

FAREHAM
BOROUGH COUNCIL



GOSPORT
Borough Council

Working in partnership

2019 Air Quality Annual Status Report (ASR)

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

June, 2019

Fareham and Gosport Environmental Health Partnership

Local Authority Officer	Ian Rickman
Department	Environmental Health
Address	Civic Offices Civic Way Fareham Hampshire PO16 7AZ
Telephone	01329 824773
E-mail	irickman@fareham.gov.uk
Report Reference number	Fareham and Gosport 2019 Air Quality ASR
Date	June 2019

Executive Summary: Air Quality in Our Area

Air Quality in Fareham and Gosport

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

The annual health cost to society of the impacts of particulate matter alone in the UK is estimated to be around £16 billion³.

The air pollutants of concern in Fareham and Gosport are nitrogen dioxide (NO₂) and fine particulate matter (PM₁₀ and PM_{2.5}). The main source of these pollutants is road traffic, but other sources include industry, domestic home heating and other transport (e.g. shipping and rail).

The government's National Air Quality Strategy (AQS) sets health-based objectives for air pollutants, including NO₂ and PM₁₀. Where these objectives are not met, local authorities must declare Air Quality Management Areas (AQMAs) and develop Air Quality Action Plans (AQAPs) to improve air quality.

Fareham Borough Council has declared two AQMAs due to measured and modelled exceedances of the annual mean NO₂ AQS objective in previous years. These are: Gosport Road AQMA, declared in 2006; and Portland Street AQMA, declared in 2007. The boundaries of both AQMAs were extended in November 2017, following a Detailed Assessment reported within Fareham & Gosport Borough Council's 2016 Air Quality Annual Status Report (ASR)⁴, which predicted exceedances of the NO₂ annual mean AQS objective outside the original AQMA boundaries. The current AQMAs in Fareham can be viewed online^{5,6}. Gosport Borough Council has not declared any AQMAs.

¹ Environmental equity, air quality, socioeconomic status and respiratory health, 2010

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

³ Defra, 2013. Abatement cost guidance for valuing changes in air quality, May 2013

⁴ http://www.fareham.gov.uk/PDF/licencing_and_inspections/HCU-170130_FarehamAndGosport16.pdf

⁵ http://www.fareham.gov.uk/PDF/licencing_and_inspections/AQMAMap_GosportRoad.pdf

⁶ http://www.fareham.gov.uk/PDF/licencing_and_inspections/AQMAMap_PortlandStreet.pdf

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An Air Quality Action Plan (AQAP) was produced in 2008 following declaration of the two AQMAs in Fareham. This outlined measures and actions designed to improve the NO₂ concentrations in these areas. The AQAP actions have been updated on a regular basis, initially through the Council's air quality steering group and more recently by direct liaison with representatives of Hampshire County Council's public transport and road network departments.

Monitoring of both NO₂ and particulate matter (PM₁₀) undertaken in Fareham and Gosport in 2018 indicates that there were no measured exceedances of AQS objectives for either pollutant at locations of relevant exposure. Measured concentrations of both pollutants have been declining since 2014.



Monitoring of NO₂, using both continuous (automatic) monitors and passive diffusion tubes

Actions to Improve Air Quality

Measures being taken by Fareham and Gosport Borough Councils are detailed within the AQAP (2008). Specific updates are as follows:

- Extension of the Eclipse Busway Bus Rapid Transit (BRT) is underway. The extension will follow a further section of disused railway corridor between Fareham and Gosport, 1 km south into Gosport. In April 2019, planning permission was granted to amend the southern section of the scheme to retain the existing shared use route for pedestrians and cyclists under Rowner Road.

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Additional funding of £1.4 m was obtained from the Department for Transport's (DfT) Transforming Cities Fund⁷.

- Full funding has been secured for the Stubbington Bypass, which will divert traffic around the outskirts of Stubbington. Hampshire County Council has been completing the detailed design of the scheme and undertaking advance ecological and environmental works. Works were delayed by a public inquiry which took place in November 2018, following objections from a local resident. In May 2019, the government announced that the challenges had been rejected and that the scheme could go ahead as planned.

In addition, funding for a raft of new measures was secured in March 2019 as part of the 'UK Plan for Tackling Roadside NO₂ Concentrations'⁸. Fareham Borough Council was identified as being one of the local authorities where the annual mean European Limit Value for NO₂ (40 µg/m³) is at risk of being exceeded in future years. As a result, Fareham Borough Council was required to develop a 'Local NO₂ Plan' to achieve compliance with the EU Limit Value in the shortest possible time. This work has been prioritised through 2018, following the establishment of a technical Air Quality Working Group. Following public consultation, an Outline Business Case was submitted to Defra/DfT's Joint Air Quality Unit (JAQU) in December 2018, and in March 2019, funding of £1.4 million was confirmed for four measures, namely:

- the provision of improved infrastructure for walking and cycling;
- the provision of real time information to additional bus stops to encourage greater use of buses;
- improvements to operation of traffic signals on Market Quay to improve traffic flow along Eastern Way; and
- the introduction of a scheme to encourage Fareham taxi drivers to upgrade from older diesel vehicles (Euro 5 or older) to newer, cleaner ones (Euro 6).

⁷ Hampshire County Council Executive Decision Record (23 April 2019): Available online at: <http://democracy.hants.gov.uk/documents/s33031/2019-04-23%20EMET%20DR%20Eclipse%20Busway%20Completion%20of%20Phase%201%20-%20Retention%20of%20Rowner%20Road%20Bridge.pdf>

⁸ Defra, 2017. UK Plan for Tackling Roadside NO₂ Concentrations. July 2017

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The revised taxi scheme will be delivered by Fareham Borough Council, whilst the other three measures will be coordinated by Hampshire County Council as the relevant Highway Authority.

Conclusions and Priorities

Monitoring of NO₂ and PM₁₀ is undertaken within Fareham and Gosport using continuous automatic monitors and passive NO₂ diffusion tubes. There are currently three continuous monitors and a total of 47 diffusion tube locations within the monitoring network.

Where data is available for more than one year, monitoring results at the majority of sites in Fareham and Gosport in 2018 show a decline in annual mean NO₂ concentrations. In 2018, the annual and 1-hour mean AQS objectives were met at all monitoring sites in both Gosport and Fareham, once measured concentrations were adjusted to represent those at the nearest locations of relevant exposure (e.g. residential properties).

The annual mean and 24-hour mean AQS objectives for PM₁₀ continue to be met at the Tichborne Way monitoring station in Gosport. The measured annual mean PM₁₀ concentration at this site remains low compared to the 40 µg/m³ annual mean objective, with the highest annual mean concentration recorded during 2013-2017 being 24 µg/m³ in 2014.

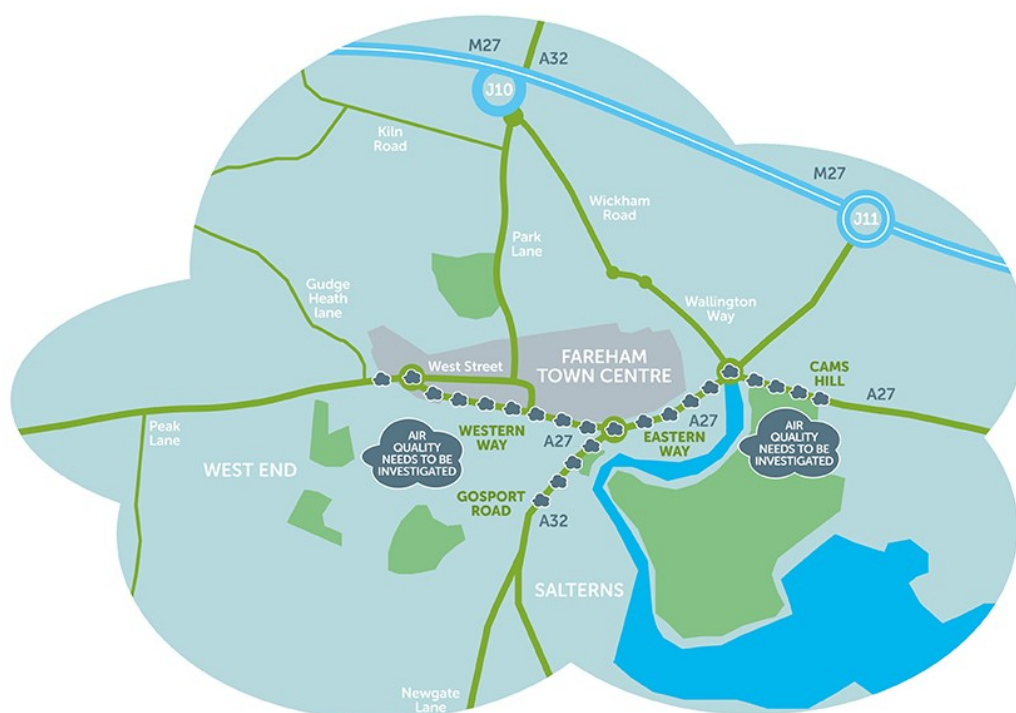
Defra feedback on the previous year's ASR (2018)⁹ noted that Fareham Borough Council may wish to consider revoking both the Portland Street and Gosport Road AQMAs, due to consecutive years of monitoring results being below the annual air quality objective for NO₂. This situation will be monitored over the next few years, following implementation of the measures within the Local NO₂ Plan, which aim to achieve compliance with the EU Limit Value for NO₂ in the shortest possible time.

The priority over the coming year is to work alongside Hampshire County Council to implement the four measures funded through the Local NO₂ Plan. The measures are all scheduled for implementation during 2019, so that the air quality impacts take effect in 2020. The coordination of multiple stakeholders and the practical implementation of these measures will be challenging over a short timeframe.

⁹ Fareham and Gosport Environmental Health Partnership (2018) 2018 Air Quality Annual Status Report (ASR). June 2018.

Local Engagement and How to get Involved

As part of the Fareham response to the 'UK Plan for Tackling Roadside NO₂ Concentrations', a range of measures were put out for public consultation from 4 September 2018, with the consultation deadline extended to 15 October 2018 due to popularity and increase in demand¹⁰. Responses were received from 1,120 people, with most living in Fareham and Gosport. Generally, most people that took part agreed with most of the measures proposed. There was however distinct disagreement for Measures D (Air Quality Business Engagement Officer) and L (Charging Clean Air Zone). The four measures taken forward, and now funded by Central Government are listed in the section above (Actions to Improve Air Quality).



Let's Clear the Air: Public Consultation on air quality measures to reduce roadside NO₂.

As part of Clean Air Day (20th June 2019) Fareham and Gosport Councils established public information displays. The Fareham display was staffed and focussed on information about the four measures contained within the Local NO₂ Plan.

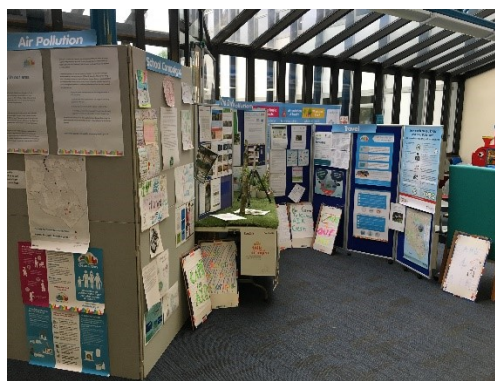
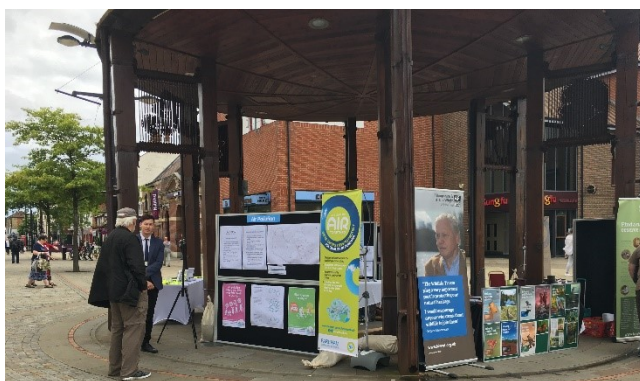
¹⁰ The consultation website:

https://www.fareham.gov.uk/licensing_and_inspections/air_quality/letscleartheair.aspx

The results of the consultation as reported to Fareham Borough Council:

<https://moderngov.fareham.gov.uk/documents/s21829/APPENDIX%20E%20-%20Consultation%20Results.pdf>

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Clean Air Day displays in Fareham and Gosport

More information about air quality in Fareham and Gosport can be obtained via the following links:

- https://www.fareham.gov.uk/licensing_and_inspections/air_quality/intro.aspx
- <https://www.gosport.gov.uk/sections/environment/environmental-health/housing-pollution/environmental-monitoring/air-quality/>
- <http://www.airqualityengland.co.uk/>

A leaflet has been produced in conjunction with the National Health Service that provides information in relation to different air pollutants, the health effects of specific air pollutants and what can be done to combat poor air quality. The leaflet is available at: http://www.fareham.gov.uk/pdf/licencing_and_inspections/Airqualityleaflet.pdf.

If residents have a concern regarding air pollution outside their home, an NO₂ diffusion tube can be fitted to monitor pollution concentrations outside their homes over a number of months.

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 reduce traffic and traffic emissions and has health and mental health benefits. For example, walking, scooting, or cycling on school journeys could save money, improve your health and wellbeing whilst helping to reduce congestion and pollution in the local area. 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 you are exposed to. Hampshire County Council has information on a number of initiatives (Active Travel: <https://myjourneyhampshire.com/>;

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Schools: <https://myjourneyhampshire.com/parent-information>). Information on cycle routes in Fareham and Gosport is available online from both councils (Fareham: <https://www.fareham.gov.uk/pdf/planning/cyclemap.pdf>; Gosport: <https://www.gosport.gov.uk/sections/living/cycling-in-gosport/>)

- **Take public transport or car share:** For longer journeys, try using public transport or car share. It can save money and reduce the impact on the environment. The Eclipse network links Fareham and Gosport with Portsmouth and other key towns and destinations, including a dedicated off-road busway between Redlands Lane in Fareham and Tichbourne Way in Gosport (<https://www.firstgroup.com/portsmouth-fareham-gosport/routes-and-maps/eclipse>).
- **When using a car:**
 - Drive smoothly. You'll save fuel and reduce emissions. Slow down as you approach traffic jams and take your foot off the accelerator. 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.
 - Turn off the engine when your car is stationary.
 - Maintain your car. Ensure your tyre pressures are correct – lower tyre pressure increases fuel use and emissions.
 - Consider whether you need to use air conditioning – using it increases fuel consumption by up to 30%.
 - Remove unnecessary clutter from your boot to reduce engine workload.
 - If you need to buy 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. Government grants are available to help with the purchase of some low emission vehicles: <https://www.gov.uk/plug-in-car-van-grants/eligibility>.
- **This about how you heat your home:**

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- If you have an open fire, or wood-burning stove, consider how you are using it, and whether you can take steps to reduce emissions. Defra has produced a wood-burning guide providing advice on how to reduce emissions whilst saving money on fuel and maintenance costs (https://consult.defra.gov.uk/airquality/domestic-burning-of-wood-and-coal/supporting_documents/open%20fires%20wood%20burning%20stoves%20%20guideA4update12Oct.pdf).
- Consider buying a 'low nitrogen oxide' boiler, the next time your boiler needs replacing.

Daily national air quality updates, pollution forecasts and advice about how to protect yourself from the impacts of poor air quality can be found at: <https://uk-air.defra.gov.uk/>.

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1 Local Air Quality Management

This report provides an overview of air quality in Fareham and Gosport during 2018. 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 to improve air quality and any progress that has been made.

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

2 Actions to Improve Air Quality

2.1 Air Quality Management Areas

Air Quality Management Areas (AQMA)s are declared when there is an exceedance or likely exceedance of an air quality objective. After declaration, the authority must prepare an Air Quality Action Plan (AQAP) within 12-18 months setting out measures it intends to put in place in pursuit of compliance with the objectives.

A summary of AQMA)s declared by Fareham Borough Council can be found in Table 2.1. Further information related to declared or revoked AQMA)s, including maps of AQMA boundaries are available online at https://uk-air.defra.gov.uk/aqma/local-authorities?la_id=103. Alternatively, see Appendix D: Map(s) of Monitoring Locations and AQMA)s, which provides for a map of air quality monitoring locations in relation to the AQMA(s).

It should be noted that the boundaries of both of Fareham Borough Council's AQMA)s were extended in November 2017, following a Detailed Assessment reported within the 2016 ASR¹¹, which predicted exceedances of the NO₂ annual mean AQS objective outside the original AQMA boundaries. At the time of writing this report however, the AQMA boundaries shown on the Defra website (see link above) are yet to be updated to reflect these updated AQMA boundaries. Figures showing the latest AQMA boundaries can however be found on the council's website^{5,6}.

Gosport Borough Council currently does not have any AQMA)s.

