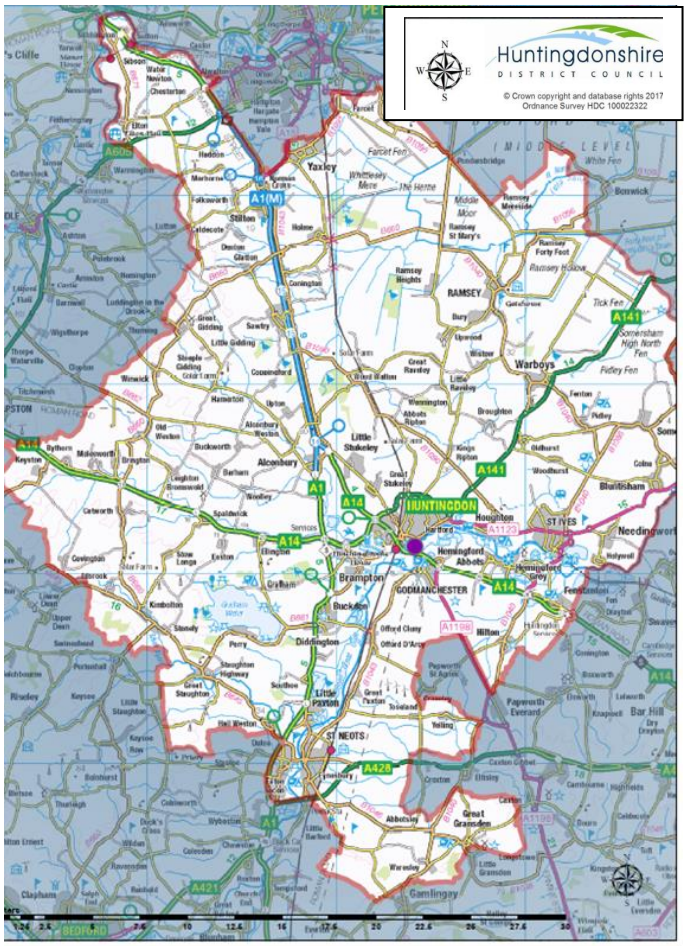
Air Quality Annual Status Report (ASR) for the year 2016

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

December 2017



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Executive Summary: Air Quality in Our Area

The Environment Act 1995 places a duty on Local Authorities to monitor, assess and take action to improve local air quality under the statutory process of Local Air Quality Management (LAQM). The LAQM system now places greater emphasis on action planning to improve air quality and includes local measures as part of EU reporting requirements, as well as requiring the completion of an air quality Annual Status Report (ASR). This report forms Huntingdonshire District Councils 2017 ASR and is a review of air quality in the district for the year 2016.

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 billion[3].

This ASR relates to data gathered between 1st January and 31st December 2016.

Air Quality in Huntingdonshire

Nitrogen Dioxide (NO_2) is the only pollutant that currently exceeds the objective level within the district. The main source of NO_2 in Huntingdonshire is from vehicle emissions and this is predominately caused by the A14 and to a lesser extent the A1 that runs straight through the district. However, local traffic within the market towns is also causing some elevated levels.

Huntingdonshire currently has four Air Quality Management Areas (AQMA's).

1. Huntingdon,
2. St Neots,
3. Brampton, and
4. A14 Hemingford to Fenstanton.

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

As a whole, the level of NO_2 has fallen in the last five years and is mostly below the annual limit. However, Huntingdonshire is still experiencing a small hotspot which is showing readings above the annual limit and this is mostly linked with the A14.

Actions to Improve Air Quality

The re-routing of the A14 is currently progressing and this will move the road away from large residential areas. Predictions indicate that all areas currently in an AQMA will see their NO_2 and PM_{10} levels significantly reduce once the scheme has been built. While some areas of the district will increase slightly, predictions have shown that these will all remain below EU limit values. Huntingdonshire District Council took a leading role in securing a satisfactory result for our residents.

Due to consistent compliance of the diffusion tubes within the St Neots AQMA, Huntingdonshire District Council is considering revoking the AQMA. A detailed modelling assessment of NO_2 concentrations has been undertaken and will be submitted to DEFRA in support of the proposal.

