

FAREHAM

BOROUGH COUNCIL

2012 Air Quality Updating and Screening Assessment for *Fareham Borough Council*

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

June 2012

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Executive Summary

An Updating and Screening Assessment of air quality has been undertaken on behalf of Fareham Borough Council by AECOM in fulfilment of the Local Air Quality Management process as set out in Part IV of the Environment Act (1995), the Air Quality Strategy for England, Scotland, Wales and Northern Ireland 2007 and the relevant Policy and Technical Guidance documents.

Two Air Quality Management Areas (AQMAs) are currently in place for nitrogen dioxide. Following the conclusions of this report it is recommended that the present AQMA declarations should remain.

Updated monitoring data for 2011 indicated that the annual mean NO₂ objective was achieved at all monitoring locations. None of the relevant objectives for the remaining six key pollutants are likely to be exceeded at any location within the Borough. Therefore a Detailed Assessment is not required at this stage.

The 2011 NO₂ diffusion tube results suggest a regional decrease in ambient NO₂ concentrations. The Council proposes to retain the current level of NO₂ diffusion tube monitoring to investigate whether the 2011 results are an indication of a long-term downward trend or a short-term deviation driven by meteorological and other regional factors.

The Council concludes from the assessment of road transport and other emissions sources that no significant changes have occurred since the previous round of Review and Assessment. Furthermore, there are no new, previously unassessed, sources that are considered likely to lead to significant increases in the concentrations of any of the prescribed pollutants. On the basis of these findings it is not necessary to proceed to a Detailed Assessment for any pollutant at this stage.

Fareham Borough Council will continue to monitor NO₂ concentrations within the Borough and will compile an Air Quality Progress Report in 2013, in line with the LAQM timescales, to provide an update on all aspects covered in this assessment.

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1 Introduction

1.1 Description of Local Authority Area

Covering an area of nearly 30 square miles, the Borough of Fareham lies on the south coast of England close to both Southampton and Portsmouth and has an approximate population of 108,000.

With approximately 60% countryside, the Boroughs five main urban areas are Fareham, Portchester, Stubbington, the Western Wards and Whiteley.

Fareham is the largest town in the Borough; Locks Heath, Sarisbury, Park Gate, Warsash and Titchfield Common, collectively known as the Western Wards, are slightly smaller. Urban development over the years has seen Portchester and Stubbington Hill Head grow from small villages to large residential suburbs with over 6,000 dwellings within each.

With mainline rail stations linked with Portsmouth, Southampton and London as well as the M27 motorway running east to west through the northern part of the Borough, Fareham is easily accessible for residents and tourists alike. In terms of local commerce and employment the Borough has two international sea ports close by: the Portsmouth European Ferryport and the Southampton Cruise Liner and Container Port.

The area is also well served by air via the regional international airports of Southampton Eastleigh Airport and Bournemouth Airport.

With consideration to local air quality, the primary source of air pollution in the Borough is road traffic emissions, notably along the M27, the A27 Eastern Way/Western Way and the A32 Gosport Road which passes through Fareham town centre. Other notable local/regional pollution sources, including commercial, industrial and domestic sources, also make a contribution to background pollution concentrations.

Through the Local Air Quality Management (LAQM) process the Council has declared two Air Quality Management Areas (AQMA); one at the junction of Gosport Road and Newgate Lane, and the second in Portland Street near the Quay Street roundabout. Both declarations were as a result of identified exceedances of the annual mean Air Quality Strategy (AQS) objective for nitrogen dioxide (NO₂), with traffic congestion being the main identified source of emissions.

1.2 Purpose of Report

This report fulfils the requirements of the LAQM process as set out in Part IV of the Environment Act (1995), the Air Quality Strategy for England, Scotland, Wales and Northern Ireland 2007 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 exceedances are considered likely, the local authority must then 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.

The objective of this Updating and Screening Assessment (USA) is to identify any matters that have changed which may lead to risk of an air quality objective being exceeded. A checklist approach and screening tools are used to identify significant new sources or changes and whether there is a need for a Detailed Assessment. The USA report should provide an update of any outstanding information requested previously in Review and Assessment reports.

1.3 Air Quality Objectives

The air quality objectives applicable to LAQM in England are set out in the Air Quality (England) Regulations 2000 (SI 928), The Air Quality (England) (Amendment) Regulations 2002 (SI 3043), and are shown in Table 1.1. This table shows the objectives in units of microgrammes per cubic metre $\mu\text{g}/\text{m}^3$ (milligrammes per cubic metre, mg/m^3 for carbon monoxide) with the number of exceedances in each year that are permitted (where applicable).

Table 1.1: Air Quality Objectives included in Regulations for the purpose of LAQM in England

Pollutant	Air Quality Objective		Date to be achieved by
	Concentration	Measured as	
Benzene	16.25 $\mu\text{g}/\text{m}^3$	Running annual mean	31.12.2003
	5.00 $\mu\text{g}/\text{m}^3$	Running annual mean	31.12.2010
1,3-Butadiene	2.25 $\mu\text{g}/\text{m}^3$	Running annual mean	31.12.2003
Carbon monoxide	10.0 mg/m^3	Running 8-hour mean	31.12.2003
Lead	0.5 $\mu\text{g}/\text{m}^3$	Annual mean	31.12.2004
	0.25 $\mu\text{g}/\text{m}^3$	Annual mean	31.12.2008
Nitrogen dioxide	200 $\mu\text{g}/\text{m}^3$ not to be exceeded more than 18 times a year	1-hour mean	31.12.2005
	40 $\mu\text{g}/\text{m}^3$	Annual mean	31.12.2005
Particles (PM_{10}) (gravimetric)	50 $\mu\text{g}/\text{m}^3$, not to be exceeded more than 35 times a year	24-hour mean	31.12.2004
	40 $\mu\text{g}/\text{m}^3$	Annual mean	31.12.2004
Sulphur dioxide	350 $\mu\text{g}/\text{m}^3$, not to be exceeded more than 24 times a year	1-hour mean	31.12.2004
	125 $\mu\text{g}/\text{m}^3$, not to be exceeded more than 3 times a year	24-hour mean	31.12.2004
	266 $\mu\text{g}/\text{m}^3$, not to be exceeded more than 35 times a year	15-minute mean	31.12.2005

1.4 Summary of Previous Review and Assessments

1.4.1 First Round of Review and Assessment

Between 1998 and 2001, Fareham Borough Council undertook its First Round of review and assessments of air quality which assessed the sources of seven air pollutants of concern to health: carbon monoxide, benzene, 1,3 butadiene, lead, nitrogen dioxide, sulphur dioxide and fine particulates (PM₁₀). The First Round assessments (Stages 1, 2 and 3) concluded that all AQS objectives were expected to be met by the target dates, based on the available information at that time.

1.4.2 Second Round of Review and Assessment

The Second Round of Review and Assessment began with a USA in 2003. Fareham Borough Council completed this stage in August 2003. The report concluded that as all AQS objectives were expected to be met, a Detailed Assessment was not required.

Fareham Borough Council completed an air quality Progress Report in May 2004. The report provided an update regarding air quality monitoring with new data from 2003, and concluded that several diffusion tubes were exceeding the annual mean NO₂ objective at Osborne Road, Hartlands Road and Gosport Road (A32), South Fareham. The Council therefore proceeded to a Detailed Assessment in these areas. The assessment was carried out using detailed dispersion modelling based on traffic data provided by Hampshire County Council, and compared the results with 2004 monitoring data.

The report was completed in June 2005 and concluded that the annual mean NO₂ objective for 2005 would be met at Osborne Road. The modelling predicted no exceedance of the NO₂ AQS objectives in Hartlands Road, although diffusion tube results at that location were showing concentrations above the annual mean objective of 40 µg/m³. Monitoring and dispersion modelling results showed that the annual mean NO₂ objective was likely to be exceeded in both 2005 and 2010 in Gosport Road, at the junction with Newgate Lane and Redlands Lane. It was recommended that the Council install a continuous analyser to monitor NO_x and NO₂ concentrations in the area for a minimum period of 6 months, to confirm whether an AQMA should be declared. However, Defra required the Council to declare an AQMA without waiting for the monitoring results. Consequently, an AQMA was declared in April 2006. Continuous monitoring of NO_x and NO₂ concentrations was carried out between December 2005 and July 2006.

Figure 1 depicts the Gosport Road AQMA, an area encompassing the junction of Gosport Road, Redlands Lane and Newgate Lane, and the surrounding area.

Figure 1: Fareham 2006 Gosport Road Air Quality Management Area



Figure 1 map reproduced with permission of Fareham Borough Council. Licensed original presented on <http://www.fareham.gov.uk/council/departments/healthcommunity/airqualmap.aspx>

1.4.3 Third Round of Review and Assessment

The Third Round of Review and Assessment began with a USA, completed in 2006. The USA included updated monitoring data for 2005 and showed that several diffusion tubes results were above the annual mean NO₂ Objective of 40µg/m³ at the following locations (all outside the current boundaries of the Gosport Road AQMA in Fareham):

- Portland Street (PS1);
- 31 Hartlands Rd (Y/HR1);
- Junction of Earl's Road and Gosport Road (G1); and
- Gosport Road (G3).

As the Council was required to proceed to a Further Assessment of the AQMA in Gosport Road, it was suggested that the assessment of the G1 and G3 locations should be incorporated. It was also concluded that as the diffusion tubes in Portland Street and Hartlands Road were not representative of public exposure, a Detailed Assessment was not required for these locations.

Further study of the area suggested that as local roads were used significantly by buses accessing the bus station in Hartlands Road, an updated traffic count should be undertaken to assist in LAQM decision making. Based on these new traffic data, it was decided to proceed to a new Detailed Assessment in Hartlands Road / Portland Street.

The Further Assessment of Gosport Road AQMA was carried out in 2007 together with the Detailed Assessment of Hartlands Road / Portland Street.

Gosport Road Further Assessment 2007

The report concluded that the AQMA in Gosport Road should remain, although there was no need to extend the AQMA boundaries further.

The results of the source apportionment indicated that background NO_x remained the main contributor, ranging from 45% to 70% of the overall NO_x concentration (depending on the distance of the receptor to the road). Cars and HGVs were the main contributors of traffic related NO_x emissions in the AQMA, with a maximum of nearly 20% each at diffusion tube G7 and specific receptors 12 and 29. LGVs accounted for 5% to 10% of the overall NO_x concentrations, while buses contributed between 3% and 7%. Motorcycles represented less than 1% of the total NO_x concentrations. Buses and HGVs together (HDVs) accounted for up to 25% of the total contribution.

These contributions, when compared to the relative weight of traffic flow from each vehicle category, as shown in Table 4.3 (of the Further Assessment report) showed that approximately 75% of the traffic was made up of cars, versus 15% of LGVs, 4% of HGVs and 2% to 3% of motorcycles. Buses accounted for 1% to 2% of the total traffic flow.

The report also concluded that a new AQMA was required for NO_2 in Portland Street, following exceedances of the annual mean objective. The Portland Street AQMA was declared in December 2007. The AQMA covers an area encompassing residential properties and the Sacred Heart Catholic Church on Portland Street (see Figure 2).

Figure 2: Fareham 2007 Portland Street Air Quality Management Area



Figure 2 map reproduced with permission of Fareham Borough Council. Licensed original presented on <http://www.fareham.gov.uk/pdf/healthregs/portlandmap.pdf>

The Council completed an Air Quality Progress Report in March 2008. Updated monitoring data indicated that the annual mean NO₂ objective was still being exceeded in the two AQMAs.

Portland Street Further Assessment 2009

The Further Assessment of Portland Street AQMA was completed in April 2009. Updated monitoring data and modelled results confirmed that the AQMA was still required, as the NO₂ annual mean NO₂ objective was still likely to be exceeded in this area. The results confirmed that the extents of the AQMA were appropriate. Source apportionment showed that local traffic accounted for 55% to 60% of the overall NO₂ annual mean concentration in Portland Street (including a 30% contribution from HDVs), while local background contributions accounted for 30%. Overall it was concluded that a reduction of 70 µg/m³ in NO_x concentration (equivalent to a 16 µg/m³ reduction in NO₂) was required to meet the annual mean NO₂ objective.

Joint Area Air Quality Action Plan 2008

In parallel with the Detailed and Further Assessments, the Council developed a joint Air Quality Action Plan for both AQMAs in 2008, which presented mitigation measures to help reduce NO₂ levels along Gosport Road and Portland Street.

1.4.4 Fourth Round of Review and Assessment

The Fourth Round of Review and Assessment started in 2009 with a new Updating and Screening Assessment. The USA 2009 concluded that, although updated NO₂ monitoring showed the annual mean NO₂ objective was still exceeded at a number of sites in the Borough, the majority of these exceedances were monitored either at sites within the AQMAs declared in Fareham for NO₂, or at sites not representative of public exposure. An exceedance of the annual mean NO₂ objective was measured at site G10, north of the AQMA in Gosport Road. As this site was located at the façade of a property, a Detailed Assessment was required.

Subsequent Detailed Assessment work concluded from further monitoring that the site of concern on Gosport Road would meet the annual mean NO₂ objective. Dispersion modelling indicated that the area of exceedance was limited to the Gosport Road and did not include the facades of any properties outside the AQMAs. Monitoring and modelling concentrations indicated that there remained exceedances of the annual mean NO₂ objective at locations relevant of public exposure within the Portland Street and Gosport Road AQMAs. From these results it was concluded that amendments of the existing AQMAs were not required.

As presented in the 2010 Air Quality Progress Report, updated monitoring results for 2009 suggested exceedances of the NO₂ annual mean objective remained in the two AQMAs. A further site outside the AQMAs also showed an exceedance of the annual mean objective. However, the site was not representative of relevant exposure.