¹¹ http://www.fareham.gov.uk/PDF/licencing_and_inspections/AirQualityReport_FarehamAndGosport2017.pdf

Table 2.1 – Declared Air Quality Management Areas

AQMA Name	Date of Declaration	Pollutants and Air Quality Objectives	City / Town	One Line Description	Is air quality in the AQMA influenced by roads controlled by Highways England?	Level of Exceedance (maximum monitored/modelled concentration at a location of relevant exposure)				Action Plan		
						At Declaration		Now		Name	Date of Publication	Link
Portland Street AQMA	Declared 01/12/2007, Amended 01/11/2017	NO ₂ Annual Mean	Fareham	An area encompassing residential properties and the Sacred Heart Catholic Church on Portland Street and the southern end of Hartland Road Fareham.	NO	45.3	µg/m ³	33.8	µg/m ³	AQAP, Gosport Road & Portland Street	2008	www.fareham.gov.uk/PDF/licencing_and_inspections/aqap-gosportrd-portlandst.pdf
Gosport Road AQMA	Declared 01/04/2006, Amended 01/11/2017	NO ₂ Annual Mean	Fareham	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	47.3	µg/m ³	37.4	µg/m ³	AQAP, Gosport Road & Portland Street	2008	www.fareham.gov.uk/PDF/licencing_and_inspections/aqap-gosportrd-portlandst.pdf

☐ **<Local Authority>** confirm the information on UK-Air regarding their AQMA(s) is up to date (confirm by selecting in box)
[At time of submission, the text information UK-Air is correct, but the maps do not show the revised boundaries of the AQMAs.]

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

Defra's appraisal of last year's ASR concluded that the report was very good, clearly communicated the Councils achievements and challenges, and satisfied the criteria set out in relevant standards. Defra provided the following comments to help inform future reports. Commentary is provided *in italics*, to note how these comments have been addressed.

- Both AQMAs have demonstrated compliance over the last 2 years. The Council should review their status, in the context of future developments, with the aim of revoking both sites if suitable. For further guidance please refer to LAQM Technical Guidance 16 (TG16).
 - *As noted above, Fareham was one of the local authorities identified within the "UK Plan for Tackling Roadside NO₂ Concentrations"⁸ where additional measures are required to achieve compliance with the annual mean EU limit value for NO₂ in the shortest possible time. Whilst achieving compliance with the EU limit value is separate to a local authority's obligations under LAQM, Fareham Borough Council is of the view that it would be prudent to retain the AQMAs, which are located in close proximity to the modelled exceedance of the EU Limit Value adjacent to the A27 Eastern Way, until such time as the newly funded Local NO₂ Plan measures are implemented and compliance is demonstrated to have been achieved.*
- Example calculations have been provided for data corrections. This is useful and encouraged for all future reports.
 - *Example calculations are provided, as previously.*
- The AQAP is good in most respects but has limited discussion on barriers to implementation, alongside lacking dates. Please ensure the AQAP is as comprehensive as possible.
 - *The measures table includes discussion on barriers to progress and dates for completion. Further information is provided on new measures*

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funded by central government as part of Fareham Borough Council's Local NO₂ Plan.

- The report provides limited discussion of PM_{2.5} issues and does not draw links between the Public Health Outcomes Framework. For further guidance please refer to TG16.
 - *Additional discussion of PM_{2.5} is included, as are links to the Public Health Outcomes Framework.*
- The Council have recently revised their monitoring strategy to include a number of additional diffusion tube sites. Two of these sites recorded high concentrations (WW3=40.4 µg/m³, and CM2 = 68.0 µg/m³), however both fall within objective limits once corrected for relevant exposure. The Council should pay close attention to these sites to ensure they do not exceed limits in future years.
 - *Annual average NO₂ concentrations recorded at both of these sites were lower in 2018, with 33.4 µg/m³ at WW3 and 57.7 µg/m³ at CM2. Once corrected for relevant exposure, the annual average NO₂ concentration at CM2 was 37.0 µg/m³.*

Fareham and Gosport Borough Councils have taken forward a number of direct measures during the current reporting year of 2018 in pursuit of improving local air quality. Details of all measures completed, in progress or planned are set out in Table 2.2.

More detail on these measures can be found in the 2008 AQAP, the 2018 ASR and previous air quality annual reports that can be viewed at: www.fareham.gov.uk/licensing_and_inspections/air_quality/historicalairqualityinfo.aspx. Key completed measures for 2018 are related to the development of a *Local NO₂ Plan for Fareham*.

- Fareham Borough Council was identified within the 'UK Plan for Tackling Roadside NO₂ Concentrations'⁸ as being one of the local authorities where the annual mean European Limit Value for NO₂ (40 µg/m³) is at risk of being exceeded in future years. As a result, Fareham Borough Council was required

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to develop a 'Local NO₂ Plan' to achieve compliance with the Limit Value in the shortest possible time.

- This work has been prioritised through 2018, with the establishment of a technical Air Quality Working Group, which developed a range of potential measures to achieve compliance.
- A long list of measures were put out for public consultation from 4 September 2018, with the consultation deadline extended to 15 October 2018 due to popularity and increase in demand. Responses were received from 1,120 people, with most living in Fareham and Gosport. Generally, most people that took part agreed with most of the measures proposed. There was distinct disagreement for Measures D (Air Quality Business Engagement Officer) and L (Charging Clean Air Zone). Responses helped to inform the development of a business case, which was submitted to Defra/DfT in December 2018.
- In March 2019, funding of £1.4 million was confirmed for four measures:
 - provision of improved infrastructure for walking and cycling;
 - provision of real time passenger information to additional bus stops to encourage greater use of buses;
 - improvements to operation of traffic signals on Market Quay to improve traffic flow along Eastern Way; and
 - the introduction of a scheme to encourage Fareham taxi drivers to upgrade from older diesel vehicles (Euro 5 or older) to newer, cleaner ones (Euro 6).

The revised taxi scheme will be delivered by Fareham Borough Council and the other three measures coordinated by Hampshire County Council as the relevant Highway Authority. Fareham Borough Council's AQAP will be updated in due course.

Fareham and Gosport's priorities for the coming year are to work with Hampshire County Council to implement these measures, with particular implementation focus for Fareham on the establishment of the revised taxi scheme.

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The principal challenges and barriers to implementation that Fareham and Gosport anticipate facing are:

- the timeframe for implementation of the Local NO₂ Plan measures is challenging (implementation in 2019, to achieve air quality benefits in 2020);
- limited funding and staffing resource to progress all areas of AQAP and Local NO₂ Plan delivery alongside ongoing air quality monitoring, reporting and legislative requirements;
- cumulative emission impacts of development planned for the area;
- uncertainty regarding the likely effectiveness of measures:
 - taxi incentives for vehicle upgrades rely on the 'on-road' emission performance of Euro 6 vehicles being significantly better than Euro 5 and below;
 - measures relying on modal shift from private cars to public transport, walking or cycling, require individuals to opt to change their travel habits, for which uptake cannot be guaranteed.

Progress on the proposed Stubbington Bypass has been slower than expected. The proposed bypass has the potential to affect air quality in both Fareham and Gosport (both positively and negatively). Planning Permission was granted in October 2015, and full funding has now been secured. The 2018 ASR reported that work is likely to start on the ground in 2019 and will take approximately two years to complete. Whilst Hampshire County Council has been completing the detailed design of the scheme and undertaking advance ecological and environmental works, progress was delayed by a public inquiry held in November 2018, following objections from a local resident. In May 2019, the government announced that the challenges had been rejected and that the scheme could go ahead as planned.

Fareham anticipates that the measures stated above and in Table 2.2 will ensure that the annual mean NO₂ air quality objective is achieved in the Portland Street and Gosport Road AQMAs and that it may be possible to revoke both AQMAs after 2021, if not sooner.

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Table 2.2 – Progress on Measures to Improve Air Quality

No.	Measure	EU Category	EU Classification	Organisations involved and Funding Source	Planning Phase	Implementation Phase	Key Performance Indicator	Reduction in Pollutant / Emission from Measure	Progress to Date	Estimated / Actual Completion Date	Comments / Barriers to implementation
1	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	FBC and HCC; Funded by Defra/DfT	2017	2019	Submission of Outline Business Case to Defra/DfT and subsequent funding of measures	Reduction of NO _x (and PM) emissions	Outline Business Case submitted in Dec-18 and confirmation that four measures would be funded received in Mar-19.	Complete	Measures were selected that can be implemented in 2019, to reduce NO ₂ concentrations as quickly as possible. The approach aims to achieve compliance in 2020.
1a	To implement a taxi replacement incentive scheme as part of Local NO ₂ Plan	Promoting Low Emission Transport	Taxi emission incentives	FBC	2018	2018-2021	Decrease in proportion of pre-Euro 6 diesel taxis in local taxi fleet compared with lower emission alternatives	Reduction of NO _x emissions from taxis	Jan-18: Secured Central Government funding for a taxi replacement initiative scheme, to replace pre-Euro 6 diesel vehicles with ultra-low emission vehicles Mar-19: Secured Central Government funding via the Local NO ₂ Plan 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.	2018-2021	Funding secured in Jan-18 was used to establish an early scheme. Unfortunately, take up was low, 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.
1b	To improve infrastructure for walking and cycling as part of Local NO ₂ Plan	Transport Planning and Infrastructure	Cycle network	HCC	2018	2019-2020	Complete works on four route corridors Growth in cycling mode share. To continue to provide specific information on the Council's website of cycle routes in and around the AQMAs	Reduction of NO _x (and PM) emissions	Mar-19: Secured Central Government funding via the Local Air Plan for a series of 19 cycle infrastructure improvement measures along four route corridors. This measure extends ongoing work by HCC following a successful DfT bid for its Local Cycling and Walking Implementation Plan (LCWIP).	2019	The potential impact of the 19 measures 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. The measure will require a procurement

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No.	Measure	EU Category	EU Classification	Organisations involved and Funding Source	Planning Phase	Implementation Phase	Key Performance Indicator	Reduction in Pollutant / Emission from Measure	Progress to Date	Estimated / Actual Completion Date	Comments / Barriers to implementation
											exercise through an existing Hampshire framework.
1c	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	HCC	2018	2019-2020	Installation of RTPI at additional bus stops Growth in public transport mode share. Annual number of passenger trips.	Reduction of NO _x (and PM) emissions	Mar-19: Secured Central Government funding via the Local NO ₂ Plan 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 acknowledged as an enabler of increasing public transport uptake.	2019	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.
1d	To improve operation of traffic signals on Market Quay and improve traffic flow along Eastern Way as part of Local NO ₂ Plan	Traffic Management	UTC, Congestion management, traffic reduction	HCC	2017	2019-2020	Install SCOOT signal optimisation Increase traffic speeds at Quay Street roundabout approaches	Reduction of NO _x (and PM) emissions	Mar-19: Secured Central Government funding via the Local NO ₂ Plan for SCOOT traffic signal optimisation at Quay Street junction of A27 and A32. This should reduce congestion and therefore traffic emissions.	2019	A feasibility study indicated that congestion will be reduced at approaches to the roundabout, but it is less likely to influence vehicle speeds on the A27 / Gosport Road, and would have a negligible influence on traffic flows. Any benefits may therefore be highly localised.
2	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	FBC	2018	2018-2021	Taxi standards for new licenses set at a minimum of Euro 6 for diesel vehicles.	Reduction of vehicle emissions	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.	Ongoing	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. In June 2018 there were 225 diesel taxi and private hire vehicles of Euro 5 and below. As at 25 June 2019 there are now 167. This

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No.	Measure	EU Category	EU Classification	Organisations involved and Funding Source	Planning Phase	Implementation Phase	Key Performance Indicator	Reduction in Pollutant / Emission from Measure	Progress to Date	Estimated / Actual Completion Date	Comments / Barriers to implementation
											reduction is as a result of the licensing change and to a lesser extent the incentive scheme secured through the Local NO ₂ Plan. This figure should continue to fall over the coming months and years as the older vehicles come up for replacement and whilst the incentive scheme is open, until December 2019.
8	To examine the feasibility of erecting signs to identify the AQMAs	Public Information	Other	FBC	2017	2017/18	To erect air quality awareness signs along the A32 Gosport Road in Fareham	Reduction of NO _x emissions	Complete	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.
10	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 Re-prioritising road space away from cars, including Access management, Selective vehicle priority, bus priority, high vehicle occupancy lane	HCC	2010	Ongoing	Annual progress towards the programmed 19 schemes listed in the study.	Reduction of NO _x and PM emissions	Key road schemes: (i) Funding has been secured for the Stubbington Bypass. Progress was delayed by a Public Inquiry held in November 2018. In May 2019, the government announced that the challenge had been rejected and the scheme could go ahead as planned. (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.	Ongoing	The STAG transport study informed the Local Transport Plan (LTP3, 2011) and the subsequent Fareham and Gosport Transport Statements (2013) ¹² .

¹² <https://www.hants.gov.uk/transport/strategies/transportstrategies>

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No.	Measure	EU Category	EU Classification	Organisations involved and Funding Source	Planning Phase	Implementation Phase	Key Performance Indicator	Reduction in Pollutant / Emission from Measure	Progress to Date	Estimated / Actual Completion Date	Comments / Barriers to implementation
15	Provide a bus/rail interchange facility at Fareham rail station	Transport Planning and Infrastructure	Public transport improvements-interchanges stations and services	HCC/TfSH	2010	Ongoing	Provision of a transport interchange at Fareham rail station	Reduction of NO _x and PM emissions	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.	2014-2020	Work is ongoing under the Transforming Cities Fund, led by HCC.
16	To provide a suitable alternative to the light rapid transit system linking Fareham, Gosport and Portsmouth	Promoting Travel Alternatives	Other	HCC/TfSH	2010	Ongoing	Annual progress against the key measures and timeframes set out for the BRT phases	Reduction of NO _x emissions	The Eclipse Busway extension is currently under construction and will extend the existing BRT 1 km further into Gosport. In April 2019, planning permission was granted to amend the southern section of the scheme to provide a ramped connection between the busway and Rowner Road.	Ongoing	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.
19a	Increase numbers of people using local bus services	Transport Planning and Infrastructure	Other	HCC/First	2008	Ongoing	Annual number of passenger trips using BRT services	Reduction of NO _x and PM emissions	The 1 km extension of the Eclipse Busway (currently under construction) 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.	Ongoing	N/A
24	To continue to work with schools in Fareham close to the AQMAs for the development, implementation and the annual review of School Travel Plans	Promoting Travel Alternatives	School Travel Plans	HCC	2008	Ongoing	All schools in Fareham close to the AQMAs have implemented School Travel Plans	Reduction of NO _x emissions	Continued liaison with HCC School Travel Planning group. Diffusion tubes have been sited at several locations adjacent to local schools.	Ongoing	Diffusion tube data was collected for two months at each school location during Oct-Dec 2017, and at new sites in Nov-Dec 2018. All raw monthly results recorded have been below the level of the annual mean air quality objective for NO ₂ . The results are not included in the ASR, as they do not meet data capture

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No.	Measure	EU Category	EU Classification	Organisations involved and Funding Source	Planning Phase	Implementation Phase	Key Performance Indicator	Reduction in Pollutant / Emission from Measure	Progress to Date	Estimated / Actual Completion Date	Comments / Barriers to implementation
											requirements for annualisation.
25	To implement the Fareham Town Access Plan proposals where they have an impact on air quality in the AQMAs	Traffic Management	Other	HCC/FBC	2012	Ongoing	Implementation of proposals	Reduction of NO _x emissions	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.	Ongoing	The Town Access Plan informed the Fareham Transport Statement (2013) ¹³ .
26	To continue to inspect premises and take appropriate enforcement action in respect of the Environmental Permit risk assessment regime	Environmental Permits	Other	FBC	2008	Ongoing	Submission of Defra return	Reduction of emissions from permitted activities	All due inspections undertaken in 2017/18. Return submitted to Defra on time	Ongoing	Continuing programme for inspections.
28	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	FBC/GBC	2008	Ongoing	Examples of where FBC requires higher provision of cycle facilities or lower car parking facilities than the HCC standards for new developments.	Reduction of NO _x and PM emissions	Planning updates: (i) Ongoing implementation of LDF policies to influence air quality. (ii) Fareham's Draft Local Plan (2017) will require new development to offer maximum flexibility in travel modes, minimise emissions and contribute to reduction of transport impacts on local air quality, and provide electric vehicle charging infrastructure. (iii) An air quality Supplementary Planning Document is being developed by HCC.	Ongoing	Planning processes ongoing

¹³ <https://www.hants.gov.uk/transport/strategies/transportstrategies>

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No.	Measure	EU Category	EU Classification	Organisations involved and Funding Source	Planning Phase	Implementation Phase	Key Performance Indicator	Reduction in Pollutant / Emission from Measure	Progress to Date	Estimated / Actual Completion Date	Comments / Barriers to implementation
32	To continue to review and consult on air quality in the Borough in line with statutory requirements	Policy Guidance and Development Control	Other policy	FBC	2008	Ongoing	(a) To ensure compliance with the Defra timetable. (b) To maintain air quality reports on the FBC website	N/A	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.	Ongoing	New measures included, barriers for implementation are listed above, particularly relevant is the short time frame for implementation.
33	To enhance the nitrogen dioxide monitoring network by providing continuous nitrogen dioxide monitors in the AQMAs	Policy Guidance and Development Control	Other policy	FBC	2008	Ongoing	Outcomes of the LAQM reporting process using diffusion tube and continuous monitoring data from the Gosport Road and possibly Portland Street	N/A	Additional diffusion tubes have been installed to provide additional evidence to support the development of Fareham BC's Local NO ₂ Plan.	Ongoing	A monitoring and evaluation strategy has been developed as part of the Local NO ₂ Plan.
34	To continue to work in partnership with neighbouring authorities and others for the control of air pollution and continued improvement of air quality e.g. to attend HLOW air quality group	Policy Guidance and Development Control	Other policy	FBC	2008	Ongoing	Minutes of meetings	Reduction of NO _x and PM emissions	A technical working group was established to develop FBC's Local NO ₂ Plan, including FBC (Environmental Health, Planning and Transport Planning), GBC, HCC and First Bus.	Ongoing	Meetings are ongoing
35	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	FBC	2008	Ongoing	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	Reduction of NO _x emissions	Progress is reported in ASRs, available on Fareham Borough Council's website.	Annual progress reports to Defra	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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No.	Measure	EU Category	EU Classification	Organisations involved and Funding Source	Planning Phase	Implementation Phase	Key Performance Indicator	Reduction in Pollutant / Emission from Measure	Progress to Date	Estimated / Actual Completion Date	Comments / Barriers to implementation
							and the need for further actions.				
38	To continue to place air quality reports on the FBC website	Public Information	Via the Internet	FBC	2008	Ongoing	Annually (or as required) e-mail stakeholder bodies send a message each time there is a website report update	N/A	The 2018 ASR is listed on FBC website.	Ongoing	N/A
39	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	FBC	2008	Ongoing	Annual review of information dissemination options in line with UK best practice and discussions with neighbouring authorities	N/A	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.	2018/19	N/A
40	To promote awareness via the FBC website of other air quality information web sites	Public Information	Via the Internet	FBC	2008	Ongoing	Annual review of the Council website content in line with accepted UK best practice	N/A	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.	Ongoing	N/A

2.3 PM_{2.5} – Local Authority Approach to Reducing Emissions and/or Concentrations

As detailed in Policy Guidance LAQM.PG16 (Chapter 7), local authorities are expected to work towards reducing emissions and/or concentrations of PM_{2.5} (particulate matter with an aerodynamic diameter of 2.5µm or less). There is clear evidence that PM_{2.5} has a significant impact on human health, including premature mortality, allergic reactions, and cardiovascular diseases.