Huntingdonshire District Council has been advised that Highways England are now starting to investigate the improvement of the A428 which runs south of St Neots and directly affects traffic flows within St Neots. Huntingdonshire District Council will continue to liaise with Highways England on assessing the impact of the scheme on St Neots.

Conclusions and Priorities

The re-routed A14 will significantly decrease the pollution levels currently experienced by many residents. Huntingdonshire District Council will continue to liaise with Highways England regarding the progress of this scheme, as well as the proposed upgrade of the A428, to minimise any impact on air quality.

Huntingdonshire is currently a growth area and our main challenge is to ensure that this growth does not cause any exceedances of AQ objectives.

Local Engagement and How to get Involved

You can help to improve your local air quality by reducing the number of car journeys undertaken, car sharing, using public transport, walking or cycling wherever possible, switching off car engines when stationary, purchasing energy efficient goods, making

your home more energy efficient and choosing to purchase a low emission car. There is further information on our website under ‘Sustainability and greener living’ http://www.huntingdonshire.gov.uk/. The energy savings trust can also provide further advice at http://www.energysavingtrust.org.uk/.

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1 Local Air Quality Management

This report provides an overview of air quality in Huntingdonshire District Council during 2016. 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 Huntingdonshire District Council 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 Table E. in Appendix E.

2 Actions to Improve Air Quality

2.1 Air Quality Management Areas

AQMAs 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 AQMAs declared by Huntingdonshire District Council can be found in Table 2.1. Further information related to declared or revoked AQMAs, including maps of AQMA boundaries are available online at http://www.huntingdonshire.gov.uk/environmental-issues/noise-nuisance-pollution/air-quality/ . Alternatively maps indicating all monitoring locations relative to these AQMA's are also available in Appendix D.

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 (Inc. date of publication)
						At Declaration	Now	
AQMA Area 1: Huntingdon	16th November 2005 - amended 29th October 2007	NO_2 annual mean	Huntingdon	An area encompassing approximately 2831 domestic properties affected by the A14, A141, B1044, B1514 and Huntingdon Inner Ring Road.	Yes		46ug/m^3 at Pathfinder House (PFH 2)	Cambridgeshire Joint Air Quality Action Plan
AQMA Area 2: St Neots	16th November 2005 - amended 29th October 2007	NO_2 annual mean	St Neots	An area encompassing approximately 115 domestic properties affected by local traffic in the town centre.	No		31ug/m^3 at 8-10 High Street (St Neots 5)	Cambridgeshire Joint Air Quality Action Plan
AQMA Area 3: Brampton	1st September 2006 - amended 29th October 2007	NO_2 annual mean	Brampton	An area encompassing approximately 82 domestic properties affected by the A14.	Yes		27ug/m^3 at 1 Laws Crescent (Brampton 3)	Cambridgeshire Joint Air Quality Action Plan
AQMA Area 4: Hemingford to Fenstanton	1st September 2006	NO_2 annual mean	Fenstanton	An area encompassing approximately 62 domestic properties affected by the A14.	Yes		31ug/m^3 at Hilton Road (Fenstanton 1)	Cambridgeshire Joint Air Quality Action Plan

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

2.2 Progress and Impact of Measures to address Air Quality in Huntingdonshire District Council

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

DEFRA conclusions	Huntingdonshire District Council comments
The ASR report highlights that the proposed re-routing of the A14 is expected to make a significant impact to relieve the Huntingdonshire AQMA's in near proximity to the route of the current A14. We recognise the potential significance of this measure when completed. The joint action plan with neighbouring authorities is also recognised as an example of best practice.	Noted and we are still in discussions regarding a new joint action plan with the rest of Cambridgeshire.
Current monitoring also suggests there is only a single exceedance point within a current AQMA (Huntingdon 2), whilst three other measurements (PFH1,2,3) appear to be outside of the declared Hemingford to Fenstanton AQMA boundary, contrary to the details within Table A2. The measurements also do not represent relevant exposure, and have not been corrected.	The original monitoring locations submitted were incorrect. This has been rectified. PFH 1, 2 & 3 are located within the Huntingdon AQMA and can be seen on the associated map in Appendix D.
Please can the Council verify the positions of these monitoring locations (PHF1,2,3) in relation to the declared AQMA boundary, and provide corrected results for distance.	The original monitoring locations submitted were incorrect so this has been rectified.
Presentation of monitoring results within reports presented to Defra for comparison to objectives requires the application of all relevant correction factors. There is no evidence that the Council has applied	Distance corrections have been applied where necessary in line with good practice.