The 2010 Progress Report also identified new planned developments in Fareham that could impact on local air quality. These included the new food retail development at Quay Street Fareham and the proposed Bus Rapid Transit. The Council committed to further monitoring in these locations to assess their impact. One future development which was noted in the report was the Strategic Development Area of 10,000 houses planned for the north of Fareham.

Updated monitoring results for 2010, presented in the 2011 Air Quality Progress Report, indicated that exceedances of the annual mean NO₂ objective continued at locations within the two AQMAs. One site outside the AQMA boundaries also showed an exceedance of the annual mean NO₂ objective; this site is representative of relevant exposure. The Council proposed to carry out an additional year of monitoring and review the situation through the 2012 Updating and Screening Assessment and to make a decision at that time on the need to undertake a Detailed Assessment for this location.

The 2011 Progress Report identified no new local developments additional to those detailed in the 2010 Progress Report which were likely to lead to significant increases in any pollutant prescribed in the Air Quality Strategy.

New Monitoring Data

2.1 Summary of Monitoring Undertaken

During 2011, the Council operated 42 NO₂ diffusion tube sites and 1 continuous automatic site for monitoring ambient air quality within the Borough. In April 2012 a new continuous automatic site for monitoring nitrogen dioxide was installed at Portland Street, using funds from a Section 106 agreement with the developer of a new food retail store at Quay Street. Results from the new monitoring site will be included in the 2013 Progress Report.

2.1.1 Automatic Monitoring Sites

The continuous automatic site (Table 2.1) which monitors for NO₂ (chemiluminescence) is located in Elms Road at the junction with the A32 Gosport Road, within the Gosport Road AQMA. The site has been running since 24th June 2008.

In order to provide confidence in the datasets, the continuous monitoring is subject to the same quality assurance/quality control objectives set out in the Netcen site operator's manual. These procedures are:

- Overnight 24 hour IZS calibration checks (NO_x analyser);
- Manual zero/span calibration using certified cylinders (carried out remotely every three days);
- Full data analyses and ratification through Bureau Veritas; and
- Six monthly services visits and site audits.

A map showing the location of the continuous site is presented in the 2010 Progress Report, so given there have been no recent changes, has not been recreated here.

Table 2.1: Details of Automatic Monitoring Site

Site	Site Type	OS Grid Ref	Pollutant	In AQMA?	Monitor type	Relevant Exposure ?	Distance to kerb of nearest road	Worst-case exposure ?
Elms Road	Road side	457594 105280	NO _x /NO ₂	Y	Chemilumin-escence	N (3.5 m away)	1.5 m	Y

2.1.2 Non-Automatic Monitoring Sites

Using diffusion tubes the Council monitors NO₂ at 42 sites within its administrative area, the majority of which are in Fareham. This includes triplicate co-location at the continuous monitoring site in Elms Road. Six sites are located in the Gosport Road AQMA and

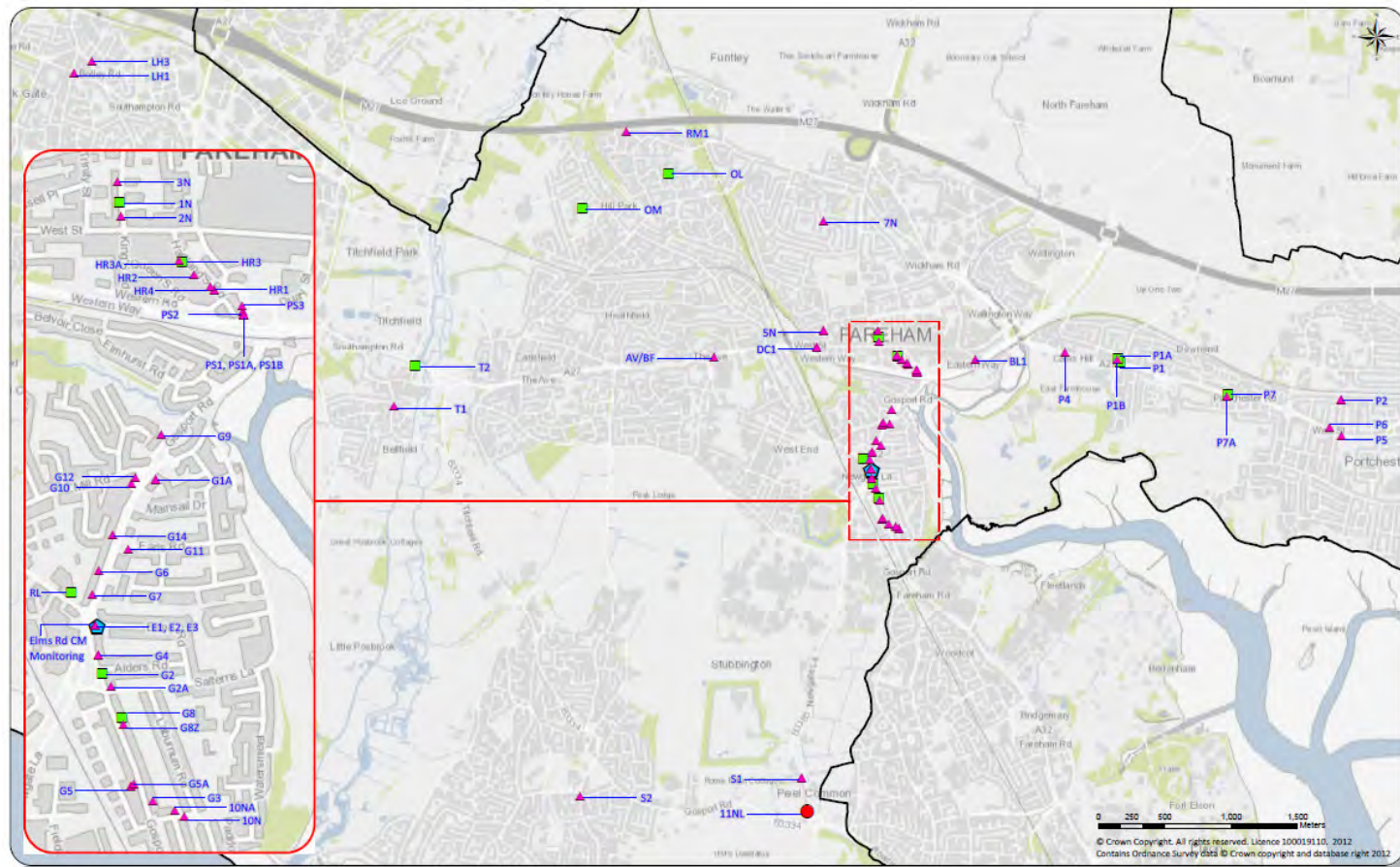
three sites in the Portland Street AQMA (including a set of triplicate tubes). Since the 2011 Progress Report, the following sites have been installed, relocated or discontinued:

- BL1 was installed on 04/08/2010 outside No.11 Bath Lane.
- G14 was installed on 04/05/2010 at the bottom of Beaconsfield Road.
- G5A was moved back from the porch to the drainpipe at No. 275 Gosport Road on 03/08/2011 and relabelled G5.
- G2/11N was moved from a lamppost outside front of No. 130 Gosport Road to a drainpipe on side of No. 138 on 01/09/2010 and relabelled G2A.
- G8/G8A was moved from the side of No. 152 Gosport Road to No. 156 Gosport Road on 03/02/2011.
- P1 (Portchester Road / Downend Road Junction) was discontinued on 03/06/2010.
- RL (Redlands Lane Primary School) was discontinued on 02/11/2010.
- T2 (No. 19 Mill Street, Titchfield) was discontinued on 28/09/2011.
- OL (Orchard Lea School, Kennedy Avenue) was discontinued on 04/08/2010.
- OM (Oak Meadow School, Tewkesbury Avenue) was discontinued on 02/11/2010.
- 1N (No. 2 Osbourne Road South) was discontinued on 02/07/2010.

A map showing the location of the diffusion tube sites is presented in the Figure 2.1.

Details of the diffusion tube monitoring sites are given in Table 2.2.

Figure 2.1: Map (s) of Non-Automatic Monitoring Sites in the Borough of Fareham



Monitoring Sites in the Borough of Fareham

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- ▲ Data available for 2011
- Discontinued historic sites
- ⬢ Elms Road CM Station
- New site for 2012
- FBC Boundary

Table 2.2: Details of Non- Automatic Monitoring Sites

Site Ref.	Site Name	Site Type	OS Grid Ref	Pollutants Monitored	In AQMA?	Co-located with a Continuous Analyser ?	Relevant Exposure?	Distance to kerb of nearest road	Worst-case Location?
10N	Farrier Way	B	457800, 104833	NO ₂	N	N	Y - 8m	0.4m	Y
10NA	3 Farrier Way	R	457775, 104846	NO ₂	N	N	Y - 0m	9.5m	Y
2N	2 Osborne Road South	R	457651, 106244	NO ₂	N	N	Y - 0m	3m	Y
3N	14 Osborne Road	R	457643, 106326	NO ₂	N	N	Y - 0m	6m	Y
5N	Grove Road	R	457234, 106329	NO ₂	N	N	Y - 4.5m	0.5m	Y
7N	Norton Road	B	457235, 107156	NO ₂	N	N	Y - 6m	0.5m	Y
Av/Bf	Avenue / Bishopfields Road	R	456408, 106125	NO ₂	N	N	N	2.2m	Y
BL1	11 Bath Lane	NR	458376, 106109	NO ₂	N	N	Y - 0m	16.0m	N
G10	107 Gosport Road	R	457675, 105616	NO ₂	N	N	Y - 0m	14m	Y
G11	2 Earls Road	R	457668, 105461	NO ₂	N	N	Y - 0m	5m	Y
G1A	30 Old Gosport Road	R	457732, 105625	NO ₂	N	N	Y - 0m	10m	Y
G2A	138 Gosport Road	NR	457627, 105138	NO ₂	Y – Gosport Road	N	Y - 0m	9.5m	Y
G3	202 Gosport Road	R	457726, 104869	NO ₂	N	N	Y - 0m	9m	Y
G4	122 Gosport Road	R	457598, 105213	NO ₂	Y – Gosport Road	N	Y - 0m	6m	Y

Site Ref.	Site Name	Site Type	OS Grid Ref	Pollutants Monitored	In AQMA?	Co-located with a Continuous Analyser ?	Relevant Exposure?	Distance to kerb of nearest road	Worst-case Location?
G5	275 Gosport Road	R	457674, 104904	NO ₂	N	N	Y - 0m	13m	Y
G5A	275 Gosport Road	R	457681, 104907	NO ₂	N	N	Y - 0m	13m	Y
G6	171 Gosport Road	R	457599, 105410	NO ₂	Y – Gosport Road	N	Y - 0m	6m	Y
G7	193 Gosport Road	R	457583, 105354	NO ₂	Y – Gosport Road	N	Y - 0m	6.5m	Y
G8Z	156 Gosport Road	R	457656, 105049	NO ₂	N	N	Y - 0m	4m	Y
G9	11 Eden Rise	R	457745, 105730	NO ₂	N	N	Y - 0m	13m	Y
HR1	Lampost, 8 Hartlands Road	K	457870, 106071	NO ₂	N	N	Y – 3.5m	1.8m	Y
HR2	17 Hartlands Road	R	457822, 106107	NO ₂	N	N	Y - 0m	11m	Y
HR3A	7 Hartlands Road	R	457787, 106140	NO ₂	N	N	Y - 0m	7m	Y
HR4	25 Hartlands Road	R	457860, 106077	NO ₂	N	N	Y - 0m	6.5m	Y
LH1	41 Bridge Road	R	451584, 108270	NO ₂	N	N	Y - 5m	2m	Y
LH3	36 Botley Road	R	451720, 108361	NO ₂	N	N	Y - 0m	5m	Y
P1B (was P1A)	3 The Ridgeway	R	459446, 106106	NO ₂	N	N	Y - 0m	20m	Y
P2	141 The Crossways	R	461134, 105806	NO ₂	N	N	Y - 10m	1m	Y
P4	22 Cams Hill	R	459054, 106162	NO ₂	N	N	Y - 24m	2m	Y

Site Ref.	Site Name	Site Type	OS Grid Ref	Pollutants Monitored	In AQMA?	Co-located with a Continuous Analyser ?	Relevant Exposure?	Distance to kerb of nearest road	Worst-case Location?
P5	Silvermist, Portchester	R	461139, 105532	NO ₂	N	N	Y - 20m	1.5m	Y
P6	169 West Street	R	461046, 105594	NO ₂	N	N	Y - 3.5m	1.5m	Y
P7A (was P7)	77 West Street, Portchester	R	460272, 105831	NO ₂	N	N	Y - 5m	1.5m	Y
PS1	1 Sentinel Cottages	R	457939, 106012	NO ₂	Y - Portland Street	N	Y - 0m	6.5m	Y
PS1A									
PS1B									
PS2	2 Sentinel Cottages	R	457937, 106021	NO ₂	Y - Portland Street	N	Y - 0m	6.5m	Y
PS3	38 Portland Street	R	457935, 106033	NO ₂	Y - Portland Street	N	Y - 0m	3.5m	Y
S1	Albert Road / Newgate Lane	R	457069, 102952	NO ₂	N	N	Y - 12m	2m	Y
S2	Stubbington Lane (Eric Road)	R	455398, 102811	NO ₂	N	N	Y - 14m	2m	Y
T1	South St Dental Health, Titchfield	R	453996, 105758	NO ₂	N	N	Y - 0m	1.5m	Y
T2	19 Mill Street, Titchfield	R	454158, 106060	NO ₂	N	N	Y - 2.2 m	1.6 m	Y
E1	Co-located with Elms Road Monitor	R	457590, 105281	NO ₂	Y - Gosport Road	Y	N - 3.5m	1.5m	Y
E2									
E3									
G12	Two Saints, 101 Gosport Road	R	457684, 105630	NO ₂	Y - Gosport Road	N	Y - 1 m	1.1m	Y
G14	Bottom of Beaconsfield Road	NR	457631, 105494	NO ₂	N	N	Y - 5m	6.9m	Y

Site Ref.	Site Name	Site Type	OS Grid Ref	Pollutants Monitored	In AQMA?	Co-located with a Continuous Analyser ?	Relevant Exposure?	Distance to kerb of nearest road	Worst-case Location?
DC1	Maytree Drive (lamppost) opposite Delme Court	R	457182, 106203	NO ₂	N	N	Y - 40 m	0.5m	Y
RM1	Runnymede	R	455745, 107825	NO ₂	N	N	Y - 6m	49m	N

2.2 Comparison of Monitoring Results with AQ Objectives

2.2.1 Nitrogen Dioxide

In order to assess the measured concentrations against the annual mean nitrogen dioxide air quality objective, both the tubes and the data need to be subject to quality assurance/quality control protocols. These allow for inherent uncertainty in the measured concentrations to be minimised.