No areas within Fareham or Gosport are considered likely to exceed the EU Limit Value for PM_{2.5} (an annual average concentration of 25 µg/m³), but information from Defra background concentration mapping¹⁴ indicates that there are areas in Fareham and Gosport where concentrations of PM_{2.5} have the potential to exceed the World Health Organisation Target Level of 10 µg/m³, cited within the 2019 Clean Air Strategy¹⁵. These areas are in central Fareham, in heavily populated areas south of the M27 motorway and adjacent to the A32 and industrial areas in Gosport.

Public Health England estimated that 59 adult deaths per annum are attributable to PM_{2.5} air pollution in Fareham, and 40 per annum in Gosport (based on 2010 figures)¹⁶. In both Fareham and Gosport, the fraction of mortality attributable to particulate air pollution is 5.5%, which is higher than the averages for Hampshire (5.3%), and England (5.1%)¹⁷. Overall, indicators for life expectancy in Fareham are in line with the rest of Hampshire and higher than the average for England as a whole. In Gosport, life expectancy is slightly lower than the average for Hampshire, but in line with the average for England. Mortality rates from cancer, heart disease

¹⁴ Estimates of current and future year background pollutant concentrations in the UK are available on the Defra UK-Air website. Background estimates, which are a combination of measured and modelled data are available for each one-kilometre grid square throughout the UK. The mapped concentrations have a base year of 2017, which is the basis for future estimates up to 2030. The background estimates include contributions from all source sectors, e.g. road transport, industry and domestic and commercial heating. The average annual mean background PM_{2.5} concentrations in Fareham is 9.7 µg/m³ and 9.5 µg/m³ in Gosport, although estimates for some grid squares are in excess of 10 µg/m³. Data available online at: <https://uk-air.defra.gov.uk/data/laqm-background-maps?year=2017>.

¹⁵ Defra, 2019. Clean Air Strategy 2019. Available online at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/770715/clean-air-strategy-2019.pdf

¹⁶ Public Health England (2014) Estimating Local Mortality Burdens Associated with Particulate Air Pollution. Available online at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/332854/PHE_CRCE_010.pdf

¹⁷ Public Health Outcomes Framework. Indicator 3.01: <https://fingertips.phe.org.uk/profile/public-health-outcomes-framework>

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and respiratory disease are all lower than the national averages in Fareham, and in line with national averages in Gosport.

Defra estimates¹⁴ 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% for both industrial and road traffic sources, and a further 5% from 'other' sources, which include shipping, aircraft and off-road emissions.

Fareham and Gosport Borough Councils work closely with public health specialists to share information and deliver improvements in air quality. A joint public information leaflet has been produced with NHS Hampshire¹⁸ 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.

Domestic home heating is estimated to be the highest contributor of primary PM_{2.5} across the country. Whilst neither Fareham or Gosport is declared as a Smoke Control Area, Fareham's air quality webpage¹⁹ prominently displays information on reducing air quality impacts from open fires and wood burning stoves, providing references to practical guides by Defra²⁰ and professional chimney sweeps²¹.

Defra's Emission Factors Toolkit estimates that for road transport, approximately 85% of particulate emissions are 'non-exhaust emissions', generated from a combination of brake and tyre wear and resuspension from the road surface. Effectively addressing particulates from road transport therefore requires a reduction in overall trips, rather than simply switching to low emission vehicles. Promotion of sustainable transport is a key part of Fareham's AQAP, and the focus of a number of the measures in Table 2.2. Additionally, two of the four measures recently funded under Fareham's Local NO₂ Plan are aimed at reducing car use, through:

- (i) improved infrastructure for walking and cycling, and;
- (ii) provision of real time passenger information for additional bus stops.

These measures will have a direct and proportional impact on PM_{2.5}.

¹⁸ https://www.fareham.gov.uk/pdf/licencing_and_inspections/Airqualityleaflet.pdf

¹⁹ https://www.fareham.gov.uk/licensing_and_inspections/air_quality/intro.aspx

²⁰ https://consult.defra.gov.uk/airquality/domestic-burning-of-wood-and-coal/supporting_documents/open%20fires%20wood%20burning%20stoves%20%20guideA4update12Oct.pdf

²¹ <http://edition.pagesuite-professional.co.uk/html5/reader/production/default.aspx?pubname=&pubid=c88a0e8e-aafd-4917-bfcb-31d6aef97027>

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The low emission taxi incentive scheme will provide grants for taxi operators to upgrade pre-Euro 6 diesels to either Euro 6 diesel, petrol hybrids or ultra-low emission vehicles. Hybrid and low emission vehicles produce considerably lower exhaust emissions of PM_{2.5} than diesel equivalents.

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

3.1 Summary of Monitoring Undertaken

3.1.1 Automatic Monitoring Sites

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

Fareham and Gosport Borough Councils undertook automatic (continuous) monitoring at three sites during 2018. Table A.1 in Appendix A shows the details of the sites. National monitoring results are available at www.airqualityengland.co.uk.

Maps showing the location of the monitoring sites are provided in Appendix D. Further details on how the monitors are calibrated and how the data has been adjusted are included in Appendix C.

3.1.2 Non-Automatic Monitoring Sites

Fareham and Gosport Borough Councils undertook non- automatic (passive) monitoring of NO₂ at 47 sites during 2018. Table A.2 in Appendix A shows the details of the sites.

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

3.2 Individual Pollutants

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

3.2.1 Nitrogen Dioxide (NO₂)

Table A.3 in Appendix A compares the ratified and adjusted monitored NO₂ annual mean concentrations for the past 5 years with the air quality objective of 40µg/m³.

For diffusion tubes, the full 2018 dataset of monthly mean values is provided in Appendix B.

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Table A.4 in Appendix A compares the ratified continuous monitored NO₂ hourly mean concentrations for the past 5 years with the air quality objective of 200µg/m³, not to be exceeded more than 18 times per year.

In 2018, a measured concentration in excess of the level of the annual mean NO₂ air quality objective was recorded at one site in Fareham (CM2, where a bias adjusted annualised concentrations of 57.7 µg/m³ was recorded). This is a kerbside site on Cams Hill, adjacent to the Delme Roundabout. This measured concentration has been distance corrected to estimate the resultant NO₂ concentration at the closest location of relevant exposure, the results of which are presented within Table B.1. Following this correction the concentration falls below the annual mean air quality objective (37.0 µg/m³).

No sites recorded annual mean concentrations greater than 60 µg/m³, which indicates that there are unlikely to be exceedances of the 1-hour mean objective at relevant receptor locations.

3.2.2 Particulate Matter (PM₁₀)

Table A.5 in Appendix A compares the ratified and adjusted monitored PM₁₀ annual mean concentrations for the past 5 years with the air quality objective of 40µg/m³.

Table A.6 in Appendix A compares the ratified continuous monitored PM₁₀ daily mean concentrations for the past 5 years with the air quality objective of 50µg/m³, not to be exceeded more than 35 times per year.

In the past 5 years, there have been no measured exceedances of either the annual mean or daily mean air quality objectives for PM₁₀.

Appendix A: Monitoring Results

Table A.1 – Details of Automatic Monitoring Sites

Site ID	Site Name	Site Type	X OS Grid Ref	Y OS Grid Ref	Pollutants Monitored	In AQMA?	Monitoring Technique	Distance to Relevant Exposure (m) ⁽¹⁾	Distance to kerb of nearest road (m) ⁽²⁾	Inlet Height (m)
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	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

Site ID	Site Name	Site Type	X OS Grid Ref	Y OS Grid Ref	Pollutants Monitored	In AQMA?	Distance to Relevant Exposure (m) ⁽¹⁾	Distance to kerb of nearest road (m) ⁽²⁾	Tube collocated with a Continuous Analyser?	Height (m)
Non-automatic - Gosport Borough Council										
G	Military Road/Brockhurst Road	Roadside	459572	101800	NO ₂	NO	41	3.5	N	2.7
Q	Fareham Way/Tichborne Way	Roadside	458985	102785	NO ₂	NO	16	6	Y	2.7
R	Fareham Way/Tichborne Way	Roadside	458985	102785	NO ₂	NO	16	6	Y	2.7
I	Fareham Way/Tichborne Way	Roadside	458985	102785	NO ₂	NO	16	6	Y	2.7
J	Fareham Road/Leders Lane	Roadside	458282	104110	NO ₂	NO	46	3	N	2.7
V	Wych Lane/Fareham Road	Roadside	458064	104235	NO ₂	NO	12	5	N	2.8
W	Bus Stop Wych Lane	Roadside	457977	104185	NO ₂	NO	84	4.5	N	2.7
U	Daedalus	Roadside	456564	101572	NO ₂	NO	15	3	N	2.8
S	Bury Cross 1	Roadside	460046	99618	NO ₂	NO	2.3	3.3	N	2.5
T	Bury Cross 2	Roadside	460061	99604	NO ₂	NO	2.3	3.3	N	2.5

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Site ID	Site Name	Site Type	X OS Grid Ref	Y OS Grid Ref	Pollutants Monitored	In AQMA?	Distance to Relevant Exposure (m) ⁽¹⁾	Distance to kerb of nearest road (m) ⁽²⁾	Tube collocated with a Continuous Analyser?	Height (m)
P	Lees Lane/Forton Road Junction	Roadside	460631	100435	NO ₂	NO	11	3	N	2.7
Non-automatic - Fareham Borough Council										
BL1	11 Bath Lane	Other	458376	106109	NO ₂	NO	N/A	16	N	2.9
G1A	30 Old Gosport Road	Roadside	457732	105625	NO ₂	YES	0	10	N	2.3
G2A	138 Gosport Road	Other	457627	105138	NO ₂	YES	0	9.5	N	1.8
G3	202 Gosport Road	Roadside	457726	104869	NO ₂	NO	0	9	N	2
G4	122 Gosport Road	Roadside	457598	105213	NO ₂	YES	0	6	N	2.5
G6	171 Gosport Road	Roadside	457599	105410	NO ₂	YES	0	6	N	2.3
G7	193 Gosport Road	Roadside	457583	105354	NO ₂	YES	0	6.5	N	3
G8Z	156 Gosport Road	Roadside	457656	105049	NO ₂	NO	0	4	N	1.9
G10	107 Gosport Road	Roadside	457675	105616	NO ₂	YES	0	14	N	2.6

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Site ID	Site Name	Site Type	X OS Grid Ref	Y OS Grid Ref	Pollutants Monitored	In AQMA?	Distance to Relevant Exposure (m) ⁽¹⁾	Distance to kerb of nearest road (m) ⁽²⁾	Tube collocated with a Continuous Analyser?	Height (m)
G11	2 Earls Road	Roadside	457668	105461	NO ₂	YES	0	5	N	2.1
G12	Two Saints, 101 Gosport Road	Roadside	457684	105630	NO ₂	YES	0	15	N	2.6
G14	Bottom of Beaconsfield Road	Other	457631	105494	NO ₂	YES	5	6.9	N	2.5
HR2	17 Hartlands Road	Roadside	457822	106107	NO ₂	NO	N/A	11	N	1.9
HR3A	7 Hartlands Road	Roadside	457787	106140	NO ₂	NO	0	7	N	2.5
HR4	25 Hartlands Road	Roadside	457860	106077	NO ₂	NO	0	6.5	N	1.9
PS1/1A/1B	1 Sentinel Cottages	Roadside	457939	106012	NO ₂	YES	0	6.5	N	2.5
PS2	2 Sentinel Cottages	Roadside	457937	106021	NO ₂	YES	0	6.5	N	2.7
PS3	38 Portland Street	Roadside	457935	106033	NO ₂	YES	0	3.5	N	2.3
PS4/5/6	Co-located with Portland St Monitor	Roadside	457954	106027	NO ₂	NO	5	1.8	Y	1.2
E1/2/3	Co-located with Gosport	Roadside	457590	105281	NO ₂	YES	3.5	1.5	Y	1.9

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Site ID	Site Name	Site Type	X OS Grid Ref	Y OS Grid Ref	Pollutants Monitored	In AQMA?	Distance to Relevant Exposure (m) ⁽¹⁾	Distance to kerb of nearest road (m) ⁽²⁾	Tube collocated with a Continuous Analyser?	Height (m)
	Road Monitor									
DC1	Maytree Drive Opposite Delme Court	Roadside	457182	106203	NO ₂	NO	N/A	0.5	N	2.5
RM1	Runnymede	Roadside	455745	107825	NO ₂	NO	N/A	49	N	2.7
GR/RL	Corner of Gosport Rd and Redlands Lane	Roadside	457564	105300	NO ₂	YES	11	1.5	N	2.1
AQ8A	Rosemary House/Bottle Road Suburban	Suburban	451618	109015	NO ₂	NO	0	8	N	2.1
BR1	Bridge Road	Roadside	449694	109264	NO ₂	NO	2.3	3.3	N	2.4
BR2	Bridge Road	Roadside	449664	109278	NO ₂	NO	1	3.2	N	2.5
BR3	Bridge Road	Roadside	449500	109465	NO ₂	NO	2.2	1.5	N	2.5
SL1	Swanwick Lane Top	Roadside	449574	109651	NO ₂	NO	4.6	2.5	N	2.5
SL2	Swanwick Lane Bottom	Roadside	451272	109530	NO ₂	NO	6	1	N	2.4
WW1	Western Way	Roadside	457845	106008	NO ₂	NO	17	1	N	2.1

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Site ID	Site Name	Site Type	X OS Grid Ref	Y OS Grid Ref	Pollutants Monitored	In AQMA?	Distance to Relevant Exposure (m) ⁽¹⁾	Distance to kerb of nearest road (m) ⁽²⁾	Tube collocated with a Continuous Analyser?	Height (m)
	(Fareham town end)									
WW2	Western Way (Half way up Road)	Roadside	457443	106087	NO ₂	NO	27	1	N	2.4
WW3	Corner of Avenue and Gudge HL	Roadside	456837	106220	NO ₂	NO	4.2	2	N	2.1
CM1	Cams Hill, Near the Bridge	Roadside	458775	106228	NO ₂	NO	20	0.7	N	2.2
CM2	Cams Mill Kerb side	Roadside	458775	106273	NO ₂	NO	8.4	0.2	N	2.2
CM3	On Cams Hill, near Delme Arms	Roadside	458828	106243	NO ₂	NO	7	1	N	2.3
TF1	Lamppost outside Rowans shop	Roadside	454003	105785	NO ₂	NO	9	1	N	2.3
TF2	Lamppost opposite TCC	Roadside	454164	106066	NO ₂	NO	1.3	2.3	N	2.3
W1	On Lamppost on on Warsah Road at	Roadside	449567	106204	NO ₂	NO	11	1.5	N	2.3

Fareham and Gosport Environmental Health Partnership

Site ID	Site Name	Site Type	X OS Grid Ref	Y OS Grid Ref	Pollutants Monitored	In AQMA?	Distance to Relevant Exposure (m) ⁽¹⁾	Distance to kerb of nearest road (m) ⁽²⁾	Tube collocated with a Continuous Analyser?	Height (m)
	junction with Osbourne Road									

Notes:

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

(2) N/A if not applicable.

