Map of Diffusion Tube Monitoring Locations in Gosport⁷

Appendix E: Summary of Air Quality Objectives in England

Table E.1 – Air Quality Objectives in England⁸

| Pollutant | Air Quality Objective: Concentration | Air Quality Objective: Measured as |
|--|--|--|
| Nitrogen Dioxide (NO2) | 200µg/m³ not to be exceeded more than 18 times a year | 1-hour mean |
| Nitrogen Dioxide (NO2) | 40µg/m³ | Annual mean |
| Particulate Matter (PM ₁₀) | 50µg/m³, not to be exceeded more than 35 times a year | 24-hour mean |
| Particulate Matter (PM ₁₀) | 40µg/m³ | Annual mean |
| Sulphur Dioxide (SO2) | 350µg/m³, not to be exceeded more than 24 times a year | 1-hour mean |
| Sulphur Dioxide (SO2) | 125µg/m³, not to be exceeded more than 3 times a year | 24-hour mean |
| Sulphur Dioxide (SO ₂) | 266µg/m³, not to be exceeded more than 35 times a year | 15-minute mean |

 $^{^{8}}$ The units are in microgrammes of pollutant per cubic metre of air (µg/m³).

Glossary of Terms

| Abbreviation | Description |
|-------------------|---|
| AQAP | Air Quality Action Plan - A detailed description of measures, outcomes, achievement dates and implementation methods, showing how the local authority intends to achieve air quality limit values' |
| AQMA | Air Quality Management Area – An area where air pollutant concentrations exceed / are likely to exceed the relevant air quality objectives. AQMAs are declared for specific pollutants and objectives |
| ASR | Annual Status Report |
| Defra | Department for Environment, Food and Rural Affairs |
| DMRB | Design Manual for Roads and Bridges – Air quality screening tool produced by National Highways |
| EU | European Union |
| FDMS | Filter Dynamics Measurement System |
| LAQM | Local Air Quality Management |
| NO ₂ | Nitrogen Dioxide |
| NOx | Nitrogen Oxides |
| PM ₁₀ | Airborne particulate matter with an aerodynamic diameter of $10\mu m$ or less |
| PM _{2.5} | Airborne particulate matter with an aerodynamic diameter of $2.5\mu m$ or less |
| QA/QC | Quality Assurance and Quality Control |
| SO ₂ | Sulphur Dioxide |
| HCC | Hampshire County Council |
| FBC | Fareham Borough Council |
| GBC | Gosport Borough Council |

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