All details of the QA/QC procedures that have been applied to the diffusion tube monitoring are given in Appendix A.

The purpose of reviewing the monitoring data is to identify any possible exceedances of the relevant air quality objectives. In doing so, it is vital to consider not only the measured concentrations in relation to the objectives, but also whether the locations represent relevant exposure. In cases where monitoring locations do not represent relevant exposure the façade distance calculation method, as described in LAQM.TG(09), has been used. This has been clearly stated in the report.

The two air quality objectives that ambient concentrations of NO₂ need to be assessed against are as follows:

- An annual mean of 40 µg/m³; and
- The number of exceedances of the 1 hour mean of 200 µg/m³ (18 allowable exceedances in total).

It should be noted that it is only possible to directly assess against the 1 hour objective if hourly monitoring data are available. As most local NO₂ monitoring within the Borough is conducted with diffusion tubes the approach suggested in LAQM.TG(09) has been adopted. The approach, based on empirical studies, suggests that where the annual mean is less than 60 µg/m³, exceedances of the short term objective are unlikely.

Automatic Monitoring Data

The Council has undertaken continuous monitoring of NO₂ at the Elms Road site since 2008. The site is located within the Gosport Road AQMA at the junction with the A32 Gosport Road. As the site is 3.5 metres closer to the A32 than the nearest receptor, measurements can be considered worst case.

The station was installed in June 2008, so the data for the 2008 monitoring data (June to December 2008) were period adjusted, in accordance with LAQM TG.09, using local AURN background sites at Bournemouth and Portsmouth to estimate the annual mean NO₂ concentration.

Table 2.3a: Results of Automatic Monitoring for Nitrogen Dioxide: Comparison with Annual Mean Objective

Location	Within AQMA?	Relevant public exposure? Y/N	Data Capture for monitoring period ^a %	Data Capture for full calendar year 2011 ^b %	Annual mean concentrations (µg/m ³)			
					2008 ^c	2009 ^c	2010 ^c	2011 ^c
Elms Road, Fareham	Y	N - 3.5m	99.9	99.9	33.7	35.9	41.8	33.2

^a i.e. data capture for the monitoring period, in cases where monitoring was only carried out for part of the year.

^b i.e. data capture for the full calendar year (e.g. if monitoring was carried out for six months the maximum data capture for the full calendar year would be 50%.)

^c Means are "annualised" as in Box 3.2 of TG(09), if monitoring was not carried out for the full year.

Excellent data capture was achieved at Elms Road in 2011 (greater than 99%). The annual mean NO₂ concentration for 2011 was 33.2 µg/m³, which is similar to the annual mean concentrations recorded in 2008 and 2009 (Table 2.3a and Figure 2.3). The higher NO₂ annual mean result in 2010 should be treated with caution due to a lower data capture as a result of incorrect filters being used. Figure 2.3 provides an indication of the trend in annual mean NO₂ concentration since monitoring began in 2008.

Figure 2.3: Trends in Annual Mean Nitrogen Dioxide Concentrations measures at Automatic Monitoring Sites

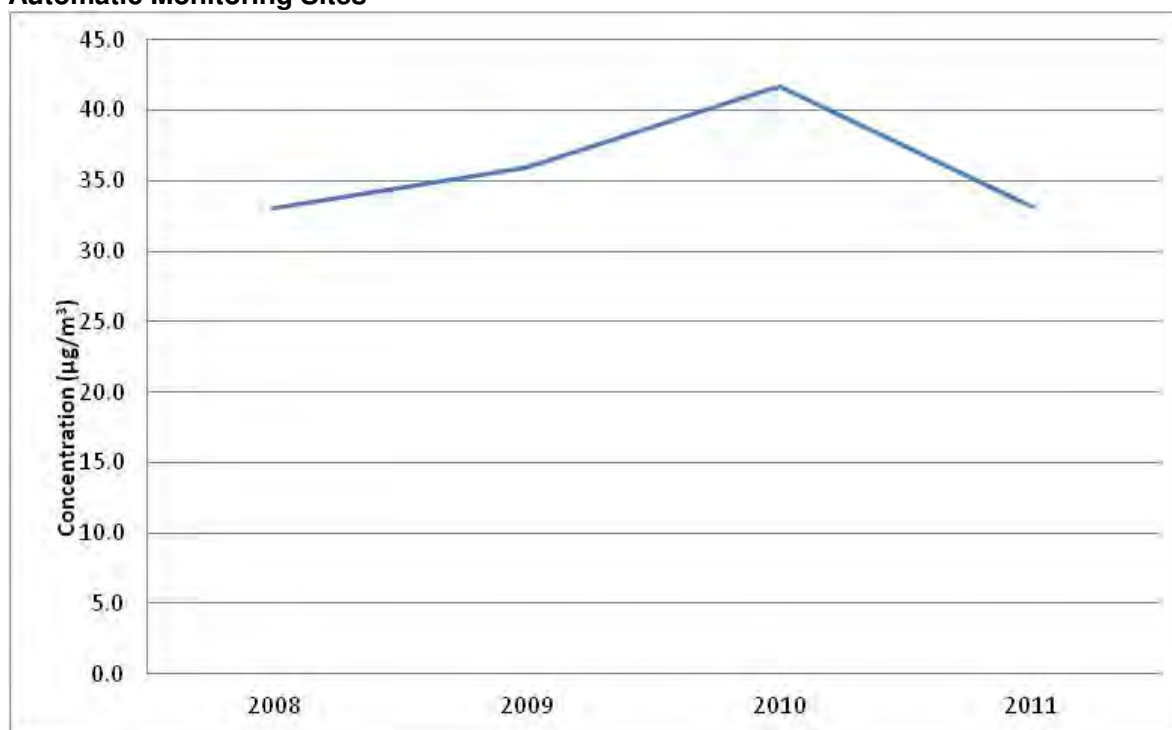


Table 2.3b: Results of Automatic Monitoring for Nitrogen Dioxide: Comparison with 1-hour Mean Objective

Location	Within AQMA?	Relevant public exposure? Y/N	Data Capture for monitoring period ^a %	Data Capture for full calendar year 2010 ^b %	Number of Exceedances of hourly mean (200 µg/m ³) If the period of valid data is less than 90% of a full year, include the 99.8 th percentile of hourly means in brackets.			
					2008	2009	2010	2011
Elms Road, Fareham	Y	N-3.5m	99.9	99.9	0	0	0	0

^a i.e. data capture for the monitoring period, in cases where monitoring was only carried out for part of the year.

^b i.e. data capture for the full calendar year (e.g. if monitoring was carried out for six months the maximum data capture for the full calendar year would be 50%).

There have been no monitored exceedances of the hourly NO₂ standard of 200 µg/m³ since monitoring began at Elms Road in 2008. The hourly NO₂ objective allows for 18 hours of NO₂ greater than 200 µg/m³ per year, therefore there have been no exceedances of the hourly NO₂ objective since monitoring began at Elms Road (Table 2.3b).

Diffusion Tube Monitoring Data

The Council has been monitoring NO₂ using passive diffusion tubes for a number of years. Diffusion tube sites that did not meet the 75% (9 months) data capture criterion in 2011 sites have been annualised to estimate the annual mean for 2011. The details of annualisation are given in Appendix A. Results at these sites are subject to greater uncertainty. The 2011 results for all sites including data capture percentages are given in Table 2.4. The full dataset (raw monthly values) are included in Appendix B.

Table 2.4: Results of Nitrogen Dioxide Diffusion Tubes in 2011

Site ID	Location	Site Type	Within AQMA?	Triplicate or Collocated Tube	Data Capture for monitoring period ^a %	Data Capture for full calendar year 2010 ^b %	Data with less than 9 months has been annualised (Y/N)	Confirm if data has been distance corrected (Y/N)	Annual mean concentration (Bias Adjustment Factor = 0.85)
									2011 ^c (µg/m ³)
10N	Farrier Way	B	N	N	92	92	N/A	N	21.2
10NA	3 Farrier Way	R	N	N	100	100	N/A	N	18.7
2N	2 Osborne Road South	R	N	N	100	100	N/A	N	29.9
3N	14 Osborne Road	R	N	N	100	100	N/A	N	21.1
5N	Grove Road	R	N	N	100	100	N/A	N	22.8
7N	Norton Road	B	N	N	83	83	N/A	N	16.5
Av/Bf	Avenue / Bishopfields Road	R	N	N	100	100	N/A	N	21.8
BL1	11 Bath Lane	NR	N	N	92	92	N/A	N	30.7
G10	107 Gosport Road	R	N	N	100	100	N/A	N	32.0
G11	2 Earls Road	R	N	N	100	100	N/A	N	24.3
G1A	30 Old Gosport Road	R	N	N	83	83	N/A	N	28.5
G2A (was G2/11N)	138 Gosport Road	NR	Y – Gosport Road	N	100	100	N/A	N	27.3
G3	202 Gosport Road	R	N	N	83	83	N/A	N	25.4
G4	122 Gosport Road	R	Y – Gosport Road	N	100	100	N/A	N	24.8
G5 (was G5A)	275 Gosport Road	R	N	N	100	42	Y	N	22.9
G5A (was G5)	275 Gosport Road	R	N	N	100	50	Y	N	23.5
G6	171 Gosport Road	R	Y – Gosport Road	N	100	100	N/A	N	29.1
G7	193 Gosport Road	R	Y – Gosport Road	N	100	100	N/A	N	33.6
G8Z (was G8)	156 Gosport Road	R	N	N	92	92	N/A	N	26.9
G9	11 Eden Rise	R	N	N	100	100	N/A	N	24.7
HR1	1 Hartlands Road	K	N	N	83	83	N/A	N	35.9

Site ID	Location	Site Type	Within AQMA?	Triplicate or Collocated Tube	Data Capture for monitoring period ^a %	Data Capture for full calendar year 2010 ^b %	Data with less than 9 months has been annualised (Y/N)	Confirm if data has been distance corrected (Y/N)	Annual mean concentration (Bias Adjustment Factor = 0.85)
									2011 ^c (µg/m ³)
HR2	17 Hartlands Road	R	N	N	100	100	N/A	N	27.6
HR3A (was HR3)	7 Hartlands Road	R	N	N	100	100	N/A	N	23.2
HR4	25 Hartlands Road	R	N	N	100	100	N/A	N	26.0
LH1	41 Bridge Road	R	N	N	100	100	N/A	N	22.8
LH3	36 Botley Road	R	N	N	92	92	N/A	N	25.9
P1B (was P1A)	3 The Ridgeway	R	N	N	100	100	N/A	N	20.2
P2	141 The Crossways	R	N	N	100	100	N/A	N	20.3
P4	22 Cams Hill	R	N	N	100	100	N/A	N	25.5
P5	Silvermist, Portchester	R	N	N	92	92	N/A	N	24.6
P6	169 West Street	R	N	N	100	100	N/A	N	21.0
P7A (was P7)	77 West Street, Portchester	R	N	N	100	100	N/A	N	17.0
PS1	1 Sentinel Cottages	R	Y - Portland Street	Triplicate	100	100	N/A	N	34.9
PS1A					100	100			33.8
PS1B					100	100			35.6
PS2	2 Sentinel Cottages	R	Y - Portland Street	N	100	100	N/A	N	35.8
PS3	38 Portland Street	R	Y - Portland Street	N	100	100	N/A	N	35.0
S1	Albert Road / Newgate Lane	R	N	N	100	100	N/A	N	26.4
S2	Stubbington Lane (Erice Road)	R	N	N	100	100	N/A	N	19.8
T1	South Street Dental Health, Titchfield	R	N	N	100	100	N/A	N	21.8
T2	19 Mill Street, Titchfield	R	N	N	100	75	N/A	N	23.7
E1	Co-located with Elms Road Monitor	R	Y – Gosport Road	Co-located	100	100	N/A	N	33.0
E2					100	100			
E3					100	100			

Site ID	Location	Site Type	Within AQMA?	Triplicate or Collocated Tube	Data Capture for monitoring period ^a %	Data Capture for full calendar year 2010 ^b %	Data with less than 9 months has been annualised (Y/N)	Confirm if data has been distance corrected (Y/N)	Annual mean concentration (Bias Adjustment Factor = 0.85)
									2011 ^c ($\mu\text{g}/\text{m}^3$)
G12	Two Saints, 101 Gosport Road	R	Y – Gosport Road	N	100	100	N/A	N	31.2
G14	Bottom of Beaconsfield Road	NR	N	N	100	100	N/A	N	29.2
DC1	Maytree Drive (lamppost) opposite Delme Court	R	N	N	100	100	N/A	N	24.2
RM1	Runnymede	R	N	N	100	25	Y	N	21.7

^a i.e. data capture for the monitoring period, in cases where monitoring was only carried out for part of the year.

^b i.e. data capture for the full calendar year (e.g. if monitoring was carried out for six months the maximum data capture for the full calendar year would be 50%.)

^c Means are "annualised" as in Box 3.2 of TG(09), if monitoring was not carried out for the full year.