Table A.3 – Annual Mean NO₂ Monitoring Results

Site ID	Site Type	Monitoring Type	Valid Data Capture for Monitoring Period (%) ⁽¹⁾	Valid Data Capture 2018 (%) ⁽²⁾	NO ₂ Annual Mean Concentration (µg/m ³) ⁽³⁾				
					2014	2015	2016	2017	2018
Automatic - Gosport Borough Council									
GOS1	Roadside	Automatic	79.7	79.7	29.5	26.2	32.8	26.6	31.9
Automatic - Fareham Borough Council									
FAR1	Roadside	Automatic	96.7	96.7	32.5	27.6	25.9	29.0	26.9
FAR2	Roadside	Automatic	97.5	97.5	40.4	37.2	36.6	34.4	31.8
Non-automatic - Gosport Borough Council									
G	Roadside	Diffusion Tube	83.3	83.3	34.4	30.9	33.7	32.8	31.4
Q/R/I	Roadside	Diffusion Tube	100 / 100 / 100	100 / 100 / 100	24.7	21.8	25.9	23.9	25.7
J	Roadside	Diffusion Tube	100.0	100.0	39.1	27.4	31.2	32.6	30.7
V	Roadside	Diffusion Tube	66.7	66.7	26.5	19.1	28.3	24.9	27.0
W	Roadside	Diffusion Tube	66.7	66.7	22.4	15.5	18.8	16.5	18.1
U	Roadside	Diffusion Tube	41.7	41.7	21.7	14.6	20.7	19.4	16.8
S	Roadside	Diffusion Tube	91.7	91.7	38.9	36.5	36.5	38.1	38.3
T	Roadside	Diffusion Tube	83.3	83.3	38.2	37.7	36.4	33.8	36.1
P	Roadside	Diffusion Tube	91.7	91.7	39.4	29.4	33.8	31.6	31.4
Non-automatic - Fareham Borough Council									
BL1	Other	Diffusion Tube	100.0	100.0	40.8	40.5	35.7	31.4	31.3

Fareham and Gosport Environmental Health Partnership

Site ID	Site Type	Monitoring Type	Valid Data Capture for Monitoring Period (%) ⁽¹⁾	Valid Data Capture 2018 (%) ⁽²⁾	NO ₂ Annual Mean Concentration (µg/m ³) ⁽³⁾				
					2014	2015	2016	2017	2018
G1A	Roadside	Diffusion Tube	83.3	83.3	35.8	35.8	30.1	29.4	28.5
G2A	Other	Diffusion Tube	100.0	100.0	34.1	33.5	27.9	27.7	25.8
G3	Roadside	Diffusion Tube	100.0	100.0	33.6	31.9	28.9	24.4	23.7
G4	Roadside	Diffusion Tube	75.0	75.0	32.2	31.5	25.5	24.8	25.2
G6	Roadside	Diffusion Tube	83.3	83.3	37.4	36.2	30.2	26.6	31.3
G7	Roadside	Diffusion Tube	91.7	91.7	46.1	45.2	36.0	34.5	37.4
G8Z	Roadside	Diffusion Tube	91.7	91.7	34.3	30.8	27.4	27.2	25.8
G10	Roadside	Diffusion Tube	100.0	100.0	40.4	41.7	35.5	33.4	33.2
G11	Roadside	Diffusion Tube	100.0	100.0	29.0	31.3	25.2	23.5	23.1
G12	Roadside	Diffusion Tube	100.0	100.0	42.2	38.2	32.8	34.0	30.8
G14	Other	Diffusion Tube	100.0	100.0	37.0	34.8	30.4	26.3	26.4
HR2	Roadside	Diffusion Tube	83.3	83.3	34.3	33.1	27.1	25.0	24.5
HR3A	Roadside	Diffusion Tube	83.3	83.3	30.2	29.0	23.6	22.8	23.3
HR4	Roadside	Diffusion Tube	83.3	83.3	33.8	33.0	29.5	24.8	25.0
PS1/1A/1B	Roadside	Diffusion Tube	100 / 100 / 100	100 / 100 / 100	38.7	37.2	31.9	30.1	29.6

Fareham and Gosport Environmental Health Partnership

Site ID	Site Type	Monitoring Type	Valid Data Capture for Monitoring Period (%) ⁽¹⁾	Valid Data Capture 2018 (%) ⁽²⁾	NO ₂ Annual Mean Concentration (µg/m ³) ⁽³⁾				
					2014	2015	2016	2017	2018
PS2	Roadside	Diffusion Tube	91.7	91.7	41.3	38.1	35.5	33.3	33.8
PS3	Roadside	Diffusion Tube	100.0	100.0	46.0	40.6	33.6	33.9	32.3
PS4/5/6	Roadside	Diffusion Tube	100 / 100 / 100	100 / 100 / 100	40.2	42.9	36.6	34.4	34.8
E1/2/3	Roadside	Diffusion Tube	100 / 100 / 100	100 / 100 / 100	39.6	39.2	31.2	32.4	29.8
DC1	Roadside	Diffusion Tube	100.0	100.0	30.1	30.2	26.3	22.5	23.9
RM1	Roadside	Diffusion Tube	91.7	91.7	29.5	29.6	25.7	26.3	24.8
GR/RL	Roadside	Diffusion Tube	100.0	100.0	28.6	26.7	22.5	21.4	23.2
AQ8A	Suburban	Diffusion Tube	100.0	100.0	27.8	29.8	24.9	24.3	22.3
BR1	Roadside	Diffusion Tube	100.0	100.0	No data	No data	No data	28.2	31.0
BR2	Roadside	Diffusion Tube	100.0	100.0	No data	No data	No data	25.0	26.8
BR3	Roadside	Diffusion Tube	75.0	75.0	No data	No data	No data	35.7	31.5
SL1	Roadside	Diffusion Tube	100.0	100.0	No data	No data	No data	28.0	24.4
SL2	Roadside	Diffusion Tube	91.7	91.7	No data	No data	No data	24.3	24.1
WW1	Roadside	Diffusion Tube	91.7	91.7	No data	No data	No data	23.9	26.7
WW2	Roadside	Diffusion Tube	83.3	83.3	No data	No data	No data	30.3	28.8

Fareham and Gosport Environmental Health Partnership

Site ID	Site Type	Monitoring Type	Valid Data Capture for Monitoring Period (%) ⁽¹⁾	Valid Data Capture 2018 (%) ⁽²⁾	NO ₂ Annual Mean Concentration (µg/m ³) ⁽³⁾				
					2014	2015	2016	2017	2018
WW3	Roadside	Diffusion Tube	58.3	58.3	No data	No data	No data	40.4	33.4
CM1	Roadside	Diffusion Tube	100.0	100.0	No data	No data	No data	29.8	30.0
CM2	Roadside	Diffusion Tube	100.0	100.0	No data	No data	No data	<u>68.0</u>	57.7
CM3	Roadside	Diffusion Tube	100.0	100.0	No data	No data	No data	27.4	27.3
TF1	Roadside	Diffusion Tube	66.7	66.7	No data	No data	No data	No data	20.1
TF2	Roadside	Diffusion Tube	75.0	75.0	No data	No data	No data	No data	24.5
W1	Roadside	Diffusion Tube	41.7	41.7	No data	No data	No data	No data	24.7

☒ Diffusion tube data has been bias corrected

☒ Annualisation has been conducted where data capture is <75%

Notes:

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

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

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

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

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

Figure A.1 – Trends in Annual Mean NO₂ Concentrations (Automatic Monitoring Sites)

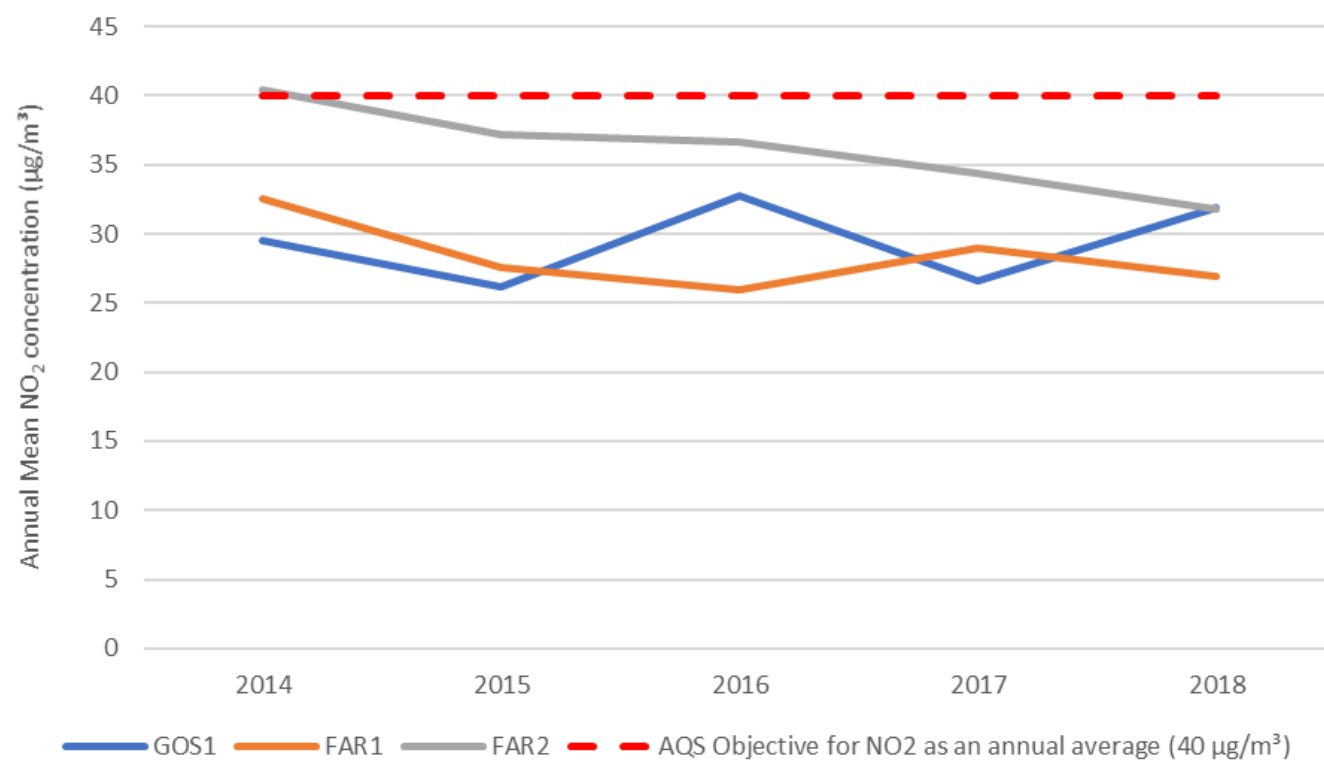


Figure A.2 – Trends in Annual Mean NO₂ Concentrations (Gosport – Non-automatic Monitoring Sites)

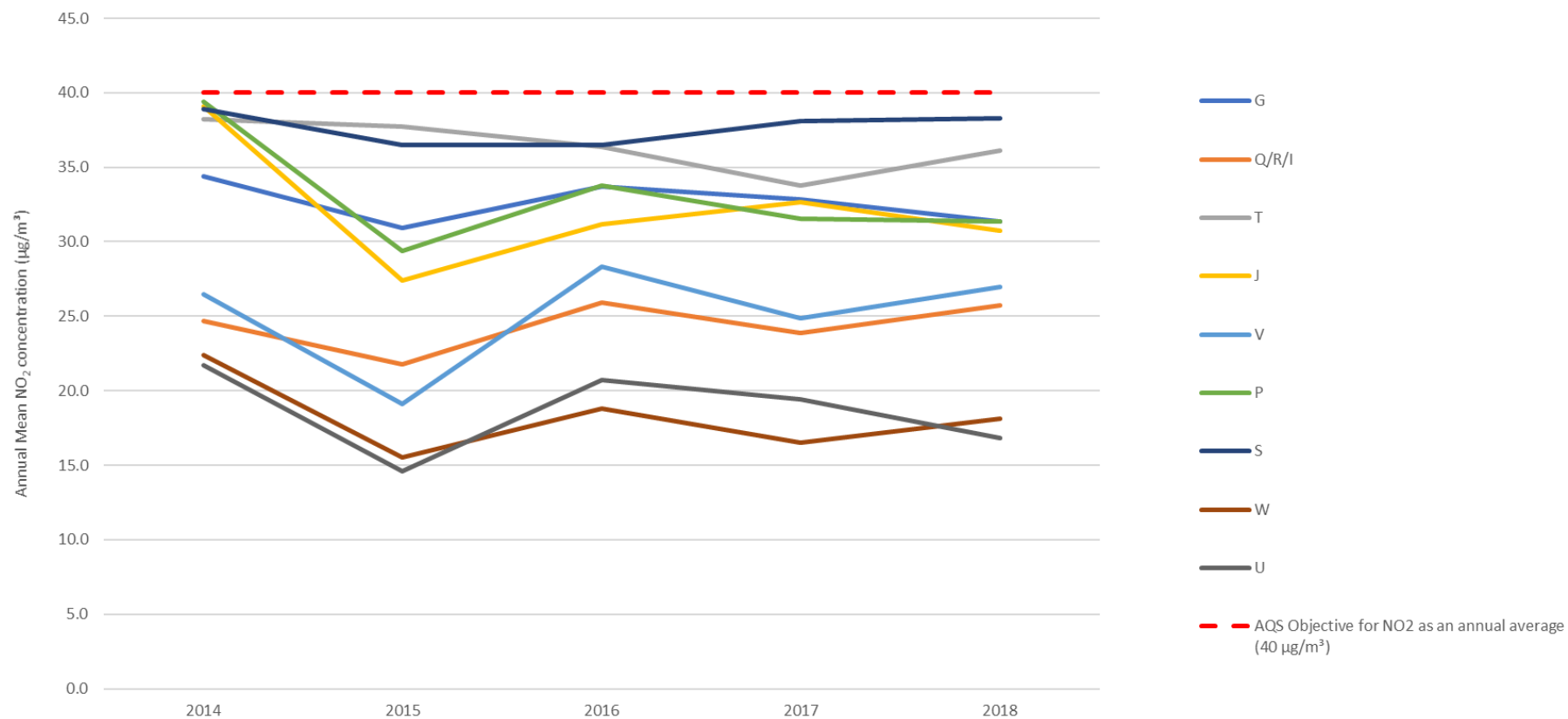


Figure A.3 – Trends in Annual Mean NO₂ Concentrations (Fareham – Non-automatic Monitoring Sites)

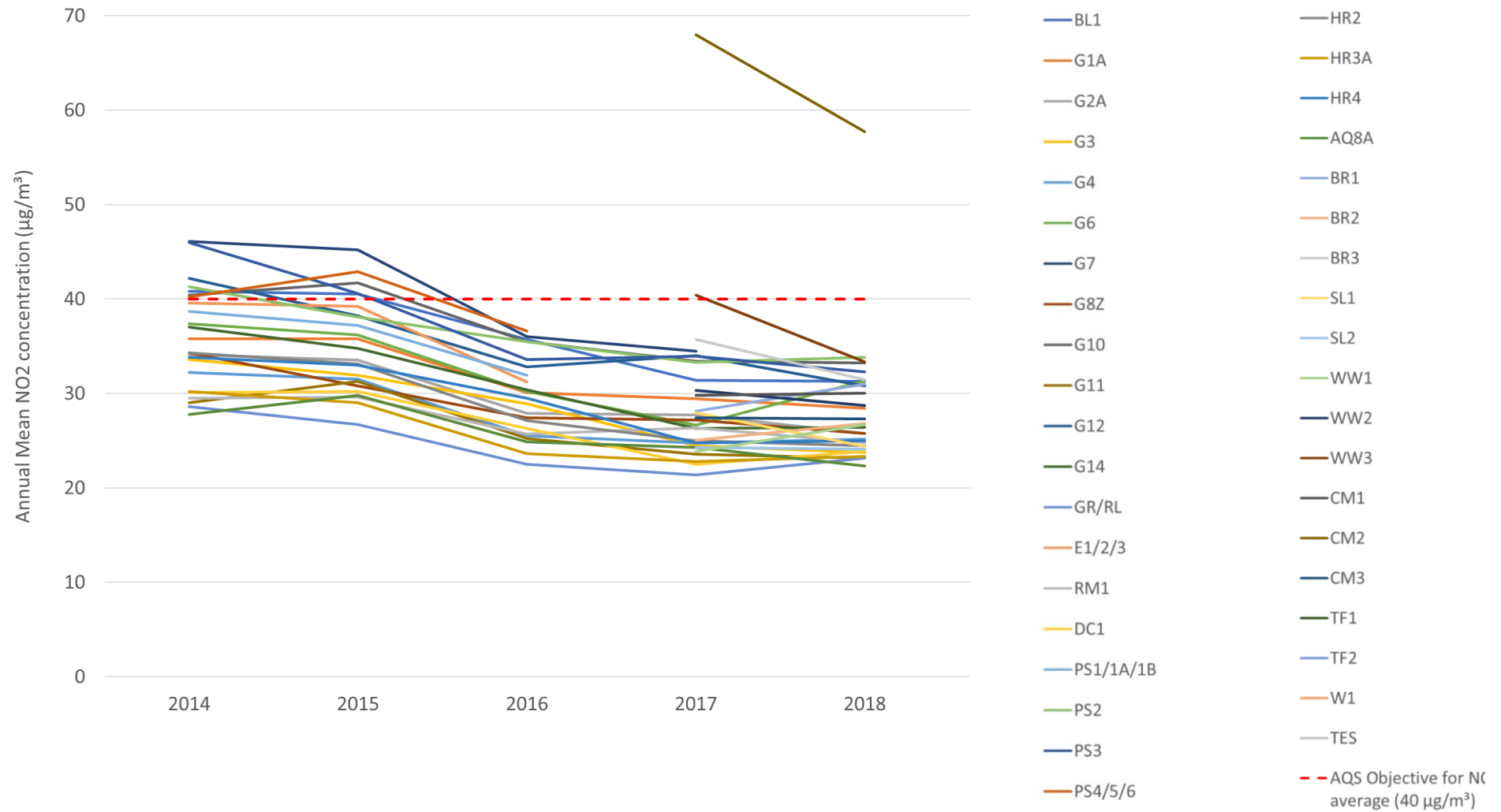


Table A.4 – 1-Hour Mean NO₂ Monitoring Results

Site ID	Site Type	Monitoring Type	Valid Data Capture for Monitoring Period (%) ⁽¹⁾	Valid Data Capture 2018 (%) ⁽²⁾	NO ₂ 1-Hour Means > 200µg/m ³ ⁽³⁾				
					2014	2015	2016	2017	2018
Gosport Borough Council									
GOS1	Roadside	Automatic	79.7	79.7	7	0	0	0	0
Fareham Borough Council									
FAR1	Roadside	Automatic	96.7	96.7	0	0	0	0	0
FAR2	Roadside	Automatic	97.5	97.5	0 (126)	0	2	5	1