distance corrections in this report or other recent reports, where monitoring sites are not representative of relevant exposure. Please refer to the procedures for applying this correction to future monitoring results, as described in the latest version of the LAQM Technical Guidance TG(16). Failure to apply the appropriate distance correction factors can lead to a significant over prediction of final concentrations.	
All monitoring sites should be clearly labelled and indexed in relation to location of AQMAs. It is most helpful if maps of monitoring sites are presented within maps showing AQMA boundaries. It is not completely clear if there are still further monitoring locations with exceedances outside of current AQMAs.	These have been included.
The results presented within the ASR suggest that AQMA's 1,2 and 3 may be considered for revocation, whilst the boundary and status of AQMA4 should be reviewed further to the comments above.	Huntingdonshire District Council is currently undertaking modelling of AQMA 2. At present AQMA's 1, 3 & 4 will be reassessed once the A14 has been upgraded unless further resources are provided to allow modelling of AQMA 3 and 4. It is not currently considered a valid use of resources to model AQMA 1 until the A14 has been relocated.
In light of these comments, the Council may wish to consider reviewing the current monitoring strategy, alongside the decisions on revocation, to ensure all locations of relevant exposure have been duly considered.	Huntingdonshire District Council has changed some monitoring locations for future year's assessment.

Huntingdonshire District Council has taken forward a number of direct measures during the current reporting year of 2016 in pursuit of improving local air quality. Details of all measures completed, in progress or planned are set out in Table 2.2.

Key completed measures are:

Measurement 1: The A14 upgrade is currently being constructed with an estimated completion date of 2020.

Measurement 2: Implementation of air quality policies in local plan is currently on going.

Measurement 3: Development of an effective freight partnership. Now that the A14 will be moved away from the residential areas it is not expected that freight will cause a significant issue within Huntingdonshire.

Measurement 4: Inclusion of Huntingdonshire in the Quality Bus Partnership. Cambridgeshire County Council has so far not extended the QBP to outside Cambridge.

Measurement 5: The guided bus route is complete and operational.

Measurement 6: Smart traffic lights at St Neots have been installed and are operational.

Huntingdonshire District Council expects the following measures to be completed over the course of the next reporting year:

It is hoped the Local Plan will steer development towards installing electric car charging points in all new buildings and car parks in order to encourage the use of electrically powered vehicles, in line with National Planning Policy.

A main priority for 2017 for Huntingdonshire District Council was to fill the vacant (Since August 2017) post of Environmental Protection Officer (Air Quality) and repair or replace the faulty automatic monitoring equipment. The new officer took up the post in November and is currently in discussions regarding all of the AQ monitoring equipment.

Huntingdonshire District Council anticipates that the measures stated above and in Table 2.2 will achieve compliance in AQMA 1 Huntingdon, AQMA 2 St Neots and AQMA 4 Hemingford to Fenstanton.

Whilst the measures stated above and in Table 2.2 will help to contribute towards the continued compliance of AQMA 3 Brampton, Huntingdonshire District Council anticipates that further additional measures not yet prescribed may be required in subsequent years, such as a realignment of the A1 duel carriageway and by-passing the village of Brampton, to maintain compliance and enable the revocation of AQMA 3 in Brampton.