Table 2.5: Results of Nitrogen Dioxide Diffusion Tubes (2007 to 2011)

Site ID	Location	Site Type	Within AQMA?	Data Capture for full calendar year 2010 ^b % Annual mean concentration ($\mu\text{g}/\text{m}^3$) (Bias Adjusted)				
				2007 ^c (Bias Factor 0.96)	2008 ^c (Bias Factor 1.05)	2009 ^c (Bias Factor 0.84)	2010 ^c (Bias Factor 1.01)	2011 ^c (Bias Factor 0.85)
				10N	Farrier Way	B	N	25.1
10NA	3 Farrier Way	R	N	N/A	25.9	21.5	24.5	18.7
1N	145 Osborne Road South	R	N	N/A	N/A	29.5	31.2	N/A
2N	2 Osborne Road South	R	N	30.6	32.2	26.6	38.9	29.9
3N	14 Osborne Road	R	N	25.4	28.6	23.5	26.6	21.1
5N	Grove Road	R	N	34.7	32	25	27.6	22.8
7N	Norton Road	B	N	18.9	21.6	17.7	20.8	16.5
Av/Bf	Avenue / Bishopfields Road	R	N	26.6	21.8	21.8	29.9	21.8
BL1	11 Bath Lane	NR	N	N/A	N/A	N/A	N/A	30.7
G10	107 Gosport Road	R	N	41.5	47.6	35.5	40.8	32.0
G11	2 Earls Road	R	N	25.7	34	25.9	28.7	24.3
G1A	30 Old Gosport Road	R	N	35.4	39.2	30.7	34.7	28.5
G2A (was G2/11N)	138 Gosport Road	NR	Y - Gosport	44.7	49.4	40.6	41.5	27.3
G3	202 Gosport Road	R	N	38.7	33.9	26.4	30.7	25.4
G4	122 Gosport Road	R	Y - Gosport	31.3	34.8	26.4	30.5	24.8
G5 (was G5A)	275 Gosport Road	R	N	30.1 ^e	31.7 ^e	25.4 ^e	33.5 ^e	22.9
G5A (was G5)	275 Gosport Road	R	N	30.1 ^e	31.7 ^e	25.4 ^e	33.5 ^e	23.5
G6	171 Gosport Road	R	Y - Gosport	32.5	36.3	28.3	32.9	29.1
G7	193 Gosport Road	R	Y - Gosport	38.1	39.8	33.2	39.6	33.6
G8Z (was G8)	156 Gosport Road	R	N	30.9	37	25.7	31.0	26.9
G9	11 Eden Rise	R	N	28	33.3	25.1	28.5	24.7
HR1	1 Hartlands Road	K	N	42.3	48.7	38.2	41.8	35.9
HR2	17 Hartlands Road	R	N	33.3	37.2	28.2	32.5	27.6
HR3A (was HR3)	7 Hartlands Road	R	N	29.5	32.5	25.2	34.8	23.2
HR4	25 Hartlands Road	R	N	N/A	38.6	26.4	30.7	26.0
LH1	41 Bridge Road	R	N	29.3	29.5	23.8	27.3	22.8
LH2	36 Botley Road	R	N	41.3	44.2	31.4	N/A	N/A
LH3	36 Botley Road	R	N	N/A	39	31.3	31.4	25.9
P1	Portchester Road / Downend Road	R	N	43.8	52	41.6	46.0	N/A
P1B (was P1A)	3 The Ridgeway	R	N	N/A	25.6	20.8	24.0	20.2

Site ID	Location	Site Type	Within AQMA?	Data Capture for full calendar year 2010 ^b %				
				Annual mean concentration ($\mu\text{g}/\text{m}^3$) (Bias Adjusted)				
				2007 ^c (Bias Factor 0.96)	2008 ^c (Bias Factor 1.05)	2009 ^c (Bias Factor 0.84)	2010 ^c (Bias Factor 1.01)	2011 ^c (Bias Factor 0.85)
P2	141 The Crossways	R	N	25.7	24.3	21.2	23.7	20.3
P4	22 Cams Hill	R	N	N/A	31.8	26	28.9	25.5
P5	Silvermist, Portchester	R	N	N/A	31.1	21.2	23.7	24.6
P6	169 West Street	R	N	N/A	30.2	26	28.9	21.0
P7A (was P7)	77 West Street, Portchester	R	N	N/A	35.1	27.7	22.5	17.0
PS1	1 Sentinel Cottages	R	Y - Portland Street	N/A	46.8	36.0	42.0	34.8
PS1A				N/A				
PS1B				N/A				
PS2	2 Sentinel Cottages	R	Y - Portland Street	N/A	48.3	38.7	43.3	35.8
PS3	38 Portland Street	R	Y - Portland Street	N/A	55.9	42.0	47.9	35.0
S1	Albert Road / Newgate Lane	R	N	N/A	31.9	25.4	32.5	26.4
S2	Stubbington Lane (Eric Road)	R	N	N/A	28.9	22.3	27.3	19.8
T1	South St Dental Health, Titchfield	R	N	N/A	29.8	20.6	28.1	21.8
T2	19 Mill Street, Titchfield	R	N	N/A	N/A	23.5	30.9	23.7
E1	Co-located with Elms Road Monitor	R	Y - Gosport	N/A	44.4	36.5	41.8	33.0
E2								
E3								
G12	Two Saints, 101 Gosport Road	R	Y - Gosport	N/A	N/A	N/A	N/A	31.2
G14	Bottom of Beaconsfield Road	NR	N	N/A	N/A	N/A	N/A	29.2
DC1	Maytree Drive (lamppost) opposite Delme Court	R	N	N/A	N/A	25.3	29.1	24.2
RM1	Runnymede	R	N	N/A	N/A	N/A	N/A	21.7

^a i.e. data capture for the monitoring period, in cases where monitoring was only carried out for part of the year.

^b i.e. data capture for the full calendar year (e.g. if monitoring was carried out for six months the maximum data capture for the full calendar year would be 50%.)

^c Means are "annualised" as in Box 3.2 of TG(09), if monitoring was not carried out for the full year.

The results in Table 2.4 show that there were no monitored exceedances of the annual mean NO₂ objective in 2011 at any of the diffusion tube monitoring sites. In the 2011 Progress Report it was noted that the monitoring site G10 exceeded the annual mean NO₂ objective. The Council proposed to continue monitoring at the site and the review the site again in the present report. The annual mean NO₂ concentration at site G10 in 2011 was 32.0 $\mu\text{g}/\text{m}^3$, which indicates that the annual mean NO₂ objective was achieved.

2.2.2 Review of Monitoring at the G10 Site

The G10 site has historically shown annual mean NO₂ concentrations which exceed the annual mean NO₂ objective of 40 µg/m³. For reasons stated in the 2011 Air Quality Progress Report the Council proposed to delay the undertaking of a Detailed Assessment until further monitoring data became available.

The 2011 diffusion tube data has an annual mean of 32.0 µg/m³, which is below the annual mean air quality objective. On the basis of the latest result there is no need at present to undertake a Detailed Assessment. However, this location will be closely monitored and reported upon in future Review and Assessment.

2.2.3 2011 NO₂ Annual Means

The 2011 dataset shows a decrease in ambient air quality concentrations at all sites except one, throughout the District, including both roadside and background sites.

Figure 2.4: Trends in Annual Mean Nitrogen Dioxide Concentration Measured at Diffusion Tube Monitoring Sites.

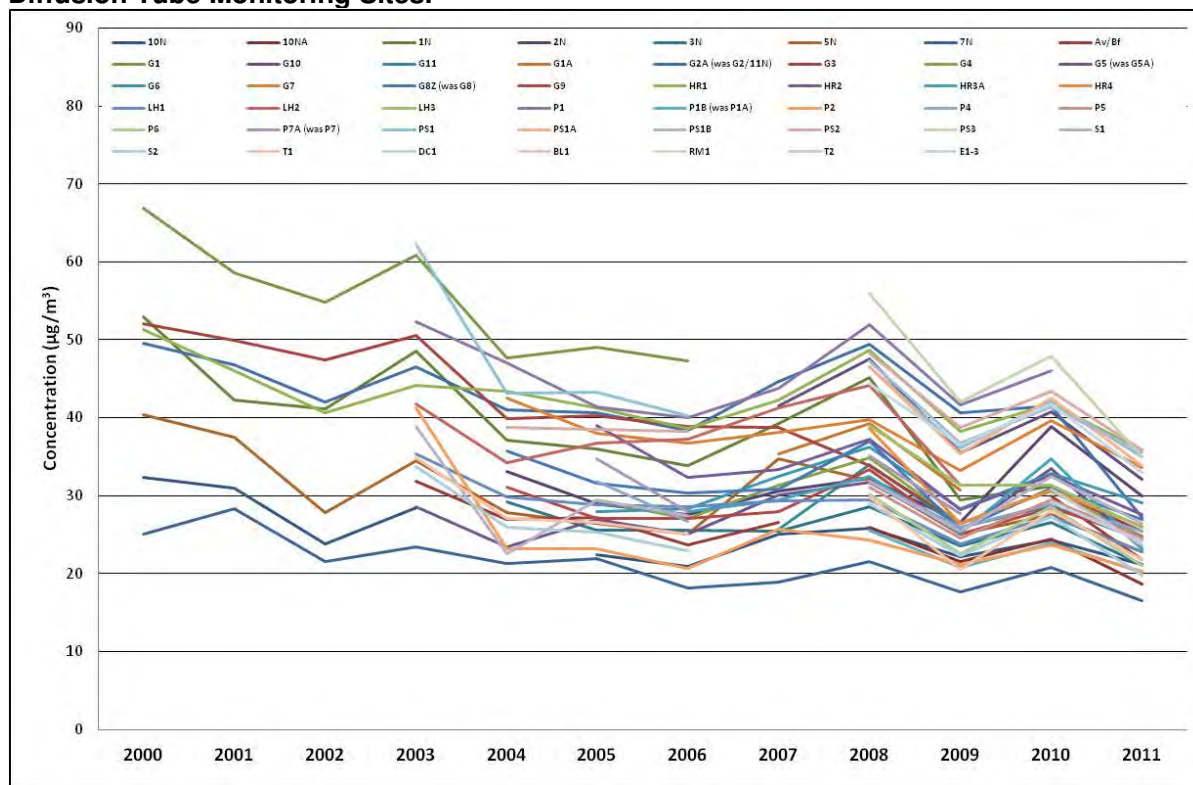


Figure 2.4 shows the annual results since 2000 for all the long term monitoring sites. The results suggest a slight downtrend in NO₂ concentrations since monitoring began, however the pattern is somewhat erratic with notable increases in 2003, 2008 and 2010. The fact that most sites show a similar pattern, suggest these increases may be as a result of meteorological effects over a wider regional area. As stated above, Figure 2.4 shows that in 2011 there were no exceedances of the annual mean NO₂ objective at any monitoring site inside or outside of the existing AQMAs.

2.2.4 Other pollutants monitored

Fareham Borough Council does not currently monitor for any other pollutant other than NO₂.

2.2.5 Summary of Compliance with AQS Objectives

Fareham Borough Council monitors for the pollutant NO₂, by way of a continuous analyser and 42 NO₂ diffusion tube locations.

Assessment of the monitoring data showed there to be no monitoring sites measuring annual mean NO₂ concentrations above the objective in 2011. Therefore no Detailed Assessment is necessary.

Fareham Borough Council has examined the results from monitoring in the Fareham. Concentrations outside of the AQMA are all below the objectives at relevant locations, therefore there is no need to proceed to a Detailed Assessment.

Road Traffic Sources

An assessment has been carried out to identify changes to any of the following since the last round of Review and Assessment:

- Narrow congested streets with residential properties close to the kerb;
- Busy streets where people may spend one hour or more close to traffic;
- Roads with a high flow of buses and/or HGVs;
- Junctions;
- New roads constructed or proposed since the last Updating and Screening Assessment;
- Roads with significantly changed traffic flows; and
- Bus or coach stations.

With consideration to the above, no significant changes have been identified which require more detailed assessment. However, the following local scheme has been identified which is anticipated to have beneficial impacts on local congestion and emissions:

- Conversion of the Quay Street roundabout to a "throughabout" with planned food retail development which should result in lower nitrogen dioxide levels in the nearby Portland Street AQMA.

3.1 Narrow Congested Streets with Residential Properties Close to the Kerb

Narrow congested streets with residential properties close to the kerb assessment criteria are as follows:

- Residential properties are within 2 m of the kerb, with buildings on both sides of the road.
- Daily traffic flow (AADT) is more than 5,000 vehicles/day.
- Traffic speeds are less than 25 kph, with traffic that is frequently stopping and starting due to pedestrian crossings, throughout much of the day, not just rush hour.
- Road widths are less than 10 m.

Previous Review and Assessments rounds have not identified any narrow congested streets with residential properties close to the kerb in Fareham. The Council confirms that this is still the case for this Assessment round.

Fareham Borough Council confirms that there are no new/newly identified congested streets with a flow above 5,000 vehicles per day and residential properties close to the kerb, that have not been adequately considered in previous rounds of Review and Assessment.

3.2 Busy Streets Where People May Spend 1-hour or More Close to Traffic

Busy streets where people may spend one hour or more close to traffic assessment criteria are as follows:

- Busy streets where individuals may be exposed within 5 m of the kerb for one hour or more
- Daily traffic flow (AADT) is more than 10,000 vehicles/day.

Previous Review and Assessments rounds have not identified any busy streets where people may spend one hour or more close to traffic in Fareham. The council confirms that this is still the case for this Assessment round.

Fareham Borough Council confirms that there are no new/newly identified busy streets where people may spend 1 hour or more close to traffic.