Notes:

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

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

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

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

Figure A.4 – Trends in Number of NO₂ 1-Hour Means > 200µg/m³

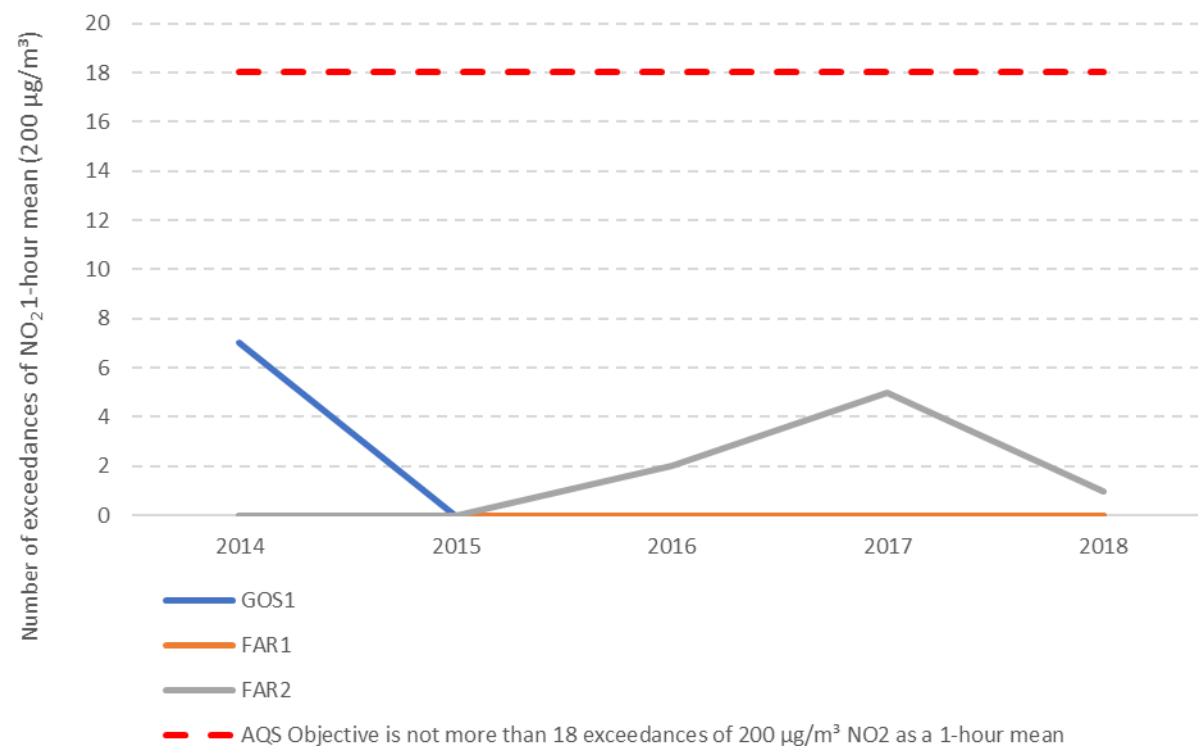


Table A.5 – Annual Mean PM₁₀ Monitoring Results

Site ID	Site Type	Valid Data Capture for Monitoring Period (%) ⁽¹⁾	Valid Data Capture 2018 (%) ⁽²⁾	PM ₁₀ Annual Mean Concentration (µg/m ³) ⁽³⁾				
				2014	2015	2016	2017	2018
Gosport Borough Council								
GOS1	Roadside	91.6	91.6	24.0	20.8	19.1	17.5	19.1

☒ Annualisation has been conducted where data capture is <75%

Notes:

Exceedances of the PM₁₀ annual mean objective of 40µg/m³ are shown in **bold**.

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

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

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

Figure A.5 – Trends in Annual Mean PM₁₀ Concentrations

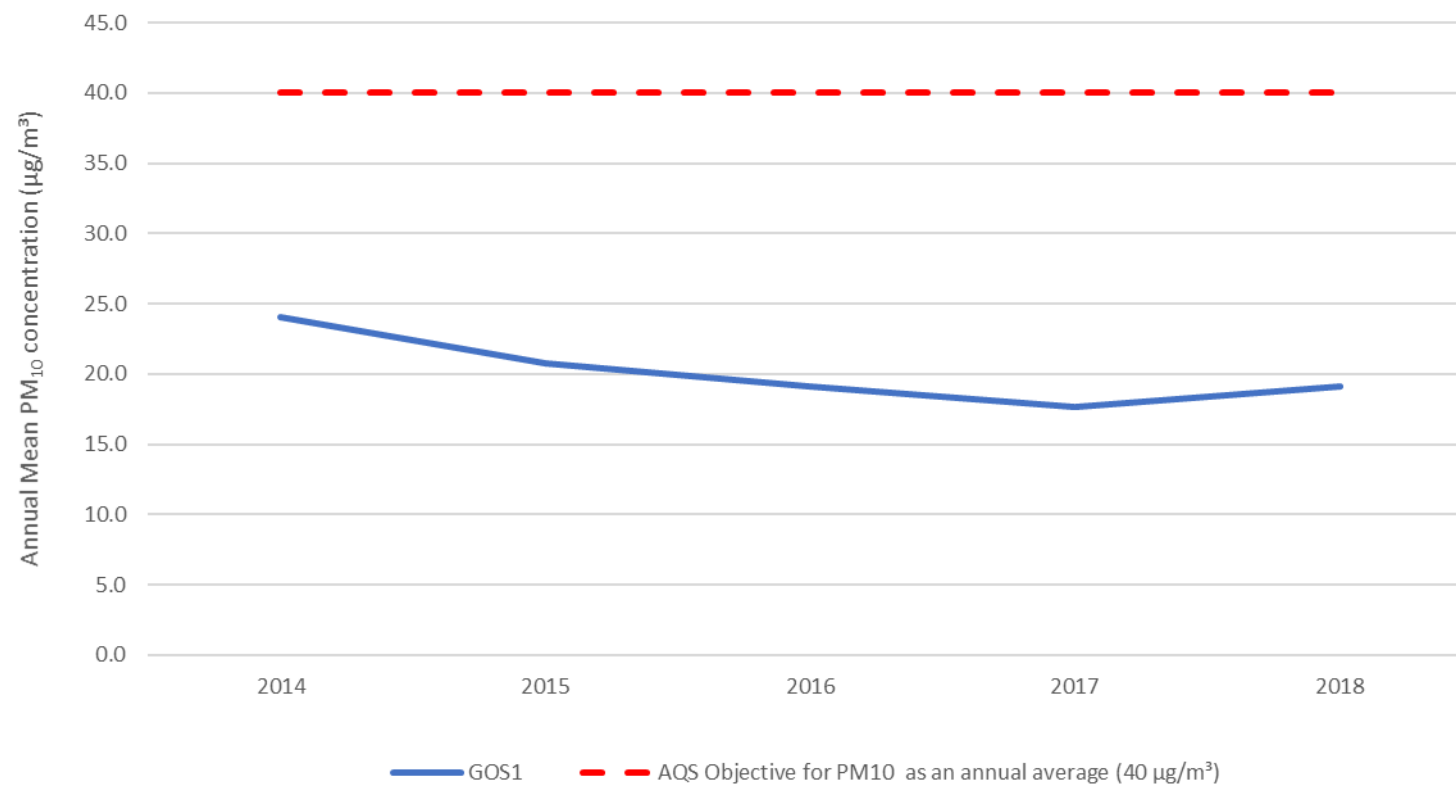


Table A.6 – 24-Hour Mean PM₁₀ Monitoring Results

Site ID	Site Type	Valid Data Capture for Monitoring Period (%) ⁽¹⁾	Valid Data Capture 2018 (%) ⁽²⁾	PM ₁₀ 24-Hour Means > 50µg/m ³ ⁽³⁾				
				2014	2015	2016	2017	2018
Gosport Borough Council								
GOS1	Roadside	94.2	94.2	15	3	1	1	0

Notes:

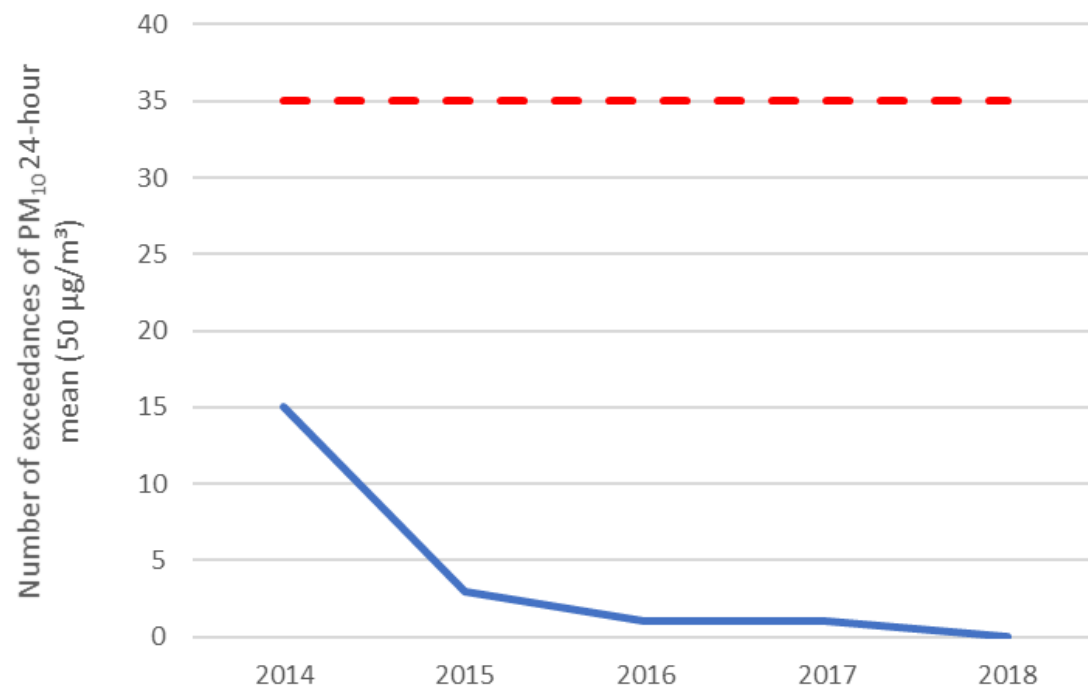
Exceedances of the PM₁₀ 24-hour mean objective (50µg/m³ not to be exceeded more than 35 times/year) are shown in **bold**.

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

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

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

Figure A.6 – Trends in Number of 24-Hour Mean PM₁₀ Results >50µg/m³



Appendix B: Full Monthly Diffusion Tube Results for 2018

Table B.1 – NO₂ Monthly Diffusion Tube Results - 2018

Site ID	NO ₂ Mean Concentrations (µg/m³)														
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean		
													Raw Data	Bias Adjusted (0.93) and Annualised ⁽¹⁾	Distance Corrected to Nearest Exposure ⁽²⁾
Gosport Borough Council															
G	No data	29.4	36.8	No data	35.9	30.3	34.2	29.8	33.4	34.7	40.4	32.6	33.7	31.4	N/A
Q/R/I	26.1	34.6	32.7	29.1	31.6	27.5	22.5	21.9	21.1	31.4	29.5	24.0	27.7	25.7	N/A
J	32.5	34.1	39.8	32.4	28.1	28.0	34.0	29.4	29.7	41.2	34.5	33.1	33.1	30.7	N/A
V	No data	50.7	32.4	30.2	33.2	No data	22.0	No data	No data	No data	27.5	21.5	31.1	27.0	N/A
W	No data	21.1	22.1	No data	22.6	17.2	No data	14.6	15.2	No data	21.9	21.6	19.5	18.1	N/A
U	20.6	No data	No data	No data	No data	14.4	14.4	No data	15.4	No data	20.9	No data	17.1	16.8	N/A
S	35.0	40.5	44.3	No data	69.7	35.9	39.4	37.6	35.6	40.0	41.5	33.0	41.1	38.3	37.6
T	No data	33.8	39.2	34.5	No data	66.6	32.7	35.1	34.5	45.6	36.6	29.7	38.8	36.1	35.5
P	No data	31.1	40.2	36.4	40.0	28.0	29.5	27.0	27.6	41.3	39.3	30.6	33.7	31.4	N/A
Fareham Borough Council															
BL1	40.6	29.9	36.1	41.0	32.1	31.3	28.8	23.3	28.2	34.7	42.6	35.4	33.7	31.3	N/A
G1A	29.8	36.3	33.8	32.4	32.6	No data	25.4	26.5	25.5	No data	32.9	30.7	30.6	28.5	N/A

Fareham and Gosport Environmental Health Partnership

Site ID	NO ₂ Mean Concentrations (µg/m ³)												Annual Mean		
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Raw Data	Bias Adjusted (0.93) and Annualised ⁽¹⁾	Distance Corrected to Nearest Exposure ⁽²⁾
G2A	29.8	30.2	33.5	28.6	26.2	20.2	26.2	23.3	25.8	30.9	30.5	27.4	27.7	25.8	N/A
G3	30.3	29.8	28.4	26.1	25.1	14.3	24.1	21.4	24.3	26.4	27.2	28.7	25.5	23.7	N/A
G4	28.3	26.5	31.4	24.9	25.9	20.8	23.3	No data	No data	No data	34.6	27.9	27.1	25.2	N/A
G6	33.7	No data	68.7	29.7	32.6	27.4	28.0	24.9	21.3	32.9	37.5	No data	33.7	31.3	N/A
G7	31.5	No data	66.4	41.3	43.3	39.4	32.4	32.9	35.1	40.5	41.9	37.4	40.2	37.4	37.4
G8Z	28.5	25.5	31.3	29.7	No data	17.7	28.7	26.2	27.0	32.0	30.1	28.4	27.7	25.8	N/A
G10	37.7	38.5	40.8	39.5	39.8	30.5	32.9	29.3	30.6	36.5	36.9	35.4	35.7	33.2	N/A
G11	29.7	27.4	25.1	24.0	22.6	20.1	23.4	21.6	21.8	27.8	26.0	29.2	24.9	23.1	N/A
G12	30.9	35.7	30.3	33.0	37.7	26.8	31.9	28.8	28.6	37.7	38.8	37.2	33.1	30.8	N/A
G14	24.3	29.2	34.9	34.0	32.4	32.8	24.5	20.1	22.3	29.1	29.6	27.9	28.4	26.4	N/A
HR2	No data	No data	30.5	30.0	24.3	23.5	27.2	22.3	21.9	26.4	32.2	24.9	26.3	24.5	N/A
HR3A	No data	No data	33.0	28.8	25.7	20.7	21.2	17.9	19.9	26.7	32.2	24.4	25.1	23.3	N/A
HR4	No data	No data	37.9	30.0	27.7	23.1	20.1	18.9	21.5	28.5	32.0	29.0	26.9	25.0	N/A
PS1/1A/1B	31.6	33.4	35.0	34.1	33.6	28.8	26.6	25.5	28.6	36.1	37.0	32.3	31.9	29.6	N/A
PS2	30.5	No data	69.9	36.6	34.8	29.8	30.3	28.4	27.9	42.7	35.9	33.0	36.3	33.8	N/A
PS3	39.9	31.7	36.0	33.5	34.9	29.9	34.2	31.9	33.7	35.2	37.0	38.3	34.7	32.3	N/A
PS4/5/6	39.2	37.5	44.5	41.8	37.9	33.8	36.5	28.8	32.3	38.6	42.4	35.5	37.4	34.8	N/A
E1/2/3	31.7	30.6	33.3	31.9	35.9	27.7	29.1	27.8	32.5	38.8	32.0	32.8	32.0	29.8	N/A