Table 2.2 – Progress on Measures to Improve Air Quality

Measure No.	Measure	EU Category	EU Classification	Lead Authority	Planning Phase	Implementation Phase	Key Performance Indicator	Target Pollution Reduction in the AQMA	Progress to Date	Estimated Completion Date	Comments
1	Re-routing of A14 away from settlements	Traffic Management	Strategic highway improvements	Highways England	Current	End of 2016	Monitoring should indicate a reduction	AQMA's 1, 3 & 4	Scheme has been approved	2020	Expected to improve all A14 AQMA's.
2	Implementation of air quality policies in the local plan.	Policy Guidance and Development Control	Air Quality Planning and Policy Guidance	Huntingdonshire District Council	Ongoing	Ongoing	N/A	All	Discussions have occurred with the LPA	On completion of Local Plan	Ongoing
3	Development of an effective freight partnership	Freight and Delivery Management	Other	Unknown	Unknown	Unknown	N/A	All	Unknown	Unknown	Now the A14 improvement has been agreed and Highways England have opened communication on improving the A428 it is unknown if an effective fright partnership would have any significant effect. This will be re-evaluated once changes have been monitored.
4	Inclusion of Huntingdonshire in the Quality Bus Partnership	Alternatives to private vehicle use	Other	Cambridgeshire County Council	Ongoing	Unknown	N/A	All	None	None	At present CCC do not consider that it is feasible to run the QBP outside of the city of Cambridge. This is something we will continue to consider.

Measure No.	Measure	EU Category	EU Classification	Lead Authority	Planning Phase	Implementation Phase	Key Performance Indicator	Target Pollution Reduction in the AQMA	Progress to Date	Estimated Completion Date	Comments
5	Completion and opening of Cambridgeshire Guided Busway	Transport Planning and Infrastructure	Bus route improvements	Cambridgeshire County Council	Completed	Completed	Unknown	All	Completed	Completed	The guided busway was opened in August 2011 from Cambridge Huntingdon and extended to Peterborough in July 2012.
6	Change to traffic-light system in St Neots High street as specified in the St Neots Markets Town Strategy	Traffic Management	Strategic highway improvements	Cambridgeshire County Council	Completed	Completed	AQ monitoring indicates a reduction	2	Completed 2013	Completed 2013	Modelling now completed to demonstrate AQ limits are being met and HDC to apply to revoke the AQMA

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.

Huntingdonshire District Council is taking the following measures to address $PM_{2.5}$.

- We expect that the upgrade to the A14 which moves the trunk road away from the major residential areas will reduce $PM_{2.5}$ significantly.
- In 2014 Huntingdonshire District Council joined with Public Health England and the other Cambridgeshire authorities to develop the transport and health joint strategic needs survey which focused on $PM_{2.5}$ from transport, see http://www.cambridgeshireinsight.org.uk/file/2552/download
- Huntingdonshire District Council is intending to review and update the Council's Air Quality Action Plan.
- Liaising with the Local Planning Authority and developers requesting pre-app advice, to ensure air quality mitigation measures are considered for large developments to minimise any impact.
- Advising planning conditions to require a Construction Environmental Management Plan when necessary, in order to control dust.
- HDC have a $PM_{2.5}$ monitor and a priority for the new officer is to ensure this is operating and maintained correctly.

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

3.1 Summary of Monitoring Undertaken

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

Overall the NO_2 results continue to indicate a mostly decreasing trend for both inside and outside the AQMAs; however many of the 2016 results appear to be slightly higher than 2015. This is not just linked to roadside locations but also rural and suburban backgrounds demonstrating the results are slightly variable. The same is true of PM_{10}, whilst $PM_{2.5}$ results show a slight fall in 2016 compared to 2015.

Huntingdonshire District Council is preparing to submit information to Defra in order to revoke the St Neots AQMA. The air quality monitoring results over the past few years within the other AQMA's have also indicated a reduction in NO_2, with the AQ objective being met and therefore further consideration will be given to these in order to determine if there is sufficient evidence for their revocation.

3.1.1 Automatic Monitoring Sites

Huntingdonshire District Council undertook automatic (continuous) monitoring at one site during 2016. Table A.1 in Appendix A shows the details of the site.

National monitoring results are available at https://uk-air.defra.gov.uk/interactive-map. Maps showing the location of the monitoring site are provided in Appendix D. Further details on how the monitors are calibrated and how the data has been adjusted are included in Appendix C.