3.3 Roads with a High Flow of Buses and/or HGVs.

Roads with a high flow of buses and/or HGVs assessment criteria are as follows:

- Roads that have a HDV proportion more than 20%
- Relevant exposure is within 10 m of the kerb
- Daily HGV flow is more than 2,500 vehicles/day.

The 2011 Progress Report highlighted the creation of the South Hampshire Bus Rapid Transit (BRT) Phase 1, which is now known as the Eclipse Busway. This is a 4 km long dedicated busway and cycle route on the 8 km stretch between Gosport and Fareham, using a former railway corridor, which was under construction by the County Council and was opened in April 2012. The County Council received £20m of funding towards the project, from the Community Infrastructure Fund. In addition, funding from Planning for Urban South Hampshire (PUSH) and Hampshire County Council has been used to progress the design and advanced works for the scheme.

The new busway is anticipated to enable buses to avoid congested parts of the busy A32 and reduce the percentage of bus traffic on these roads. The scheme proposes to use low emission buses and so far 14 new Euro V buses have been purchased for use on the Eclipse Busway. The opening of the busway will create roads with high flows of buses; however relevant exposure is not likely to be within 10 m of the kerb, therefore a Detailed Assessment is not required.

The Detailed Environmental Assessment (March 2009) prepared to support the planning application of the Scheme, concluded that a slight beneficial impact in terms of air quality would occur at receptors on the A32, whereas a slight adverse impact along the north of the Scheme and the southernmost end of the route may be expected. However, overall the scheme was concluded to result in a negligible impact for the majority of the receptors considered in the assessment. It was concluded that the Portland Street AQMA would not be affected by the scheme.

No other roads with a high flow of buses and/or HGVs have been identified since previous Review and Assessments in Fareham.

Fareham Borough Council confirms that there are no new/newly identified roads with high flows of buses/HDVs.

3.4 Junctions

The criteria for the assessment of junctions are as follows:

- Relevant exposure is within 10 m of the kerb
- Daily traffic flow is more than 10,000 vehicles/day.

Fareham Borough Council has confirmed the following junction changes since the last Review and Assessment report:

- Conversion of the Quay Street roundabout to a "throughabout" with planned food retail development which should result in lower nitrogen dioxide levels in the nearby Portland Street AQMA.

This new road will result in traffic coming from Gosport via the A32 and out onto the M27 via Eastern Way and will no longer pass through Portland Street. Traffic data for Quay Street indicates that the daily traffic flow is not more than 10,000 vehicles/day, and therefore a Detailed Assessment is not required.

Prior to construction an Environmental Statement and a Portland Street AQMA Further Assessment were issued as noted in the previous Review and Assessment (USA 2009). These Assessments noted that upon completion the redevelopment of the Quay Street roundabout would have a beneficial impact on the Portland Street AQMA and that the AQS objectives for NO₂ and PM₁₀ would not be exceeded at receptors. The "throughabout" opened in November 2011.

Fareham Borough Council has assessed new/newly identified junctions meeting the criteria in Section A.4 of Box 5.3 in TG(09), and concluded that it will not be necessary to proceed to a Detailed Assessment.

3.5 New Roads Constructed or Proposed Since the Last Round of Review and Assessment

New roads constructed or proposed since the last round of Review and Assessment criteria are as follows:

- Relevant exposure is within 10 m of the kerb
- Daily traffic flow is more than 10,000 vehicles/day.
- Any new roads which could have caused increased flows on existing roads where annual mean NO₂ by more than 36 µg/m³

With the exception of the new junction listed in Section 3.4, the Council confirms that no other new/proposed roads meet the criteria listed above.

Fareham Borough Council has assessed new/proposed roads meeting the criteria in Section A.5 of Box 5.3 in TG(09), and concluded that it will not be necessary to proceed to a Detailed Assessment.

3.6 Roads with Significantly Changed Traffic Flows

Roads with significantly changed traffic flows criteria are as follows:

- Roads that have an increase in traffic flow of more than 25%
- Daily traffic flow is more than 10,000 vehicles/day.

Traffic flows have been assessed for roads with available traffic data. For roads with an AADT of more than 10,000 vehicles/day, there is no increase of 25% or more in daily traffic flow. The maximum increase in daily traffic is 3% on the A27 Locks Heath, as shown in Appendix D.

Fareham Borough Council has assessed new/newly identified roads with significantly changed traffic flows, and concluded that it will not be necessary to proceed to a Detailed Assessment.

3.7 Bus and Coach Stations

Bus and Coach Station criteria are as follows:

- Relevant exposure within 10 m of any part of the bus station where buses are present
- Daily flow of buses is greater than 2,500 per day

Previous rounds of Review and Assessment have concluded that the Fareham main bus terminal and Hoeford bus depot are not considered to be significant sources. Fareham Borough Council has confirmed that no significant changes to bus movements have occurred since the last USA and that there are no residential properties located within 10 m of the site.

Fareham Borough Council confirms that there are no relevant new/newly identified bus stations in the Local Authority area.

Other Transport Sources

No other significant local transport sources have been identified since the previous LAQM assessment.

4.1 Airports

Airports to be taken into account should include the following criteria:

- Relevant exposure within 1,000 m of the airport boundary.
- Passenger numbers more than 10 million passengers per annum (mppa).
- The existing background NO₂ concentration is above 25 µg/m³.

Fareham Borough Council confirms that there are no airports in the Local Authority area.

4.2 Railways (Diesel and Steam Trains)

The assessment criteria for Railways (whether stationary or moving locomotives) are as follows:

- Any locations where diesel/steam trains are frequently stationary for more than 15 minutes (e.g. signals, good loops, depots, stations) where there is relevant exposure within 15 m.
- The existing background NO₂ concentration is above 25 µg/m³.

4.2.1 Stationary Trains

The assessment for stationary trains considers SO₂ emissions. Railway locomotives were not identified as a significant source of SO₂ in the Borough in the previous rounds of Review and Assessment. Current data on train movements on the rail network in the Borough show that the majority of trains are electric and not diesel, suggesting that emissions from stationary locomotives are not an issue.

Fareham Borough Council confirms that there are no locations where diesel or steam trains are regularly stationary for periods of 15 minutes or more, with potential for relevant exposure within 15m.

4.2.2 Moving Trains

Current data on train movements on the rail track in the Borough show that the majority of trains are electric and not diesel, suggesting that emissions from moving trains are not an issue. After reviewing Table 2¹ from the Defra webpage for Guidance on Assessing Emissions from Railway Locomotives, there are no locations within the Borough where there are a large number of diesel locomotive

¹ <http://laqm.defra.gov.uk/laqm-fags/faq37.html>, Defra Webpage, last accessed 24 April 2012. "Table 2: Authorities with rail line with a heavy traffic of diesel passenger trains where the estimated annual mean background NO₂ concentration (in 2008) is greater than 25 µg/m³"

movements and there are no locations where there is the potential for long-term exposure within 30 m of the tracks

Fareham Borough Council confirms that there are no locations with a large number of movements of diesel locomotives, and potential long-term relevant exposure within 30 m.

4.3 Ports (Shipping)

Ports (shipping) to be taken into account should include the following criteria:

- Relevant exposure within either 250 m or 1 km of the berths and main areas of ship manoeuvring.
- Ship movements between 5,000 and 15,000 movements per year for relevant exposure within 250 m.
- Ship movements more than 15,000 movements per year for relevant exposure within 1 km.

Fareham Borough Council confirms that there are no ports or shipping that meet the specified criteria within the Local Authority area.

Industrial Sources

This report has assessed any changes to the following since the last Updating and Screening Assessment:

- New or proposed installations for which an air quality assessment has been carried out;
- Existing installations where emissions have increased substantially or new relevant exposure has been introduced;
- New or significantly changed installations with no previous air quality assessment;
- Major fuel storage depots storing petrol;
- Petrol stations; and
- Poultry farms.

There are currently 36 industrial installations listed as Part B processes (regulated by the Council), and 2 installations listed as a Part A1 process in the Borough (regulated by the Environment Agency). A list of all industrial processes in the Borough is provided in Appendix E.

5.1 Industrial Installations

5.1.1 New or Proposed Installations for which an Air Quality Assessment has been Carried Out

Fareham Borough Council confirms that there are no new or proposed industrial installations for which planning approval has been granted within its area or nearby in a neighbouring authority for which an air quality assessment was carried out.

5.1.2 Existing Installations where Emissions have Increased Substantially or New Relevant Exposure has been Introduced

Industrial sources to be taken into account should include the following criteria:

- An increase in emissions of more than 30%.
- New relevant exposure in the vicinity.

Assessment of emissions from the larger industrial installations, the Esso Refinery and Fawley Power Station, to the southwest of the Borough boundary shows that pollutant emissions have not increased substantially and for most pollutants a decrease has occurred.

Fareham Borough Council confirms that there are no industrial installations with substantially increased emissions or new relevant exposure in their vicinity within its area or nearby in a neighbouring authority.

5.1.3 New or Significantly Changed Installations with No Previous Air Quality Assessment

New industrial processes, governed under the Local Authority Environmental Permitting Regime, since the 2009 USA are:

- Hoare Construction Group Ltd was granted an Environmental Permit to operate a mobile plant (Pegson Mobile Xr400 Concrete Crusher).

A number of industrial installations have had their permits revoked, surrendered or mothballed. Other permits were renewed since the 2009 USA for facilities which have already been assessed in the previous rounds.

Fareham Borough Council has assessed new/proposed industrial installations, and concluded that it will not be necessary to proceed to a Detailed Assessment.

5.2 Major Fuel (Petrol) Storage Depots

There are no major fuel (petrol) storage depots within the Local Authority area.

5.3 Petrol Stations

Petrol Stations requiring more detailed assessment should satisfy the following criteria:

- The petrol station has an annual throughput of more than 2 million litres per annum.
- The petrol station is in close proximity to a road with more than 30,000 vehicles daily.
- There are relevant receptors less than 10 m from the pumps.

Petrol stations fitted with Stage II recovery systems can be ignored.

Fareham Borough Council confirms that there are no petrol stations meeting the specified criteria.

5.4 Poultry Farms

Poultry Farms requiring assessment should satisfy the following criteria:

- There are 400,000 birds housed in a mechanically ventilated building.
- There are 200,000 birds housed in a naturally ventilated building.
- There are 100,000 birds for any turkey unit
- Relevant exposure within 100 m of the poultry units. This includes residential properties that form part of the farm itself.

Fareham Borough Council confirms that there are no poultry farms meeting the specified criteria.

Commercial and Domestic Sources

6.1 Biomass Combustion – Individual Installations

Individual biomass combustion installations with maximum thermal heat capacity of between 50 kW and 20 MW require assessment. There is one biomass combustion installation in the Borough which meets this criterion. The unit is located at the Catisfield Hinton Hotel, 32 Catisfield Lane, PO15 5NN.

- The following information was obtained on the unit:
- Maximum thermal capacity of the appliance is 95 kW (for all fuel types)
- Stack height – 10.1 m
- Stack diameter – 150 mm
- Stack Height above building – 0.1 m
- Dimensions (floor area) of habitable buildings within 5 times the stack height above ground:
 - o Catisfield Hinton Hotel – 502 m², and Annexe – 268 m²
 - o 24 Catisfield Lane – 81 m²
 - o The Limes Public House – 276 m²
 - o Maximum height of the buildings – 10 m
- Description of the combustion appliance: Angus Max Multi Fuel Boiler, using wood as the fuel type.

Details of the assessment of this combustion installation are shown in Appendix C. The outcome of the screening assessment indicated that the biomass installation at Catisfield Hinton Hotel is unlikely to exceed the thresholds given in the nomograms and so there is no need to proceed to a Detailed Assessment.

Fareham Borough Council has assessed the biomass combustion plant, and concluded that it will not be necessary to proceed to a Detailed Assessment.

6.2 Biomass Combustion – Combined Impacts

This section assesses the combined effects of small biomass combustion installations. There is only one biomass combustion installation in the Borough. This was assessed in section 6.2 and it was concluded that no further assessment is required.

Fareham Borough Council has assessed the biomass combustion plant, and concluded that it will not be necessary to proceed to a Detailed Assessment.

6.3 Domestic Solid-Fuel Burning

A Detailed Assessment of domestic solid fuel burning will be required where areas of significant coal burning takes place. 'Significant' is defined as any area of about 500 x 500 m with more than 50 houses burning coal/smokeless fuel as their primary heating source. Smokeless fuel has a similar sulphur content to coal and so should be treated in the same way.

Previous Review and Assessment work has concluded that there were no areas in the Borough with a high density of domestic coal burning. There have been no changes since the last round of Review and Assessment.

Fareham Borough Council confirms that there are no areas of significant domestic fuel use in the Local Authority area.

Fugitive or Uncontrolled Sources

The assessment of fugitive or uncontrolled sources considers only PM₁₀ objectives. The assessment considers the following sources of dust: quarries, landfill sites, opencast coal mining, waste transfer sites, materials handling (i.e. ports, major construction sites). Only sources with planning approval granted need to be considered. It is necessary to establish whether there is relevant exposure 'near' to the source according to the following criteria:

- Within 1000 m for a local PM₁₀ background concentration >28 µg/m³;
- Within 400 m for a local PM₁₀ background concentration between 26 µg/m³ and 28 µg/m³; and
- Within 200m for a local PM₁₀ background concentration <26 µg/m³.