Fareham and Gosport Environmental Health Partnership

Site ID	NO ₂ Mean Concentrations (µg/m ³)														
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean		
													Raw Data	Bias Adjusted (0.93) and Annualised ⁽¹⁾	Distance Corrected to Nearest Exposure ⁽²⁾
DC1	31.5	27.5	29.8	27.6	23.7	20.1	20.8	19.6	24.2	27.6	25.8	30.1	25.7	23.9	N/A
RM1	29.1	31.6	25.9	26.5	31.5	No data	21.6	21.5	24.7	30.9	25.8	24.4	26.7	24.8	N/A
GR/RL	24.8	30.8	30.5	27.2	25.8	22.7	15.7	17.8	20.9	27.6	27.5	27.9	24.9	23.2	N/A
AQ8A	27.7	22.0	24.0	26.0	23.1	19.2	28.1	23.2	20.9	25.6	25.6	22.7	24.0	22.3	N/A
BR1	27.4	34.1	35.9	37.7	36.0	30.8	32.1	29.0	32.8	37.5	35.3	31.5	33.3	31.0	N/A
BR2	29.6	29.8	31.6	33.1	30.2	26.4	24.1	24.6	27.6	27.6	30.8	30.8	28.8	26.8	N/A
BR3	35.9	34.8	30.8	38.3	38.5	31.0	32.7	27.4	No data	No data	35.2		33.8	31.5	N/A
SL1	35.3	25.4	29.3	29.0	26.4	21.0	17.1	20.7	27.2	31.7	29.9	22.0	26.2	24.4	N/A
SL2	31.2	25.3	31.0	26.9	26.7	No data	25.8	20.0	23.9	26.6	26.3	21.6	25.9	24.1	N/A
WW1	35.4	29.0	34.7	27.4	27.0	20.3	No data	23.0	23.7	30.9	36.3	28.0	28.7	26.7	N/A
WW2	35.9	34.0	38.3	28.8	26.3	21.1	24.8	No data	No data No data	35.3	31.9	32.9	30.9	28.8	N/A
WW3	40.4	41.3	38.7	No data	No data	No data	29.9	No data	36.4	No data	37.3	44.1	38.3	33.4	N/A
CM1	34.4	35.4	34.9	31.2	38.5	32.5	25.7	23.2	26.1	37.8	32.8	35.1	32.3	30.0	N/A
CM2	<u>61.0</u>	<u>61.9</u>	47.3	<u>61.2</u>	<u>74.5</u>	<u>68.0</u>	<u>67.1</u>	58.2	59.7	<u>66.9</u>	55.7	<u>63.5</u>	<u>62.1</u>	57.7	37.0
CM3	32.6	32.5	30.6	31.1	31.4	22.9	27.2	24.7	26.8	30.3	28.2	33.7	29.3	27.3	N/A
TF1	24.7	26.2	23.9	22.7	No data	No data	No data	No data	18.5	22.0	24.4	29.8	24.0	20.1	N/A
TF2	27.1	31.8	31.2	26.0	28.2	No data	No data	No data	19.0	26.8	22.8	23.8	26.3	24.5	N/A

Fareham and Gosport Environmental Health Partnership

Site ID	NO ₂ Mean Concentrations (µg/m ³)												Annual Mean		
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Raw Data	Bias Adjusted (0.93) and Annualised ⁽¹⁾	Distance Corrected to Nearest Exposure ⁽²⁾
W1	No data	No data	27.0	26.8	27.0	21.7	22.5	No data	No data	No data	No data	No data	25.0	24.7	N/A

- ☐ Local bias adjustment factor used (confirm by selecting in box)
☒ National bias adjustment factor used (confirm by selecting in box)
☒ Annualisation has been conducted where data capture is <75% (confirm by selecting in box)
☒ Where applicable, data has been distance corrected for relevant exposure (confirm by selecting in box)

Notes:

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

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

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

(2) Distance corrected to nearest relevant public exposure.

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

Sources of Pollution

Fareham and Gosport Councils have identified no new sources within the Borough as described in Chapter 7, Section 1 of the Defra Technical Guidance LAQM.TG(16).

Additional Evidence

No additional evidence is gathered in support of measures for Action Plans.

However, evidence will be available in future as part of the monitoring and evaluation of the Local NO₂ Plan.

Short-term to Long-term Data Adjustment

For the 2018 diffusion tube data, annualisation was required at three sites in Gosport and three sites in Fareham, due to data capture below 75%. Annualisation has been completed following Defra Technical Guidance LAQM.TG(16) Box 7.10. Details of the annualisation are provided in Table C.1.

Table C.1 – Short-term to Long-term Monitoring Data Adjustment

Site ID	Unadjusted Diffusion Tube Mean (µg/m ³)	Annualisation Factor Portsmouth (Urban Background)	Annualisation Factor Southampton Centre (Urban Background)	Annualisation Factor Bournemouth (Urban Background)	Annualisation Factor Brighton Preston Park (Urban Background)	Average Annualisation Factor	Adjusted and Bias Adjusted Tube Mean (µg/m ³)
Gosport Borough Council							
V	31.1	0.93	0.95	0.92	0.94	0.93	27.0
W	19.5	0.99	1.01	0.99	1.01	1.00	18.1
U	17.1	1.08	1.03	1.00	1.13	1.06	16.8
Fareham Borough Council							
WW ₃	38.3	0.94	0.94	0.90	0.97	0.94	33.4
TF1	24.0	0.89	0.93	0.87	0.92	0.90	20.1
W1	25.0	1.06	1.04	1.09	1.05	1.06	24.7

Diffusion Tube Local Bias Adjustment Factors

There are four triplicate diffusion tube monitoring sites located within Fareham and Gosport, three of which are co-located with automatic monitoring stations. Local bias

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adjustment factors have been calculated at each of these sites using the Precision and Bias Adjustment spreadsheet (v04) (see Figures C.1, C.2 and C.3), the results of which are compared in Table C.2.

Table C.2 – Local Bias Adjustment Factors

Location	Diffusion Tube Data Capture (%)	Continuous Monitor Data Capture (%)	Diffusion Tube Annual Mean ($\mu\text{g}/\text{m}^3$)	Continuous Monitor Annual Mean ($\mu\text{g}/\text{m}^3$)	Bias Factor B
Tichborne Way (GOS1), Q/I/R	100	93%	33	29	-13% (-28% - 2%)
Gosport Road (FAR1), E1/2/3	100	96%	32	27	18% (0% - 36%)
Portland Street (FAR2), PS4/5/6	100	98%	37	32	16% (7% - 25%)

Figure C.1 – Local Bias Adjustment Factor Correction Output – Tichborne Way (GOS1)

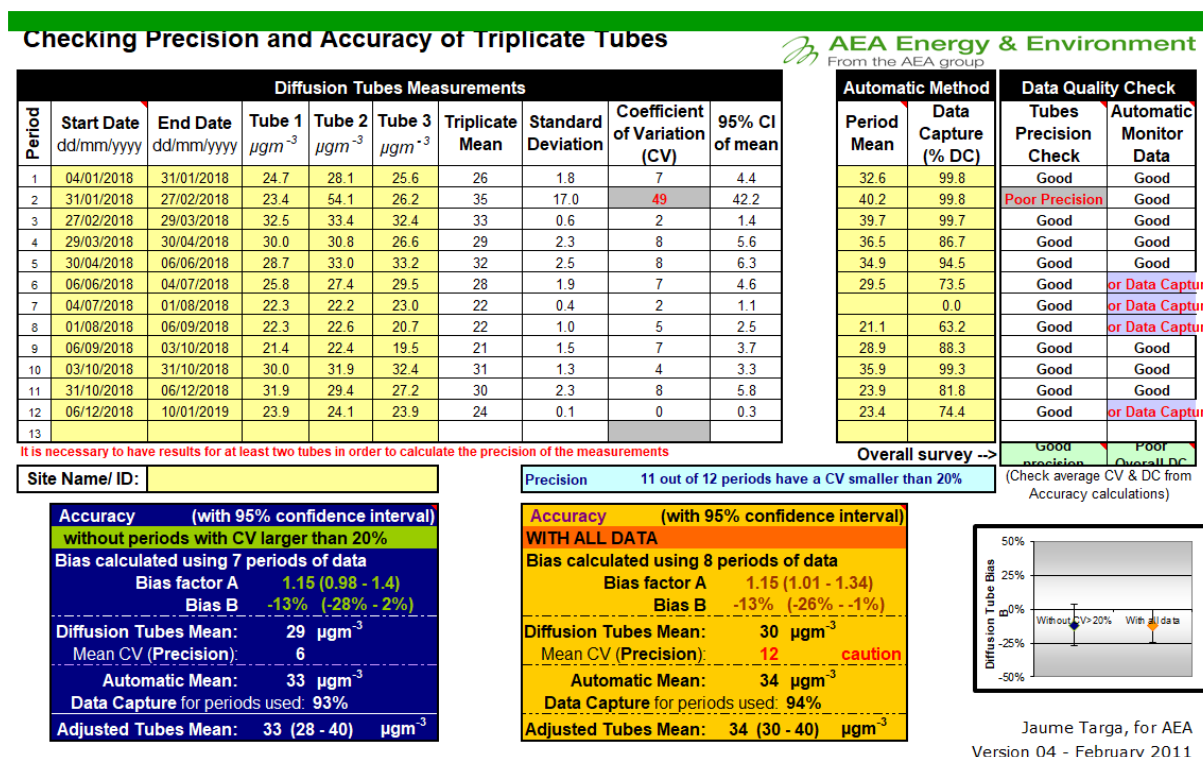


Figure C.2 – Local Bias Adjustment Factor Correction Output – Gosport Road (FAR1)

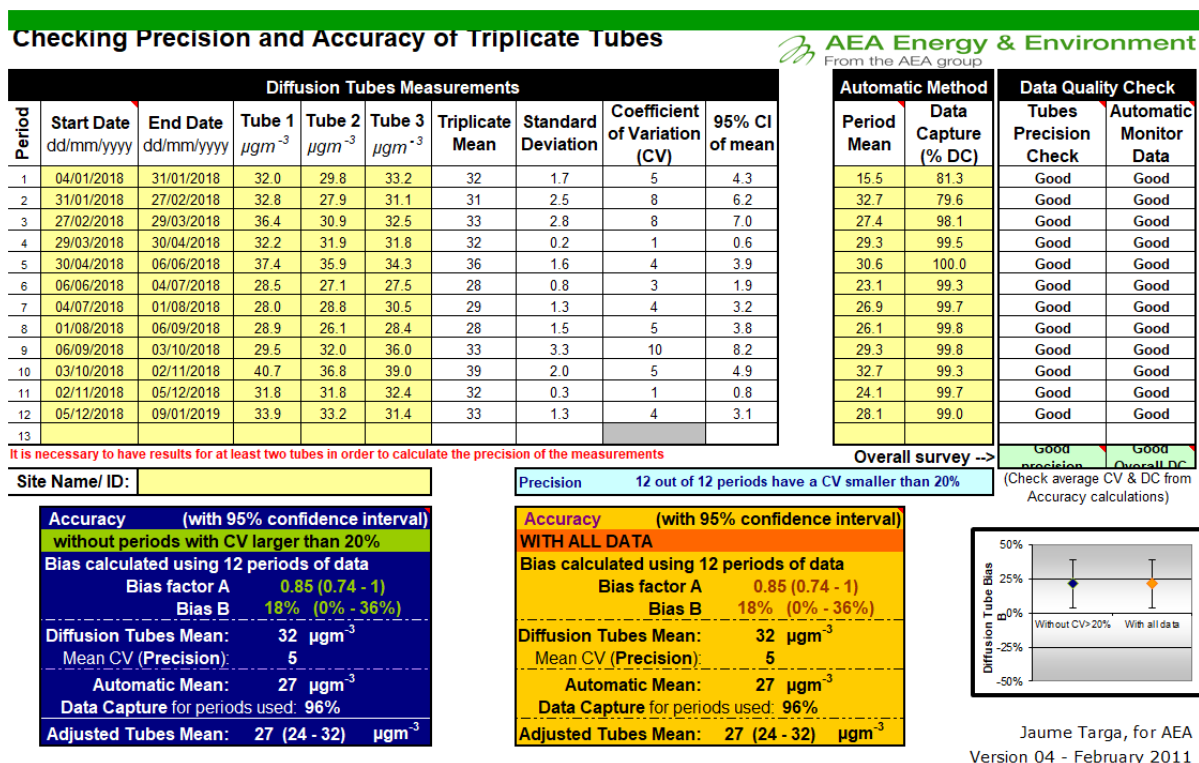
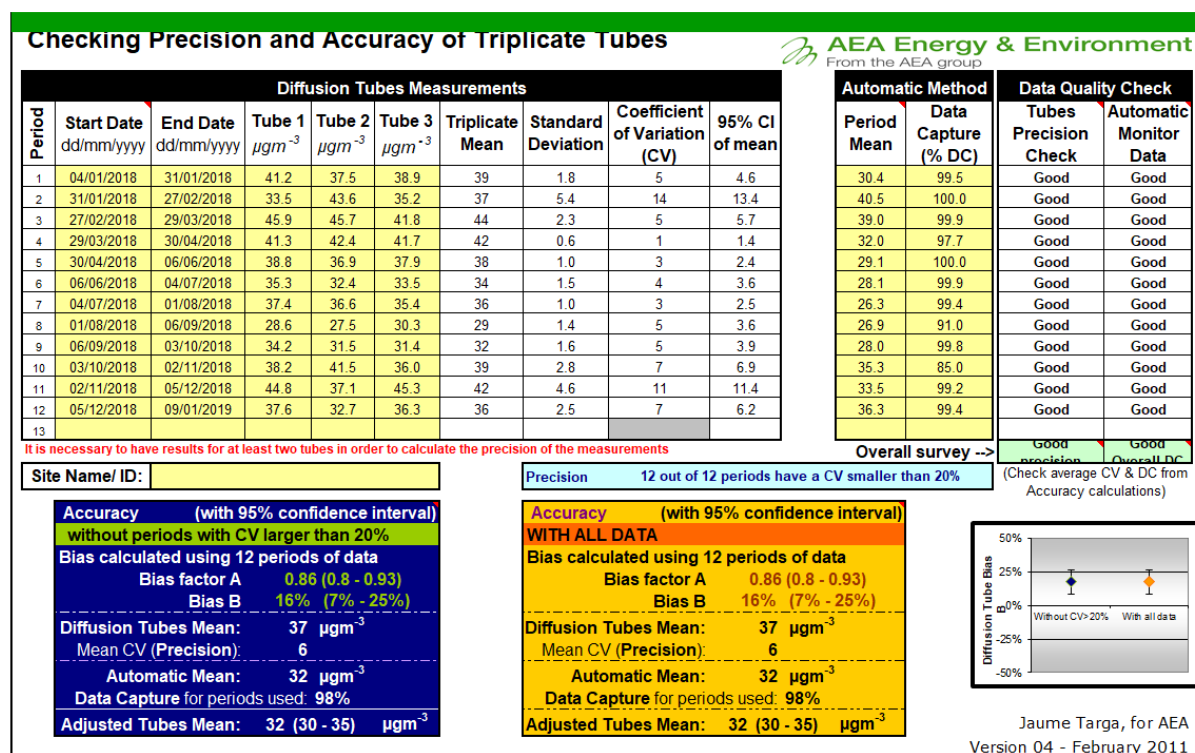


Figure C.3 – Local Bias Adjustment Factor Correction Output – Portland Street (FAR2)



Diffusion Tube National Bias Adjustment Factors

Diffusion tubes for 2018 were supplied and analysed by Gradko International Limited. The tubes were prepared using the 20% Triethanolamine (TEA) in water preparation method. The national bias adjustment factor for Gradko 20% TEA is 0.93 (based on 30 studies, spreadsheet version number 03/19) as derived from the national bias adjustment calculator.

Justification for Choice of Factor Applied

The diffusion tube data has been corrected using a bias adjustment factor, which is an estimate of the difference between measured diffusion tube concentrations and those measured by a continuous analyser at the same location, the latter being a more accurate method of monitoring. Defra Technical Guidance LAQM.TG(16) 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.

Within the results reported in this 2019 ASR, the national bias adjustment factor has been applied to both Fareham and Gosport Borough Council's diffusion tube measurements, with justification as follows:

- Previous LAQM reports have applied the national bias adjustment factor (and these data have been used to inform Fareham's Local NO₂ Plan).
- The average local bias adjustment factor for the two CMS sites in Fareham was 0.85. Using a national factor of 0.93 therefore provides a more conservative estimate of annual mean NO₂ concentrations.
- The Gosport CMS at Tichbourne Way had relatively poor data capture in 2018, so the factor determined at this site is considered potentially less reliable than the national bias adjustment factor.

PM₁₀ 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

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Titchborne Way PM₁₀ data has been corrected using the Volatile Correction Model (VCM) methodology. The VCM correction has been applied to the data provided to Gosport Borough Council by Ricardo Environment and Energy who were the service agents for the automatic monitors for during 2018.

QA/QC of Automatic Monitoring

Formal Quality Assurance/Quality Control (QA/QC) is currently provided by Ricardo Environment and Energy, this ensures reliability and accuracy of the measurements. The monitoring sites are visited and checked every two weeks.

QA/QC of Diffusion Tube Monitoring

Gradko International Ltd is a UKAS accredited laboratory and participates in laboratory performance and proficiency testing schemes. 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. Gradko previously participated in the Workplace Analysis Scheme for Proficiency (WASP) for NO₂ diffusion tube analysis and the Annual Field Inter-Comparison Exercise. In April 2014, a new scheme, AIR PT10, was introduced. This is an independent analytical proficiency-testing (PT) scheme, operated by LGC Standards and supported by the Health and Safety Laboratory (HSL). AIR PT combines two long running PT schemes: LGC Standards STACKS PT scheme and HSL WASP PT scheme.