There is some concern regarding the operation of the NO_2 monitor and the accuracy of the results, increasing uncertainty. The new Environmental Protection Officer will be investigating this, and a further update will be provided within the 2017 ASR.

3.1.2 Non-Automatic Monitoring Sites

Huntingdonshire District Council undertook non- automatic (passive) monitoring of NO_2 at 44 sites during 2016. 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) and bias adjustment for the diffusion tubes 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 (NO_2)

Table A.3 in Appendix A compares the ratified and adjusted monitored NO_2 annual mean concentrations for the past 5 years with the air quality objective of 40µg/m^3.

For diffusion tubes, the full 2016 dataset of monthly mean values is provided in Appendix B.

Table A.4 in Appendix A compares the ratified continuous monitored NO_2 hourly mean concentrations for the past 5 years with the air quality objective of 200µg/m^3, not to be exceeded more than 18 times per year.

Both the automatic monitor and diffusion tube network achieved greater than 75% data capture and therefore no annualisation was required.

Table A3 regarding the annual mean NO_2 monitoring results, indicates that three diffusion tubes exceeded the AQ objective and a further one was within 10% of it. The three that exceeded (PFH 1 (45.1 µg/m^3), PFH 2 (46.1 µg/m^3), and PFH 3 (44.8 µg/m^3)) are all located at Pathfinderhouse in Huntingdon, co-located on the continious AQ monitor, which indicated a level of 39.4 µg/m^3. As discussed earlier the continous monitor requires further investigation to check its operation. The diffusion tube within 10% of the AQ objective was located in Goerge Street, Huntingdon (Huntingdon 3) and had a result of 39.9 µg/m^3. This location is at the nearest receptor so no distance calculation was required. The Pathfinder House location is not representative of the nearest receptor and therefore a distance calculation was undertaken utilising the Defra calculator, the results of which are

shown in table B1. The calculations and additional information regarding this can be found in Appendix C.

There were no annual means greater than 60 µg/m^3, indicating that an exceedance of the 1-hour mean objective was unlikely. The 3 diffusion tube exceedances were at a location point within an existing AQMA and these can be seen in Appendix D.

3.2.2 Particulate Matter (PM_{10})

Table A.5 in Appendix A compares the ratified and adjusted monitored PM_{10} annual mean concentrations for the past 5 years with the air quality objective of 40µg/m^3. Figure A.2 demonstrates this in graph format.

Table A.6 and Figure A.3 in Appendix A compare the ratified continuous monitored PM_{10} daily mean concentrations for the past 5 years with the air quality objective of 50µg/m^3, not to be exceeded more than 35 times per year.

The results indicate that these AQ objectives have been met at the monitoring location.

3.2.3 Particulate Matter ($PM_{2.5}$)

Table A.7 in Appendix A presents the ratified and adjusted monitored $PM_{2.5}$ annual mean concentrations for the past 5 years. Huntingdonshire District Council has been monitoring $PM_{2.5}$ since 2014 and each year there has been a slight reduction in the levels measured. This is demonstrated in Figure A.4.

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)
PFH	Huntingdon	Roadside	524102	271540	NO_2	YES	Chemiluminescent	3	7	2.5
					PM_{10}		Beta Attenuation			
					$PM_{2.5}$		Beta Attenuation			

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)
St Neots 1	The Paddocks	Kerbside	517869	260132	NO_2	No	22	22	No	3
St Neots 3	71 Avenue Road	Urban Background	518925	260503	NO_2	No	4	1	No	3
St Neots 4	20 Harland Road	Urban Background	518489	260871	NO_2	No	3	1	No	3
St Neots 5	8-10 High Street (Post Office)	Kerbside	518323	260263	NO_2	Yes	0	1	No	3
St Neots 6	35 High Street (Traffic lights)	Kerbside	518433	260321	NO_2	Yes	0	1	No	3
St Neots 7	17 Arundel Crescent	Suburban	518424	258556	NO_2	No	0	17	No	1.75
St Neots 9	5 Duchess Close	Suburban	516370	259514	NO_2	No	3	5 (24m to trunk road)	No	3
Southoe 1	2 Lees Lane	Roadside	518714	264308	NO_2	No	24	2 (14m to trunk road)	No	1.75
Buckden 1	6 Perry Road	Roadside	518981	267370	NO_2	No	0	12 (10m to trunk road)	No	1.75
Buckden 2	4 High Street (Roundabout)	Roadside	519082	267433	NO_2	No	0	1 (35m to trunk road)	No	1.75
Buckden 3	34 High Street (shop)	Roadside	519161	267624	NO_2	No	0	1	No	2
Buckden 4	11 Taylors Lane	Roadside	519197	267955	NO_2	No	3	1	No	3
Brampton 1	RAF Brampton (Sparrow Close)	Roadside	518981	267370	NO_2	No	10	0.5	No	3