Fareham Borough Council has identified six new or previously unidentified local developments which may impact on air quality in the Local Authority area that have not been assessed in previous USAs. No complaints were received from any of these facilities in 2011:

- Harfields Truck Ltd. which uses a mobile concrete crusher. This company is not based in Fareham and is not near sensitive receptors. The background PM₁₀ in the area for 2011 was 19.7 µg/m³ (mapped background PM₁₀ concentration for grid square 452500,108500 for 2011)². The local background in 2011 was below 26 µg/m³ and the nearest sensitive receptors are more than 200 m away so no further assessment is required. The permit for the operation of this mobile concrete crusher was surrendered in November 2011.
- Veolia Environmental Services (UK) Ltd. is a Waste Transfer Station which has relevant receptors within 200 m of the site boundary. The receptors are also shielded from the site by rows of trees. The background PM₁₀ concentration in 2011 for this location was 14.7 µg/m³ (mapped background PM₁₀ concentration for grid square 478500,104500 for 2011).
- The Veolia Composting Site on Downend Road, appears to be in the same location as the Veolia Environmental Services (UK) Ltd. Waste Transfer Station above. Therefore the same relevant receptors and background PM₁₀ concentrations apply. In 2011 permission was granted for this facility to change of its use to wood waste storage, sorting and transfer, highways salt store and bin storage. No complaints of odour have occurred since 2010 as a result.
- SITA Waste Transfer station off Military Road in Fareham is more than 200 m from a relevant receptor and had a background PM₁₀ concentration of 17.4 µg/m³ (mapped background PM₁₀ concentration for grid square 458500,106500 for 2011).
- The Rentokil Initial Services Ltd. at Crompton Way is a mixed waste transfer facility within an industrial complex. The facility is almost 200 m away from a relevant receptor but has various buildings between it and the relevant receptors. The 2011 background PM₁₀ concentration for this location was 15.7 µg/m³ (mapped background PM₁₀ concentration for grid square 451500,107500 for 2011).
- The Hansons Aggregate Transfer Station on Station Approach is within 200 m of relevant receptors. The receptors are shielded from the site by buildings and vegetation. The local background PM₁₀ concentration for 2011 was 15.4 µg/m³ mapped background PM₁₀ concentration for grid square 456500,105500 for 2011).

Still at the planning application stage is the HMS Daedalus redevelopment. The environmental statement produced for this development included an assessment of the dust emissions from the construction phase of the development. The conclusion of the ES was that short term minor adverse impacts were likely after employing best practical means to suppress dust generation. The use of dust suppression techniques was also recommended. As this development is still in the planning application stage it has not been assessed at present in this USA but should be considered in future Review and Assessment if approval is granted.

The assessment of fugitive and uncontrolled particulate matter emissions sources has identified several new or not previously assessed sources in the local authority area where there is nearby relevant exposure. However, the Council has received no dust complaints in relation to these facilities

² <http://laqm.defra.gov.uk/review-and-assessment/tools/background-maps.html>

and has no reason to suspect that fugitive or uncontrolled emissions are problematic at these locations. Therefore, a Detailed Assessment of fugitive particulate matter emissions is not required at this stage.

Fareham Borough Council confirms that there are no potential sources of fugitive particulate matter emissions in the Local Authority area.

8 Conclusions and Proposed Actions

8.1 Conclusions from New Monitoring Data

Fareham Borough Council has historically monitored for the pollutant NO₂ by way of a continuous analysers and diffusion tube sites. At present there is one continuous monitoring site and there are 42 diffusion tube monitoring sites. In April 2012 a new continuous automatic site for monitoring nitrogen dioxide was installed at Portland Street, using funds from a Section 106 agreement with the developer of a new food retail store at Quay Street. Results from the new monitoring site will be included in the 2013 Progress Report.

Analysis of the 2011 dataset showed there to be no diffusion tube sites with an annual mean NO₂ concentration in excess of the annual mean NO₂ objective of 40 µg/m³ at relevant locations outside the existing AQMAs or within the AQMAs. However, at present it is not recommended to revoke the AQMAs until further monitoring is undertaken to determine whether this is a permanent occurrence or whether it is the effect of regional meteorological conditions during 2011.

No Detailed Assessment is required for the historically high monitoring site G10 as during 2011 the annual mean measured was below the NO₂ annual mean objective.

No PM₁₀ monitoring was undertaken in 2011.

8.2 Conclusions from Assessment of Sources

8.2.1 Road Sources

Most of the road sources were assessed in the previous USAs (2006 and 2009) with the conclusion that there is not a risk of exceedence of the AQS objectives for NO₂ and PM₁₀ at the nearest properties. Updated traffic data for 2011 indicates that there were no significant changes in daily traffic flows and so there is no need to proceed to a Detailed Assessment for these roads.

The conversion of the Quay Street roundabout to a "throughabout" was completed in November 2011 and will result in traffic coming from Gosport via the A32 and out onto the M27 via Eastern Way. Traffic will no longer pass through Portland Street. This new road layout will hopefully reduce emissions in the Portland Street AQMA. Traffic data for Quay Street indicates that daily traffic flows are not more than 10,000 vehicles/day, indicating that a Detailed Assessment is not required at this stage.

8.2.2 Other Sources

Fareham Borough Council has identified the following new or previously unidentified local developments which may impact on air quality in the Local Authority area.

- Biomass Combustion Unit at the Catisfield Hinton Hotel;
- Change of use of existing green waste composter site on Veolia Down End Quarry;
- The Harfields Truck Ltd. mobile concrete crusher (permit surrendered in November 2011);
- Veolia Environmental Service (UK) Ltd. Waste Transfer Station
- SITA Waste Transfer Station on Military Road
- Rentokil Initial Services Ltd. on Crompton Way
- Hansons Aggregate Transfer Station on Station Road.

Future developments which should be considered in later Review and Assessments are the HMS Daedalus redevelopment which is still at the planning stage at present.

All potential sources have been assessed and it has been determined that a Detailed Assessment is not required for these sources.

8.3 Proposed Actions

The overall conclusions of the 2012 USA are that monitored concentrations of NO₂ are currently below the annual mean NO₂ objective at monitoring locations within and outside the current AQMA boundaries and, on the bases of the latest monitoring data and assessment of sources, Fareham Borough Council does not need to proceed to a Detailed Assessment for any of the pollutants listed in the Air Quality Strategy at this stage.

Fareham Borough Council proposes the following actions:

- Continue to undertake monitoring at the existing locations including in the Gosport Road AQMA and surrounding area, despite there being no monitored exceedances in 2011;
- The Gosport Road and Portland Street AQMAs will be retained and NO₂ diffusion tube monitoring will continue to determine whether the observed reduction in the NO₂ annual mean in 2011 is part of a longer term trend or a short-term deviation influenced by meteorological conditions;
- Undertake monitoring at the new Portland Street monitoring site to assess the need for retention of the Portland Street AQMA in the future.
- Prepare and submit, in line with the requirements of LAQM, an Air Quality Progress Report in 2013, which will update on all the elements set out in this report.

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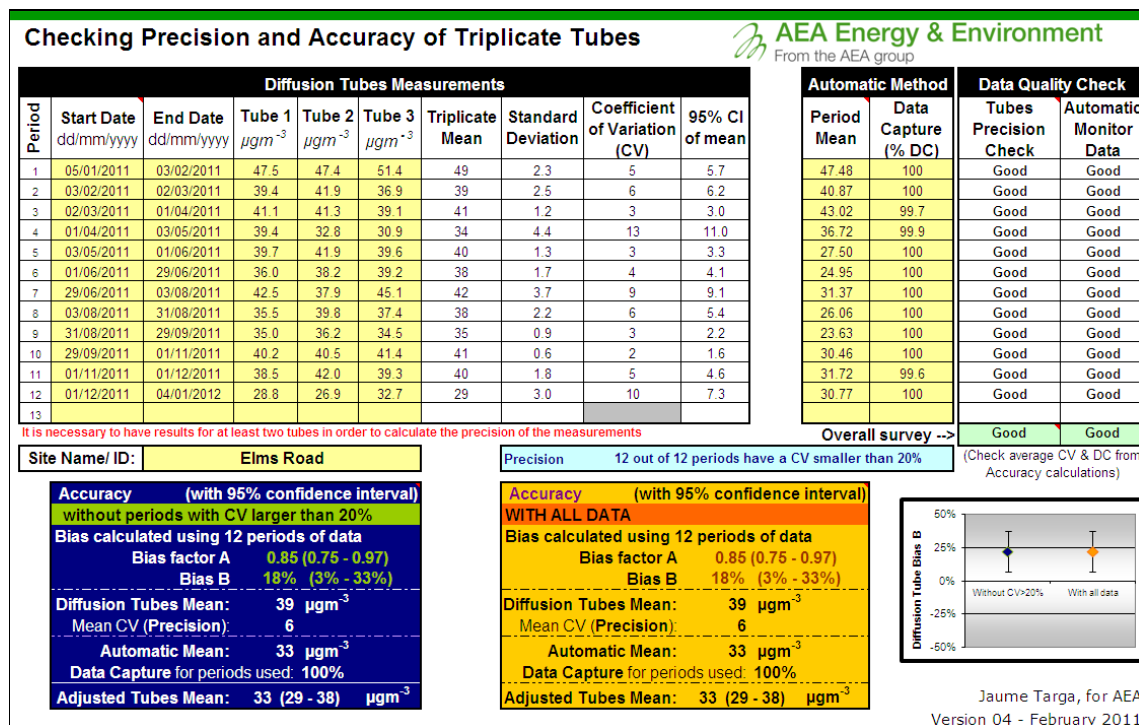
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Appendix A: QA:QC Data

Factor from Local Co-location Studies

A local bias adjustment factor for NO₂ Diffusion Tube monitoring was derived from a co-location study. Triplicate tubes were placed alongside the NO_x Analyser at Elms Road Monitoring Site and the co-location used to calculate a local bias adjustment factor. Details of the local bias adjustment calculation are shown in Figure A.1. The local bias adjustment calculation resulted in a local bias adjustment factor of 0.85.

Figure A.1: NO₂ Diffusion Tube Bias Adjustment Calculation, Fareham 2011



Diffusion Tube Bias Adjustment Factors

A national bias adjustment factor of 0.89 was obtained from the national Spreadsheet of Bias Adjustment Factors Version 03/12 using the following inputs:

- Analysed By: Gradko International;
- Method: 20% TEA / Water;
- Year: 2011.

The output is shown in Figure A.2.

Analysed By ¹	Method <small>To undo your selection (Alt) from the pop-up</small>	Year <small>To undo selection (Alt)</small>	Site Type	Local Authority	Length of Study (months)	Diffusion Tube Mean Conc. (Dm) (µg/m ³)	Automatic Monitor Mean Conc. (Cm) (µg/m ³)	Bias (B)	Tube Precision ²	Bias Adjustment Factor (A) (Cm/Dm)
Gradko	20% TEA in water	2011	R	Scarborough Borough Council	12	35	37	-4.7%	G	1.05
Gradko	20% TEA in Water	2011	R	Dudley MBC	12	35	28	23.3%	G	0.81
Gradko	20% TEA in Water	2011	UB	Dudley MBC	12	28	25	10.0%	G	0.91
Gradko	20% TEA in Water	2011	R	Dudley MBC	11	45	40	11.8%	G	0.89
Gradko	20% TEA in water	2011	K	South Lakeland District Council	10	41	38	8.3%	G	0.92
Gradko	20% TEA in water	2011	R	Gedling Borough Council	11	43	35	24.5%	G	0.80
Gradko	20% TEA in water	2011	R	Gateshead	12	39	37	4.9%	P	0.95
Gradko	20% TEA in water	2011	R	Gateshead	12	37	36	1.8%	G	0.98
Gradko	20% TEA in water	2011	R	Gateshead	10	33	31	5.1%	G	0.95
Gradko	20% TEA in water	2011	R	Gosport Borough Council	10	28	25	11.1%	G	0.90
Gradko	20% TEA in water	2011	UC	Southampton City Council	12	31	35	-10.8%	G	1.12
Gradko	20% TEA in Water	2011	R	Dudley MBC	9	50	51	-1.5%	G	1.02
Gradko	20% TEA in water	2011	K	Marylebone Road Intercomparison	12	111	100	11.4%	G	0.90
Gradko	20% TEA in water	2011	R	Boston Borough Council	11	57	36	59.6%	P	0.63
Gradko	20% TEA in water	2011	UB	Luton Borough Council	11	39	35	11.1%	G	0.90
Gradko	20% TEA in water	2011	R	Exeter City Council	11	37	33	15.1%	S	0.87
Gradko	20% TEA in water	2011	UB	Belfast City Council	12	36	29	23.5%	G	0.81
Gradko	20% TEA in water	2011	R	Bromsgrove District Council (Worce	10	56	53	6.0%	G	0.94
Gradko	20% TEA in water	2011	R	Monmouthshire County Council	11	47	40	17.9%	S	0.85
Gradko	20% TEA in water	2011	K	New Forest District Council	10	49	42	16.7%	G	0.86
Gradko	20% TEA in water	2011	R	New Forest District Council	12	34	26	29.9%	G	0.77
Gradko	20% TEA in water	2011	R	Fareham Borough Council	12	39	33	17.4%	G	0.85
Gradko	20% TEA in water	2011	R	Rushcliffe BC	11	35	39	-9.5%	G	1.10
Gradko	20% TEA in Water	2011	R	Carlisle City Council	12	35	28	24.8%	G	0.80
Gradko	20% TEA in Water	2011	O	North Warwickshire Borough Council	12	48	39	23.0%	G	0.81
Gradko	20% TEA in water	2011	R	Wokingham Borough Council	11	41	38	8.6%	G	0.92
Gradko	20% TEA in water	2011		Overall Factor² (26 studies)					Use	0.89

Discussion of Choice of Factor to Use

Both local and national bias adjustment factors were derived for the purpose of bias adjusting Fareham Borough Council's NO₂ diffusion tube results. It was decided to use the local factor for bias adjustment for the following reasons:

- Local bias adjustment factor is considered to be the most representative of local conditions in Fareham;
- Local and national bias adjustment factors are similar (0.85 and 0.89 respectively), so adjusted concentrations did not differ much when applying the local or national bias adjustment factor and it was believed that the local factor was more representative of Fareham conditions. No exceedances of the NO₂ annual mean objective are measured if the national bias adjustment factor is applied.