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

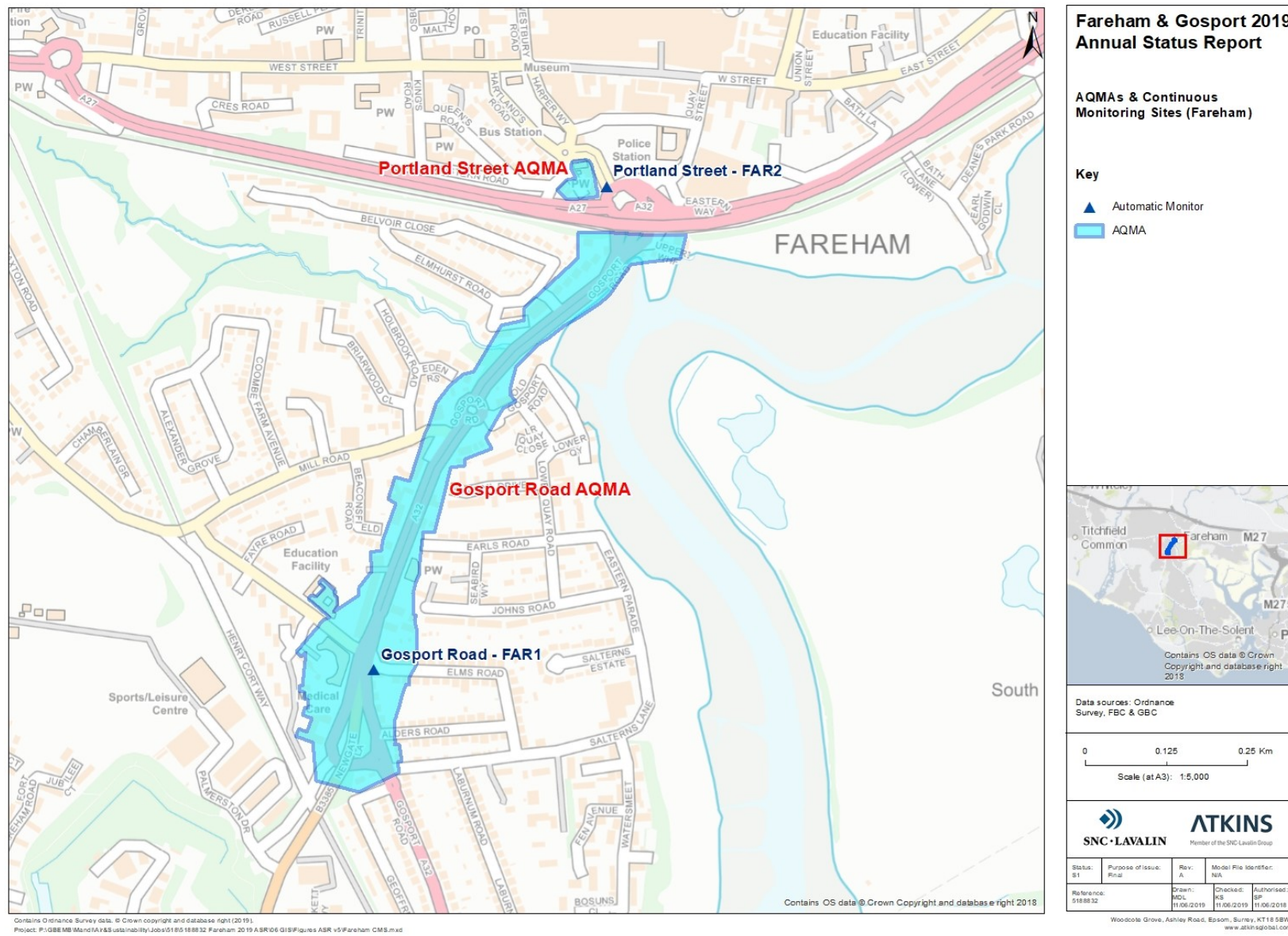
Gradko International Ltd's performance for 2018 is covered by rounds AR024, AR025, AR027 and AR028 of the AIR-PT scheme, for each round 100% of the laboratory's results were deemed to be satisfactory based upon a z score of $\leq \pm 2$. In 2018, the tube precision in the NO₂ Annual Field Inter-Comparison for Gradko International using the 20% TEA in water method was 'good' for the results of 30

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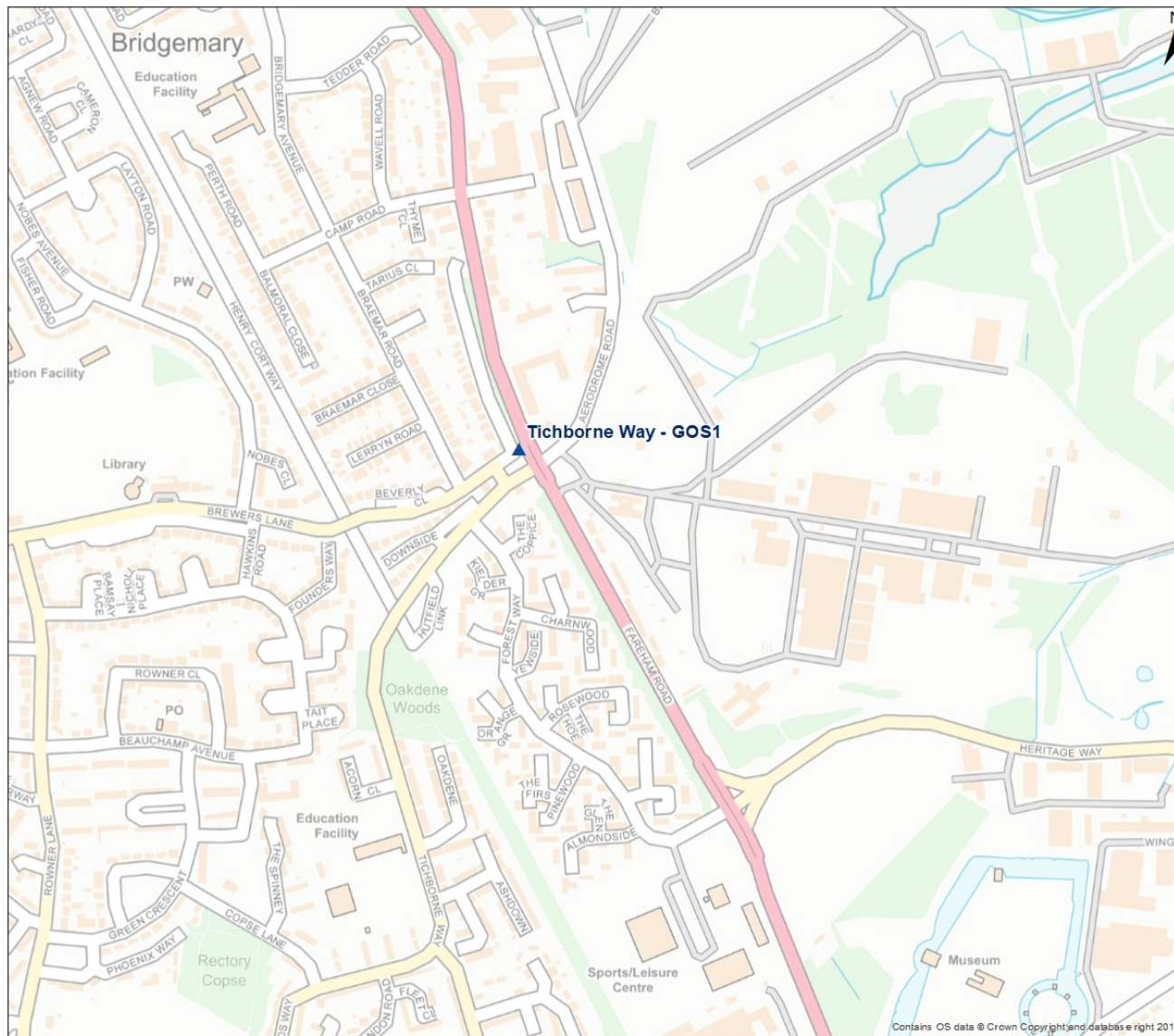
participating local authorities, with a further two recording 'poor' precision and a third submitting a single tube.

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

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Continuous Monitoring Site (Gosport)

Key

▲ Automatic Monitor



Data sources: Ordnance Survey, FBC & GBC

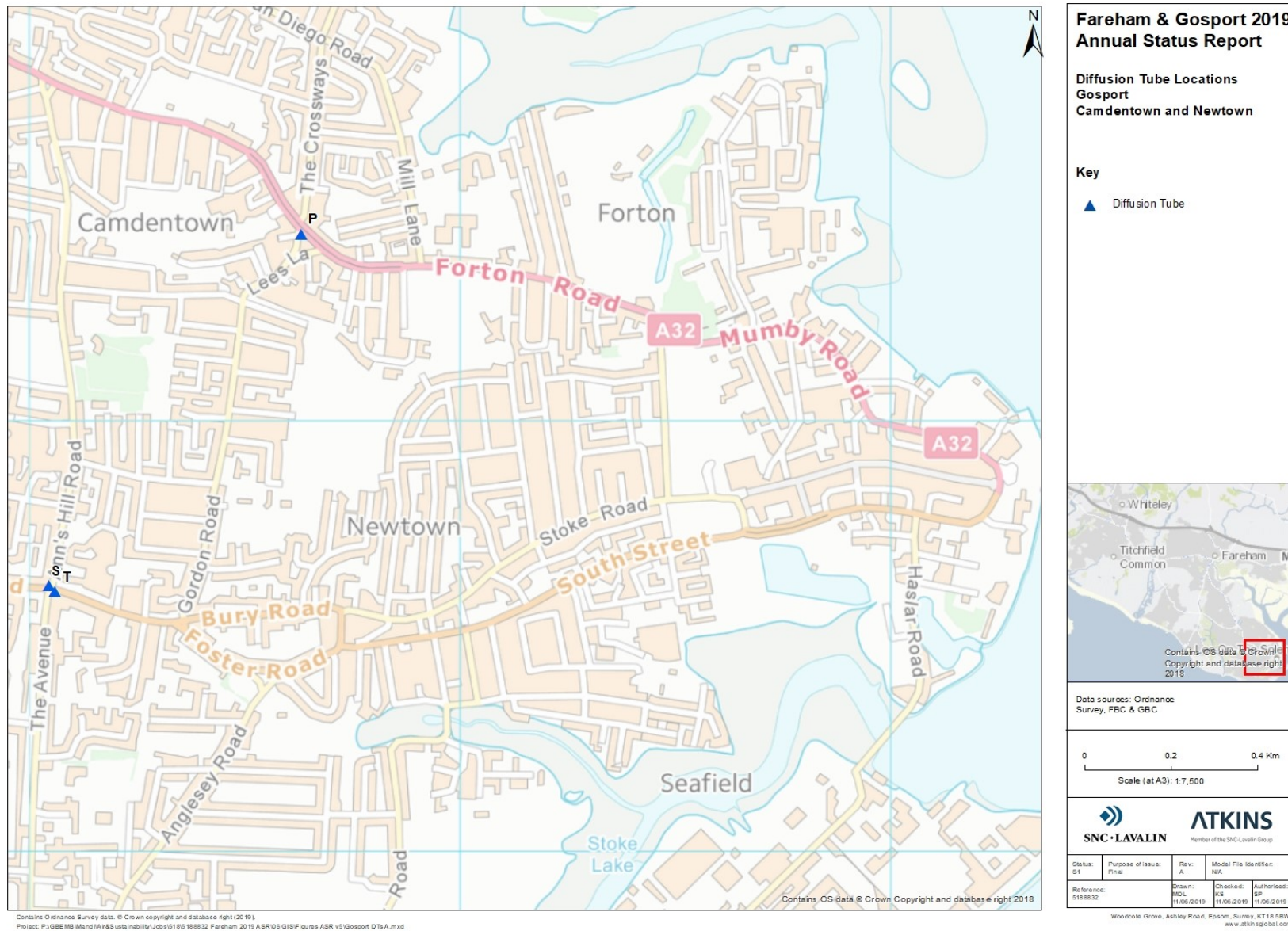
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SNC-LAVALIN **ATKINS**
Member of the SNC-Lavalin Group

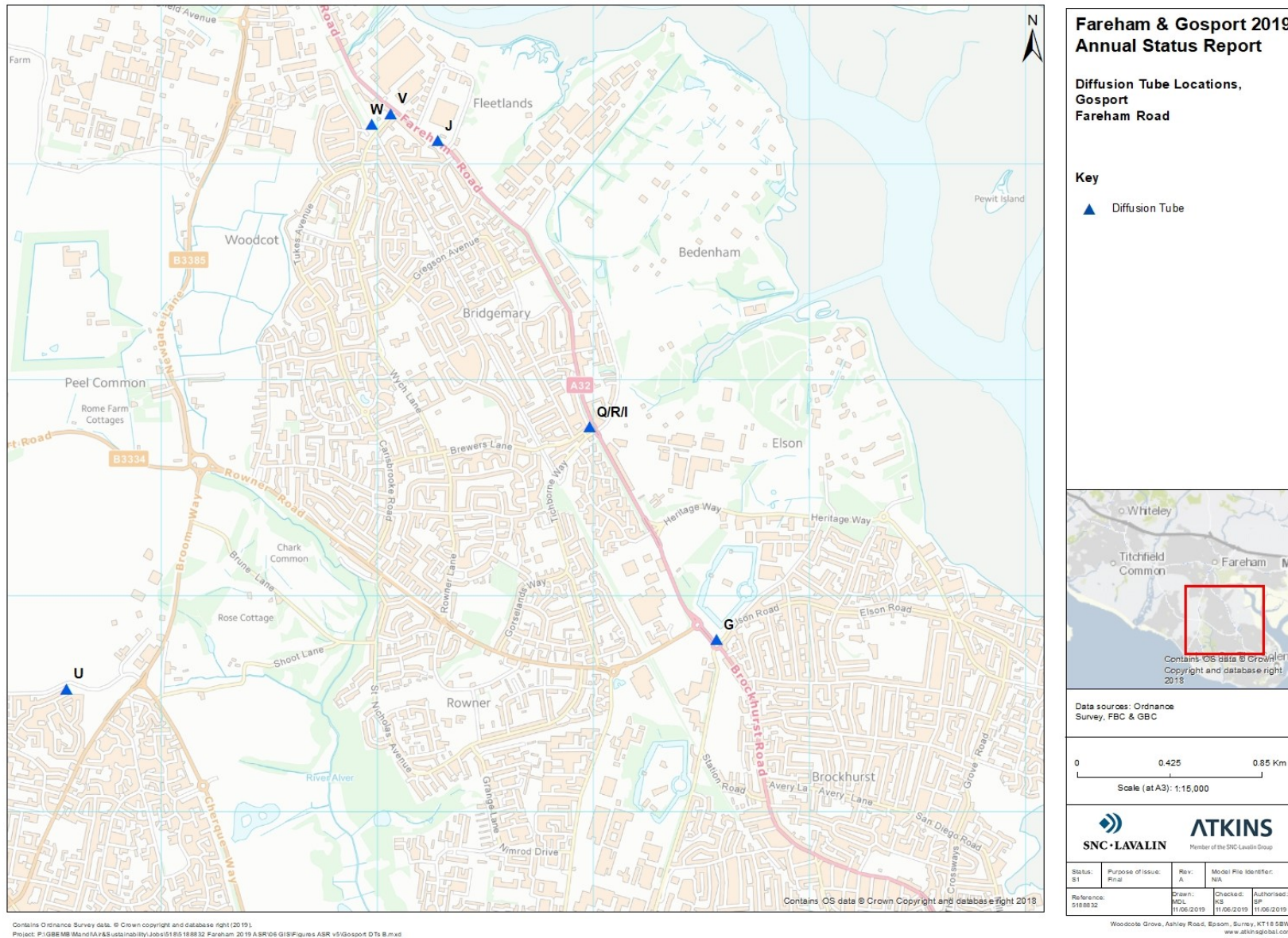
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Reference: 518.88.32	Drawn: MDL 11/06/2019	Checked: KS 11/06/2019	Authorised: SP 11/06/2019