Short-term to Long-term Data adjustment

The long term continuous monitoring sites chosen for annualisation of the diffusion tubes in Fareham Borough were Bournemouth, Southampton Centre and Portsmouth. These monitoring sites were chosen because of their proximity to the Borough and good data capture rates (>90%).

Within the Borough there were 3 locations that required annualisation, Sites RM1, G5 and G5A. The Site G5 is a replacement of Site G5A, but for the purpose of this study they are interpreted as two locations, but will be considered as one location from 2012 onwards. The Site RM1 was annualised as it was installed in September 2011. No other monitoring sites had less than 75% data capture. Tables A.1 to A.3 show the annualisation ratio required for each monitoring period. The monitoring periods for monitoring sites were as follows:

- Site G5: August to December 2011;
- Site G5A: January to June 2011; and
- Site RM1: October to December 2011.

Site	Site Type	Annual Mean	Period Mean	Ratio
Bournemouth	R	15.39	13.15	1.17
Portsmouth	R	19.00	19.20	0.99
Southampton Centre	R	35.34	35.44	1.00
			Average	1.05

Table A.3: Annualisation Bias Adjustment Factor Calculations Site G5A, Fareham 2011

Site	Site Type	Annual Mean	Period Mean	Ratio
Bournemouth	R	15.39	17.86	0.86
Portsmouth	R	19.00	19.81	0.96
Southampton Centre	R	35.34	36.28	0.97
			Average	0.93

Table A.3: Annualisation Bias Adjustment Factor Calculations Site RM1, Fareham 2011

Site	Site Type	Annual Mean	Period Mean	Ratio
Bournemouth	R	15.39	15.22	1.01
Portsmouth	R	19.00	21.51	0.88
Southampton Centre	R	35.34	39.28	0.90
			Average	0.93

QA/QC of automatic monitoring

Monitoring in Fareham was performed in accordance with the guidelines outlined in Technical Guidance Notes LAQM.TG(03), LAQM.TG1(00) and LAQM.TG(09). All the analysers were set up and calibrated in strict accordance with the manufacturers' recommended procedures prior to and during use. Details of automatic monitoring QA/QC is given in Section 2.1.

QA/QC of diffusion tube monitoring

The diffusion tubes were supplied and analysed by Gradko International Ltd. To maintain consistency with previous monitoring the preparation method used was 20% v/v triethanolamine in water.

Gradko International Ltd. participate in the Health and Safety Laboratory's Workplace Analysis Scheme for Proficiency (WASP) scheme, which provides a Quality Assurance / Quality Control framework for local authorities carrying out diffusion tube monitoring as a part of their local air quality management process. This scheme is based on a z-score system where if 95% of the laboratory results occur within the z-score $<\pm 2$ for each WASP round, then this is deemed a satisfactory laboratory result. If this percentage is substantially lower than 95% then one can conclude that the laboratory in question may have significant systematic sources of bias in their assay and the results are questionable or unsatisfactory.

Table 2 shows Gradko International Ltd. summary performance for WASP NO₂ PT rounds R112 – R115 which cover the 2011 monitoring period. The performance summary shows that Gradko International Ltd. achieved 100% ratings from January to September 2011 which corresponds with a 'Good' rating via the old WASP scheme. However, results obtained in October to December 2011 should be treated with caution as the laboratory performance is 'questionable'³.

³ WASP – Annual Performance Criteria for NO₂ Diffusion Tubes used in Local Air Quality Management (LAQM), 2007 onwards, and Summary of Laboratory Performance in Rounds 108-115. April 2012. Available from <http://laqm.defra.gov.uk/diffusion-tubes/qa-qc-framework.html>

WASP Round	WASP R112	WASP R113	WASP R1114	WASP R115
Round conducted in the period	Jan-March 2011	April-June 2011	July – Sept 2011	Oct – Dec 2011
Gradko International	100%	100%	100%	37.5%

Appendix B: Nitrogen dioxide Diffusion Tube Results 2011

Site Ref.	NO ₂ Concentration (µg/m ³)													Annualised? (Y-value / N)	Corrected Annual Mean 2011 (Bias Factor 0.85)
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Average		
10N	35.3	27.2	29.3	20.1	18.2	-	15.9	19.3	20.7	24.6	25.6	26.1	24	N	21.2
10NA	30.8	23.0	27.9	17.4	17.9	18.1	19.3	18.1	18.3	25.6	24.9	22.4	22	N	18.7
2N	45.1	44.8	40.4	26.8	36.9	35.8	31.4	2.2	36.6	44.4	42.4	35.5	35	N	29.9
3N	27.6	26.0	30.8	20.8	21.6	21.8	23.3	18.4	20.8	30.3	34.2	22.7	25	N	21.1
5N	35.3	30.1	33.9	33.6	24.2	24.6	22.6	1.7	25.6	31.1	31.8	27.2	27	N	22.8
7N	30.1	19.6	-	20.7	-	14.7	16.3	14.5	15.8	21.4	23.7	17.6	19	N	16.5
AV/BF	40.0	29.3	31.9	21.5	18.1	19.6	21.2	20.2	21.0	27.8	30.4	27.3	26	N	21.8
BL1	37.2	34.4	42.9	36.2	35.4	34.5	20.9	31.0	36.2	-	52.0	36.7	36	N	30.7
DC1	35.5	30.6	26.9	33.5	23.9	21.6	23.1	22.3	24.2	35.4	34.6	30.5	29	N	24.2
E1	47.5	39.4	41.1	39.4	39.7	36.0	42.5	35.5	35.0	40.2	38.5	28.8	39	N	32.8
E2	47.4	41.9	41.3	32.8	41.9	38.2	37.9	39.8	36.2	40.5	42.0	26.9	39	N	33.1
E3	51.4	36.9	39.1	30.9	39.6	39.2	45.1	37.4	34.5	41.4	39.3	32.7	39	N	33.1
G10	42.7	42.3	37.8	26.1	36.3	37.4	33.5	36.0	36.0	42.6	41.8	40.0	38	N	32.0
G11	36.8	33.1	31.6	24.8	25.4	25.9	25.9	25.6	27.4	31.4	28.1	27.5	29	N	24.3
G12	39.5	37.0	40.4	29.3	33.1	35.9	31.7	36.7	36.0	42.5	37.5	40.7	37	N	31.2
G14	37.0	39.6	34.2	48.8	28.3	31.5	27.3	25.1	25.6	42.6	49.3	22.5	34	N	29.2
G1A	46.2	31.8	37.1	7.49*	8.88*	32.2	28.0	30.3	30.1	38.8	33.2	28.1	34	N	28.5
G2A	37.1	34.3	31.3	35.0	30.4	27.9	24.3	29.2	29.2	33.9	34.6	37.6	32	N	27.3
G3	0.65*	28.0	35.7	33.7	26.2	25.9	28.7	26.3	26.7	33.8	33.9	-	30	N	25.4
G4	36.5	31.9	32.9	24.9	24.5	27.8	26.9	26.3	27.0	31.2	32.2	28.2	29	N	24.8
G5	-	-	-	-	-	-	-	20.9	21.5	30.3	31.2	23.3	25	Y – 22.9	21.6

Site Ref.	NO ₂ Concentration (µg/m ³)													Annualised? (Y-value / N)	Corrected Annual Mean 2011 (Bias Factor 0.85)
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Average		
G5A	38.8	33.2	35.1	32.9	17.8	19.5	-	-	-	-	-	-	30	Y – 23.5	25.1
G6	42.8	12.7	41.9	39.3	29.5	31.2	31.7	28.8	32.0	47.2	44.8	28.6	34	N	29.1
G7	43.6	40.8	45.5	38.1	35.4	32.2	39.8	34.9	38.3	43.5	47.0	35.1	40	N	33.6
G8Z	-	31.8	35.0	20.6	32.7	29.9	29.6	31.5	30.4	37.1	34.9	34.4	32	N	26.9
G9	34.8	31.3	36.5	31.5	26.6	26.8	24.9	22.1	25.5	34.5	38.3	16.5	29	N	24.7
HR1	49.5	46.8	44.5	32.1	44.0	40.0	40.0	36.7	44.6	-	43.6	-	42	N	35.9
HR2	39.6	31.9	33.2	21.6	31.1	32.4	31.7	30.1	32.6	38.9	38.5	27.6	32	N	27.6
HR3A	33.7	28.0	33.1	20.6	23.2	23.7	23.9	22.4	24.9	32.6	38.5	23.5	27	N	23.2
HR4	39.8	30.1	35.6	26.7	26.6	25.4	27.6	22.8	24.6	40.9	40.4	27.3	31	N	26.0
LH1	33.0	29.8	34.3	27.6	21.9	22.8	24.1	22.1	23.6	30.6	31.0	20.8	27	N	22.8
LH3	39.1	32.2	39.1	25.2	28.2	31.3	0.7	39.1	29.7	37.4	33.1	-	30	N	25.9
P1B	29.6	27.3	28.1	27.6	19.7	20.7	16.2	18.4	22.2	27.3	27.1	20.7	24	N	20.2
P2	29.3	27.9	34.2	28.1	17.4	17.0	16.9	18.1	19.1	27.8	26.7	23.6	24	N	20.3
P4	32.0	33.9	34.7	34.5	25.5	24.9	26.0	24.0	26.7	40.5	26.6	30.4	30	N	25.5
P5	-	28.4	32.5	38.0	25.5	24.8	23.7	22.4	23.1	37.1	36.7	26.5	29	N	24.6
P6	32.5	24.4	34.6	33.8	20.7	20.3	20.8	3.9	19.5	28.4	32.1	26.0	25	N	21.0
P7A	30.6	20.5	6.1**	26.3	15.2	15.3	16.9	15.4	15.0	23.2	23.8	17.6	20	N	17.0
PS1	42.2	35.5	39.6	45.0	40.6	40.0	41.4	35.4	41.9	49.1	52.9	29.7	41	N	34.9
PS1A	52.1	35.3	46.6	53.5	41.0	39.2	38.7	8.1	36.6	48.3	48.3	29.9	40	N	33.8
PS1B	51.0	40.7	43.0	34.1	36.8	38.3	54.8	37.2	39.3	44.6	51.5	31.1	42	N	35.6
PS2	41.8	31.6	41.0	48.6	41.7	41.7	36.2	40.7	40.5	58.3	47.3	36.8	42	N	35.8
PS3	48.8	37.2	45.2	34.5	43.6	43.0	46.8	6.3	50.4	51.3	50.7	37.0	41	N	35.0
RM1	-	-	-	-	-	-	-	-	-	28.7	27.4	25.7	27	Y – 21.7	23.2
S1	35.9	32.5	43.2	37.6	25.4	28.9	31.6	25.8	24.0	30.2	37.1	20.9	31	N	26.4

Site Ref.	NO ₂ Concentration (µg/m ³)													Annualised? (Y-value / N)	Corrected Annual Mean 2011 (Bias Factor 0.85)
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Average		
S2	33.4	21.6	31.7	35.1	16.1	19.7	22.2	15.0	17.2	23.1	31.2	12.8	23	N	19.8
T1	35.9	28.4	32.9	30.8	19.2	21.5	25.3	19.5	19.2	24.8	29.2	20.7	26	N	21.8
T2	37.7	27.0	34.9	34.9	23.2	25.1	26.1	21.6	20.0	-	-	-	28	N	23.7

* Tube was located on the ground during the survey. These results have been discounted in the analysis

** Tube was located upside down during the survey. These results have been discounted in the analysis

Appendix C: Biomass Combustion Installation Calculations

Biomass burning can lead to an increase in PM₁₀ emissions, due to the process of combustion – aerosol formation from volatile materials distilled from the wood is also an issue. Compared to conventional gas burning, biomass burning can also result in an increase in the overall NO_x emissions due to the fuel derived portion that is not present in gas combustion.

Fareham Borough Council has identified one biomass burner within the Borough which has a maximum thermal capacity within the range of 50 kW to 20 MW. The calculation of the background adjusted emission rates in g/s of the burner is shown in Table C.1. The effective stack height is assumed to be equal to the actual (physical) stack height because of the following:

- The height of release is not greater than 3 m above the building on which it sits.
- The height of release is not less than 2.5 times the height of the tallest adjacent building.
- The height of the stack is not less than the surrounding buildings.

From the calculated background adjusted emission rates and from the stack height the nomograms shown in Figures C.1 and C.2 were used to assess whether a detailed assessment was required. Table C.2 shows the emission rate obtained from the nomogram for the appropriate stack diameter of this burner. As the calculated emission rates shown in Table C.1 are less than this, no Detailed Assessment is required for this burner.

Table C.1: Calculation of Background Adjusted Emission Rates

Height of Stack (m)	Height of Building upon which Stack is based (m)	Effective Stack Height (m)	Diameter of Stack (mm)	Maximum Height of Nearby Buildings (m)	Maximum Thermal Capacity (kW)	Emission Factor (g/GJ) ^b		Emission Rate (g/s)		Background Concentration ^a (µg/m ³)		Background Adjusted Emission Rates (g/s)	
						PM ₁₀	NO ₂	PM ₁₀	NO ₂	PM ₁₀	NO ₂	PM ₁₀	NO ₂
10	10	10	150	10	95	240	150	0.0228	0.01425	15.28705	16.36615	0.001364	0.000603

^a Background Concentrations obtained LAQM Tools available from Defra.