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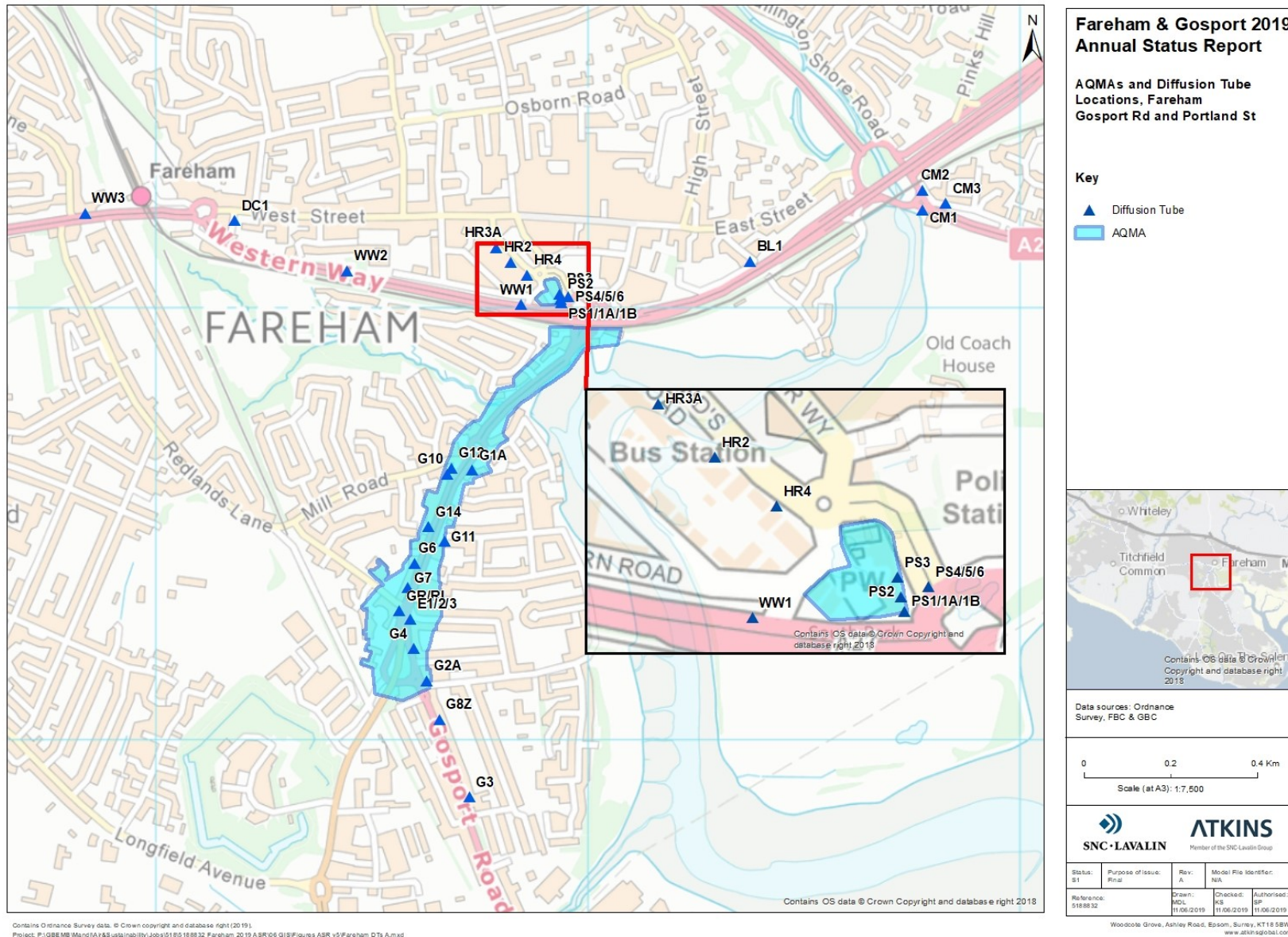
Fareham and Gosport Environmental Health Partnership



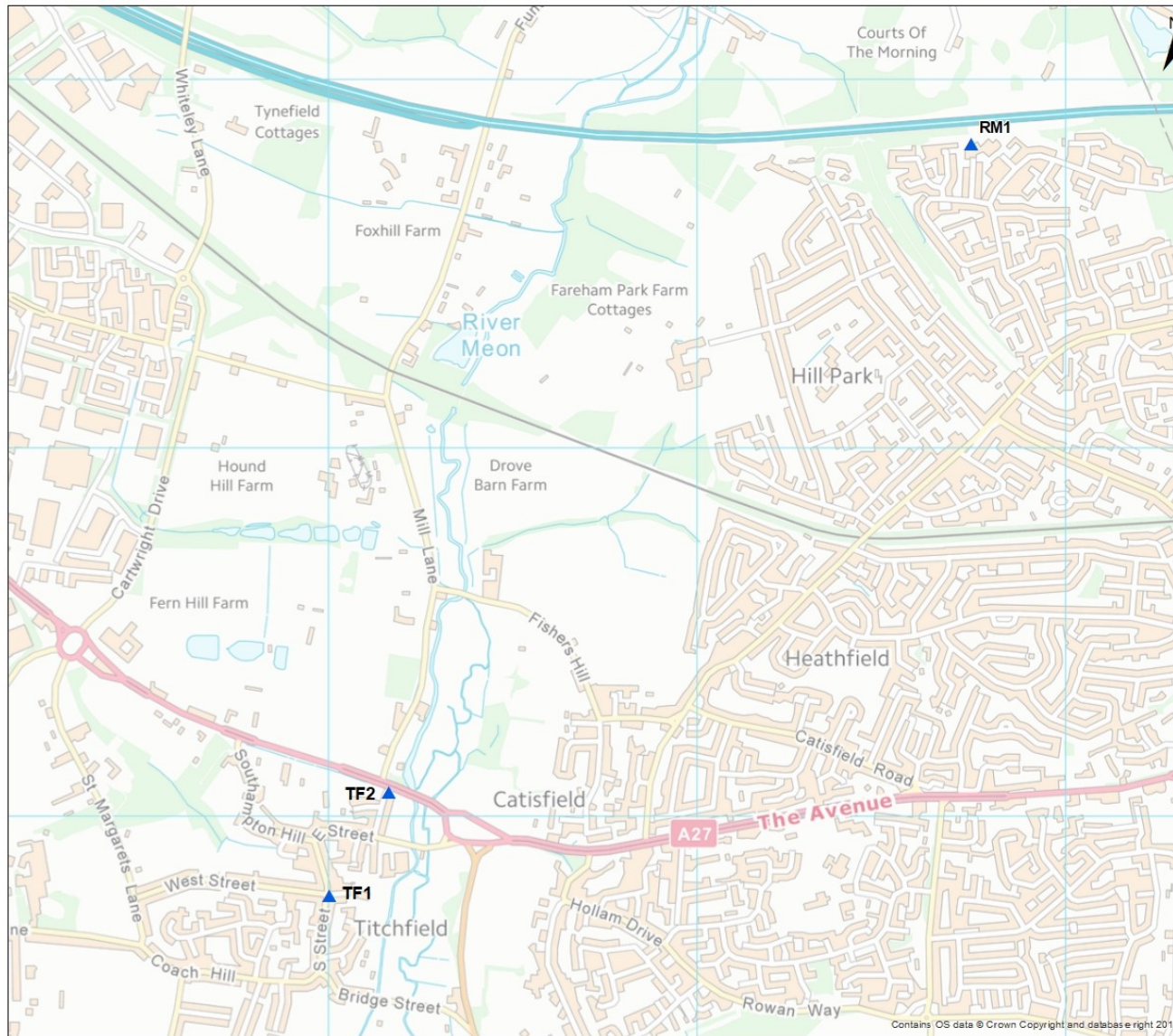
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Diffusion Tube Locations,
Fareham
Titchfield and M27

Key

▲ Diffusion Tube



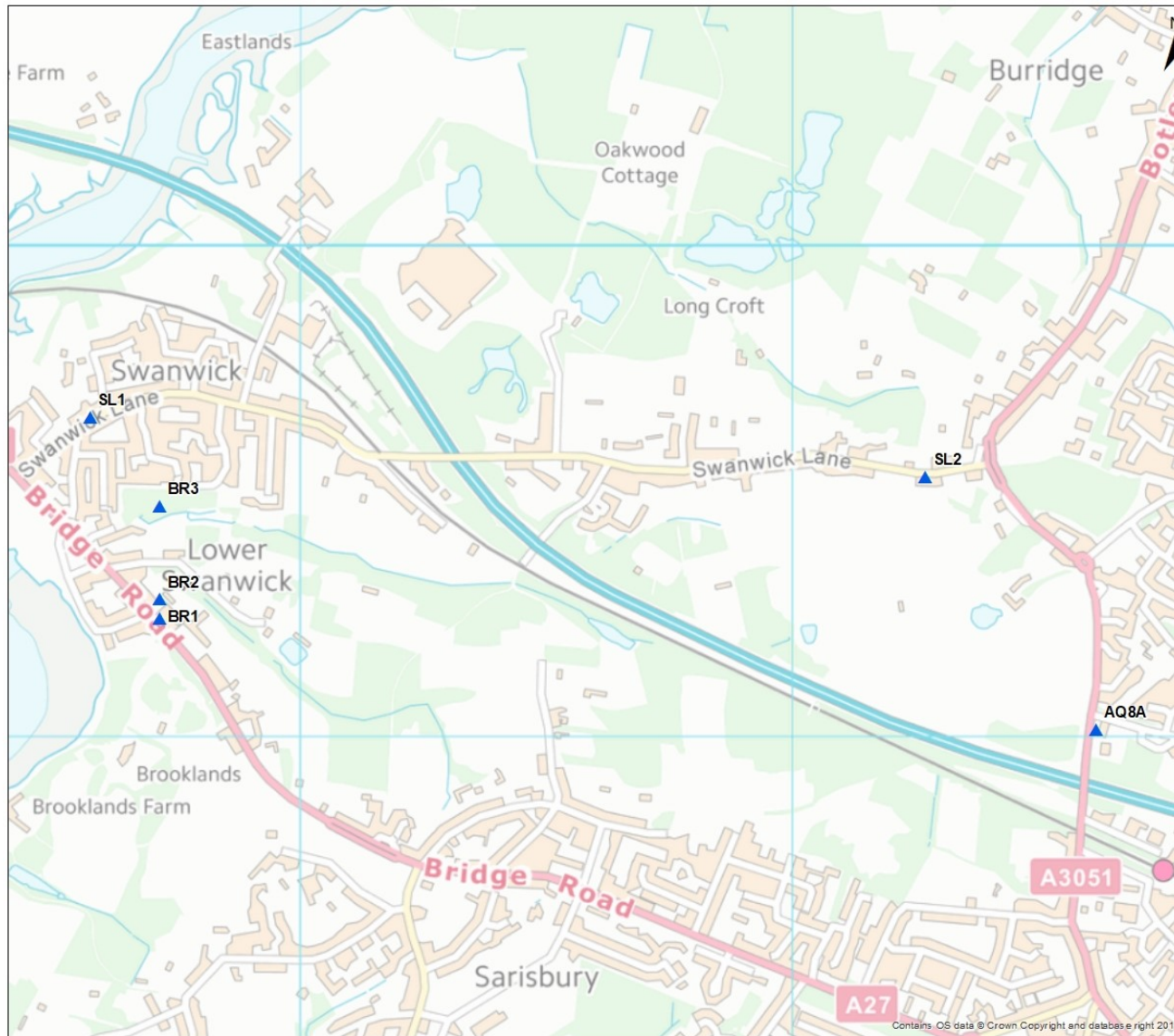
Data sources: Ordnance
Survey, FBC & GBC

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SNC-LAVALIN		ATKINS Member of the SNC-Lavalin Group	
Status: S1	Purpose of Issue: Final	Rev: A	Model File Identifier: NA
Reference: 518.88.32	Drawn: MDL 11/06/2019	Checked: KS 11/06/2019	Authorised: SP 11/06/2019

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Diffusion Tube Locations,
Fareham
Swanick, Sarisbury and Park Gate

Key

▲ Diffusion Tube



Data sources: Ordnance
Survey, FBC & GBC



SNC-LAVALIN

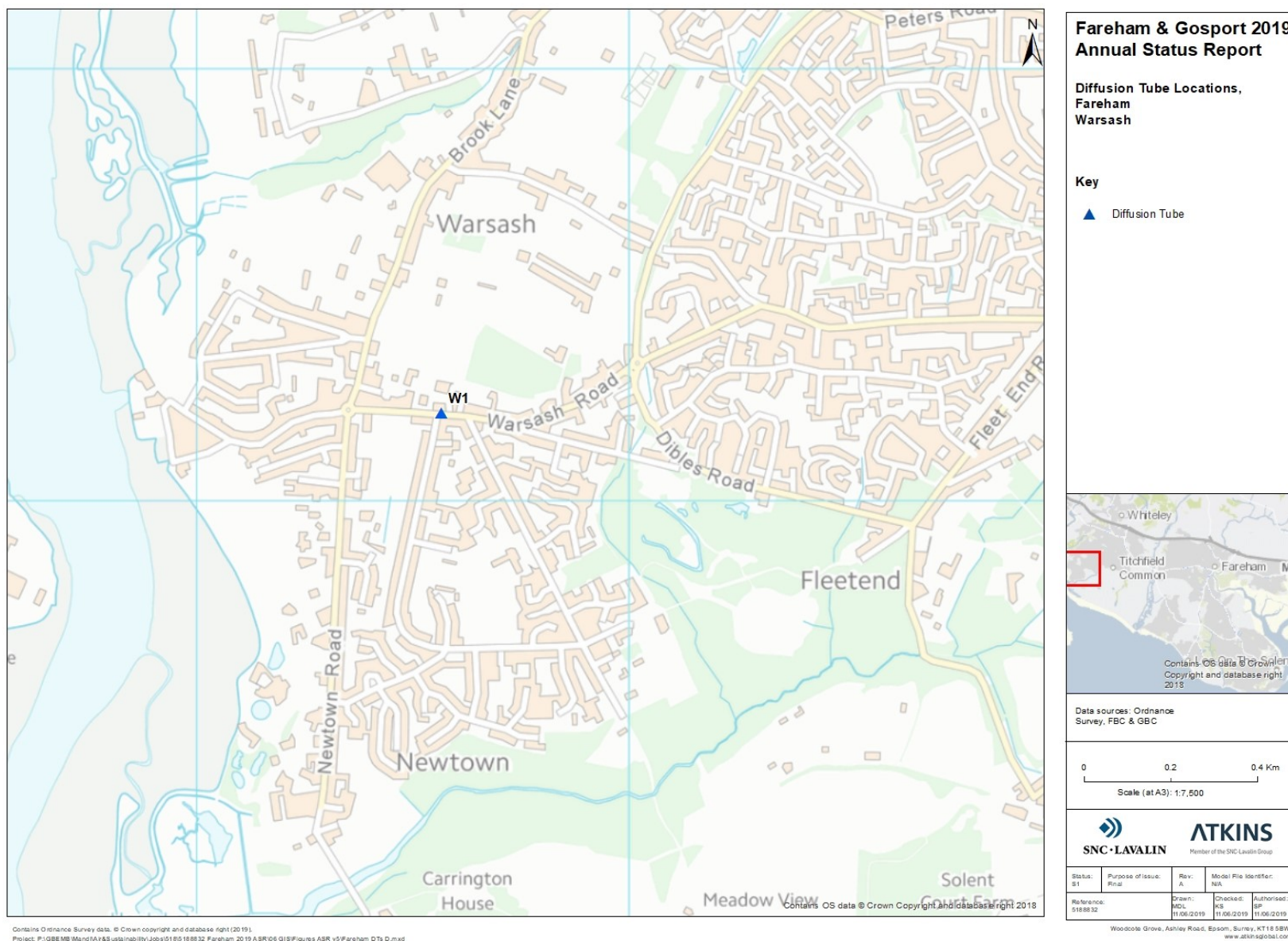
ATKINS
Member of the SNC-Lavalin Group

Status:	Purpose of Issue:	Rev:	Model File Identifier:
S1	Final	A	NA
Reference:	Drawn:	Checked:	Authorised:
518.88.32	MDL 11/06/2019	KS 11/06/2019	SP 11/06/2019

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Project: P:\GBC\MB\Main\IA\AS sustainability\Jobs\518.88.32 Fareham 2019 A3\B06 GIS\Figures ASR v3\Fareham DTS C.mxd

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Appendix E: Summary of Air Quality Objectives in England

Table E.1 – Air Quality Objectives in England

Pollutant	Air Quality Objective ²²	
	Concentration	Measured as
Nitrogen Dioxide (NO ₂)	200 µg/m ³ not to be exceeded more than 18 times a year	1-hour mean
	40 µg/m ³	Annual mean
Particulate Matter (PM ₁₀)	50 µg/m ³ , not to be exceeded more than 35 times a year	24-hour mean
	40 µg/m ³	Annual mean
Sulphur Dioxide (SO ₂)	350 µg/m ³ , not to be exceeded more than 24 times a year	1-hour mean
	125 µg/m ³ , not to be exceeded more than 3 times a year	24-hour mean
	266 µg/m ³ , not to be exceeded more than 35 times a year	15-minute mean

²² The units are in micrograms 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
AQS	Air Quality Strategy
ASR	Air quality Annual Status Report
BRT	Bus Rapid Transit
Defra	Department for Environment, Food and Rural Affairs
DfT	Department for Transport
DMRB	Design Manual for Roads and Bridges – Air quality screening tool produced by Highways England
EU	European Union
FBC	Fareham Borough Council
FDMS	Filter Dynamics Measurement System
GBC	Gosport Borough Council
HCC	Hampshire County Council
LAQM	Local Air Quality Management
LTP	Local Transport Plan
NO ₂	Nitrogen Dioxide
NO _x	Nitrogen Oxides
PM ₁₀	Airborne particulate matter with an aerodynamic diameter of 10µm (micrometres or microns) or less

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PM _{2.5}	Airborne particulate matter with an aerodynamic diameter of 2.5µm or less
QA/QC	Quality Assurance and Quality Control
RTI	Real Time Information
SO ₂	Sulphur Dioxide
STAG	Strategic Access to Gosport (2010-2026)
TfSH	Transport for South Hampshire

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