^b Emission Factors obtained from - Abbott J, "Technical Guidance: Screening Assessment for Biomass Burners". AEA Report Reference AEA/ED28673005/r 1, prepared for Defra and the Devolved Administrations, July 2008

Table C.2: Emission Rates limits

Pollutant	Emission Rate Limit ^a
PM ₁₀	0.003
NO ₂	0.0125

^a Values obtained from nomograms

Figure C.1: Particulate Matter emissions to give a 90th percentile of 24-hour mean ground-level PM₁₀ concentrations of 1 µg/m₃

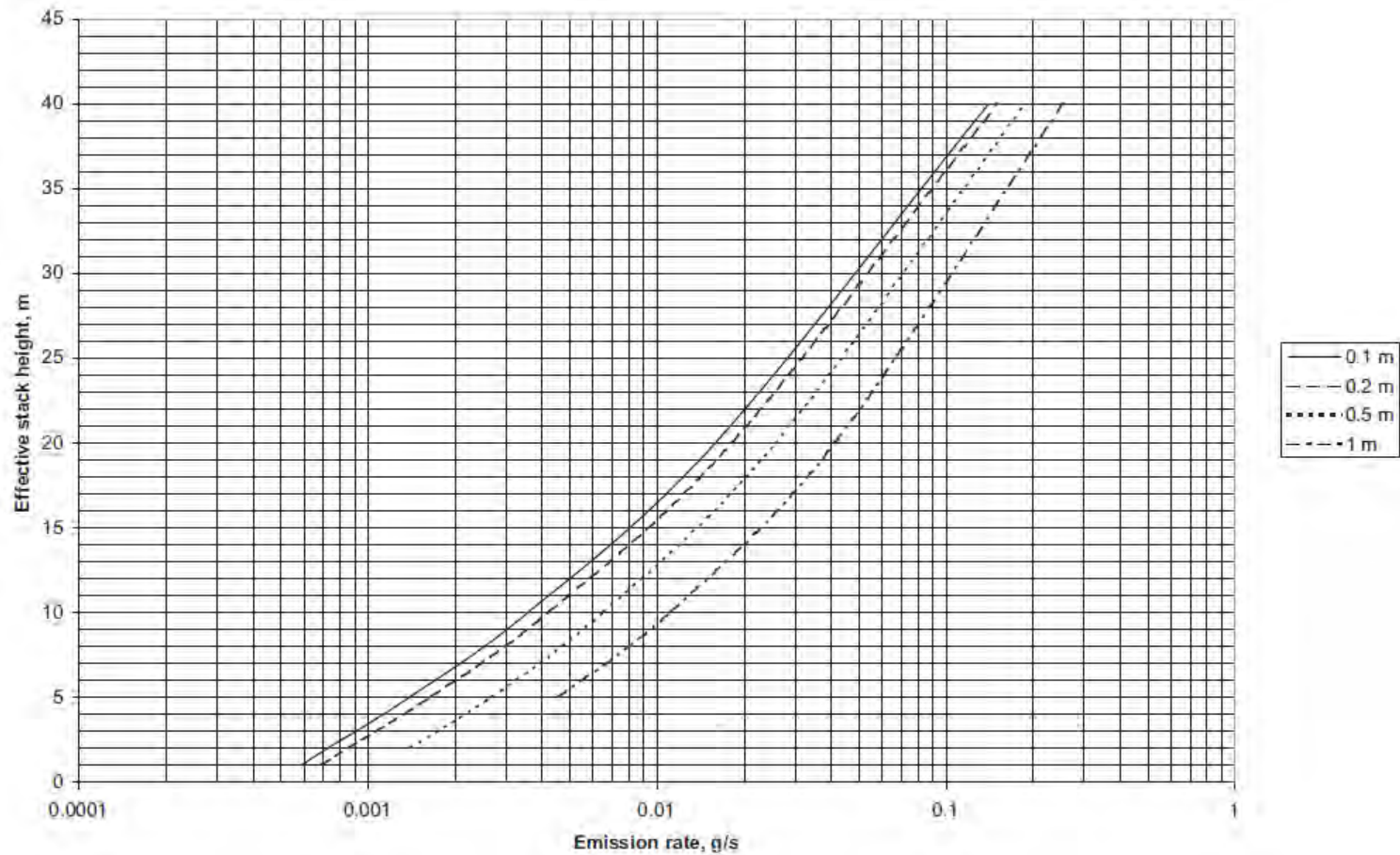
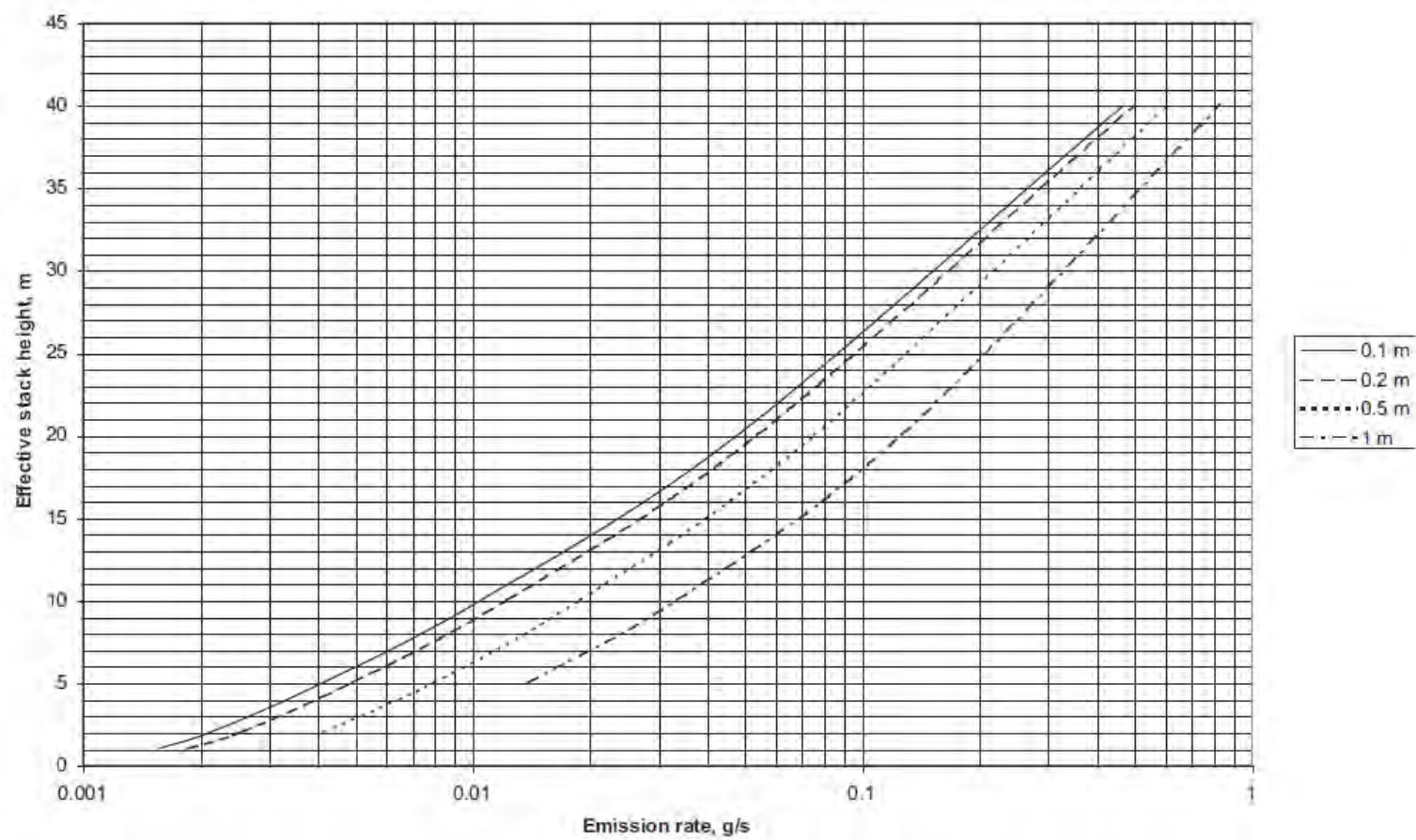


Figure C.2: Nitrogen Dioxide emissions to give an annual mean ground-level nitrogen dioxide concentration of $1 \mu\text{g}/\text{m}^3$



Appendix D: Traffic Data

Site No: 00270061

A27 Locks Heath

Vehicle Count Summary

Time	Oct-09	Oct-10	Oct-11	Percentage Change Oct-09 to Oct-11
	7-Day	7-Day	7-Day	
Begin	Av	Av	Av	
00:00	40	50	51	27.5%
01:00	31	32	33	6.5%
02:00	26	26	31	19.2%
03:00	32	25	31	-3.1%
04:00	94	71	84	-10.6%
05:00	352	253	247	-29.8%
06:00	1038	842	861	-17.1%
07:00	1255	1079	1229	-2.1%
08:00	1277	1182	1230	-3.7%
09:00	1046	1100	1143	9.3%
10:00	1010	988	983	-2.7%
11:00	1000	994	1014	1.4%
12:00	995	1002	1043	4.8%
13:00	1013	1014	1031	1.8%
14:00	935	951	1014	8.5%
15:00	1003	986	1018	1.5%
16:00	969	1027	1071	10.5%
17:00	794	857	847	6.7%
18:00	724	751	748	3.3%
19:00	522	572	569	9.0%
20:00	326	351	336	3.1%
21:00	254	257	266	4.7%
22:00	160	189	183	14.4%
23:00	100	105	111	11.0%
			Average	3.1%

Appendix E: List of Industrial Processes

Type	Licence Reference	Status	Trading Name	Permitted Process	New Source Since USA 2009	Existing Process with New Exposure	Substantial Changes > 30%?	Complaints?	Detailed Assessment Required?
A1	1603	Granted	Future Fuels Distribution Ltd	Fareham Biodiesel Plant	No	No	No	No	No
A1	2201	Granted	Raymond Brown Eco Bio Limited	Rookery Farm Landfill Site	No	No	No	No	No
B	1526	Revoked	Maidment Coach Finishers Ltd	Respray Road Vehicle	No	No	No	No	No
B	1511	Surrendered	Eaton Aerospace Ltd	Surface Cleaning (Sed Activity)	No	No	No	No	No
B	1513	Mothballed	Gea Searle Ltd	Coating Application To Metal Refrigeration Coils Declaration Of Reduced Operation Accepted	No	No	No	No	No
B	1638	Surrendered	Charity Farm	Air Curtain Burner	No	No	No	No	No
B	2313	Granted	Hoare Construction Group Ltd	Env Permit To Operate Mobile Plant (Pegson Mobile Xr400 Concrete Crusher)	Y	No	-	No	No
B	1509	Surrendered	Speciality Flexibles Ltd	Printing Flex Packaging	No	No	No	No	No
B	1518	Granted	Esso Service Station	Petrol Vapour Recovery Stage 2 Unloading Of Petrol	No	No	No	No	No
B	1984	Surrendered	Harfields Trucks Ltd	Mobile Concrete Crusher	No	No	No	No	No
B	1616	Granted	Charity Farm	Mobile Concrete Crusher	No	No	No	No	No
B	1599	Granted	Pressing Needs Ltd	Dry Cleaners	No	No	No	No	No
B	1551	Granted	South Coast	Dry Cleaning Process	No	No	No	No	No

Type	Licence Reference	Status	Trading Name	Permitted Process	New Source Since USA 2009	Existing Process with New Exposure	Substantial Changes > 30%?	Complaints?	Detailed Assessment Required?
			Cleaners						
B	1547	Granted	Portchester Dry Cleaning Centre	Dry Cleaning Process	No	No	No	No	No
B	1550	Granted	Solent Cleaners Ltd	Dry Cleaning Process	No	No	No	No	No
B	1546	Surrendered	Johnson Cleaners UK Ltd.	Dry Cleaning Process	No	No	No	No	No
B	1548	Surrendered	Pressing Needs	Dry Cleaning Process	No	No	No	No	No
B	1549	Granted	Solent Cleaners Ltd	Dry Cleaning Process	No	No	No	No	No
B	1598	Granted	Hendy Body	Vehicle Refinishers	No	No	No	No	No
B	1512	Surrendered	Hendy Ford	-	No	No	No	No	No
B	1510	Granted	BP Rolls (Fareham) Ltd	Respray Road Vehicle	No	No	No	No	No
B	1506	Granted	Solent Body Builders & Repairs Ltd.	Original Coating of Road Vehicles	No	No	No	No	No
B	1505	Granted	Mechelec Fareham Ltd	Respray Road Vehicle	No	No	No	No	No
B	1519	Granted	Park Gate Service Station	Unloading of petrol	No	No	No	No	No
B	1517	Granted	Asda Stores Ltd	Unloading Of Petrol	No	No	No	No	No
B	1516	Granted	Shell UK Oil-City Petroleum	Unloading Of Petrol	No	No	No	No	No
B	1520	Granted	Co-Op Group	Unloading of petrol	No	No	No	No	No
B	1515	Granted	Locksheath Service Station	Unloading Of Petrol	No	No	No	No	No
B	1523	Granted	Shell Garage	Unloading Of Petrol	No	No	No	No	No
B	1514	Granted	Co-Op Pioneer Petrol Station	Unloading of petrol	No	No	No	No	No
B	1595	Granted	Crest Dry Cleaning	Dry Cleaners	No	No	No	No	No

Type	Licence Reference	Status	Trading Name	Permitted Process	New Source Since USA 2009	Existing Process with New Exposure	Substantial Changes > 30%?	Complaints?	Detailed Assessment Required?
B	1522	Granted	BP/Safeway	Unloading of petrol	No	No	No	No	No
B	1521	Granted	Sainsbury Supermarkets Ltd	Unloading of petrol	No	No	No	No	No
B	1507	Granted	Smr Automotive Mirrors UK Ltd	Coating metal and plastic	No	No	No	No	No
B	1527	Granted	Seward Prestige Accident Repair Centre	Respray Road Vehicle	No	No	No	No	No
B	1525	Granted	Polycast Ltd	Non Ferrous Metal Foundry	No	No	No	No	No
B	1504	Granted	Swinburne Bodywork Serv & Sale	The Operation of a Waste Oil Burner - Net Thermal Input of Less Than 0.4MW	No	No	No	No	No
B	1524	Granted	Crematorium Joint Committee	The Cremation of Human Remains	No	No	No	No	No