Brampton 2	RAF Brampton - Stokemans Way	Roadside	519082	267433	NO_2	No	10	1.5	No	3
Brampton 3	1 Laws Crescent	Roadside	519161	267624	NO_2	Yes	32	2	No	3
Brampton 4	25 Dorling Way	Roadside	519197	267955	NO_2	No	6	1.5	No	3
Brampton 5	7 Hansell Road	Roadside	518981	267370	NO_2	No	18	0.5	No	3
Brampton 7	52 Elizabethan Way	Suburban	519874	270948	NO_2	No	7	1.5	No	3
A1	Grafham Road Cottages	Suburban	519756	269900	NO_2	No	23	0.5 (40m to trunk road)	No	1.5
Catworth 1	1 Thrapston Road	Rural	508409	274876	NO_2	No	42	42 (42m to trunk road)	No	3
PFH 1	Pathfinder House	Roadside	524102	271540	NO_2	Yes	8	6	Yes	3.6
PFH 2	Pathfinder House	Roadside	524102	271540	NO_2	Yes	8	6	Yes	3.6
PFH 3	Pathfinder House	Roadside	524102	271540	NO_2	Yes	8	6	Yes	3.6
Huntingdon 1	23 Lodge Close	Suburban	523177	271627	NO_2	No	3	2	No	3
Huntingdon 2	19 Nursery Road	Kerbside	524198	271949	NO_2	Yes	0	1	No	1.75
Huntingdon 3	6 George Street	Kerbside	523661	271802	NO_2	Yes	0	1	No	3
Huntingdon 4	1 St Peters Road	Kerbside	523435	272464	NO_2	Yes	3	1	No	3
Huntingdon 5	18 Blethan Drive	Roadside	522293	272909	NO_2	Yes	3	2	No	3
Huntingdon 6	40 Hartford Road	Roadside	524274	271939	NO_2	Yes	4	2	No	3

Huntingdon 7	6 Brampton Road	Roadside	523432	271760	NO_2	Yes	10	2	No	3
Godmanchester 1	25 Cambridge Villas	Roadside	525319	270571	NO_2	No	3	12 (34m to trunk road)	No	3
Wood Green Animal Shelter	Goat enclosure	Rural	526250	268264	NO_2	No	0	235	No	3
Fenstanton 1	Hilton Road	Roadside	531427	268397	NO_2	Yes	20	2 (20m to trunk road)	No	3
Fenstanton 2	20 Conington Road	Roadside	531770	268215	NO_2	Yes	14	2 (23m to trunk road)	No	3
Fenstanton 3	1 Pear Tree Close	Rural	531063	268063	NO_2	No	6	1.5	No	3
St Ives 1	2 The Pound	Urban Background	531206	272334	NO_2	No	5	1	No	3
St Ives 2	59 Greenfields	Suburban	530850	270286	NO_2	No	6	1.5	No	3
Ramsey 1	5 Blenheim Road	Urban Background	528433	284936	NO_2	No	4	2	No	3
Hilton	The Paddocks	Suburban	528961	266718	NO_2	No	2.5	3	No	3
Stibbington 1	7 Great North Road	Roadside	508326	298684	NO_2	No	22	2 (8m to trunk road)	No	3
Offords	233 High Street	Suburban	522086	267508	NO_2	No	1.5	1.5	No	3
Sawtry 1	81 Fen Lane	Suburban	517440	283443	NO_2	No	4	2	No	3
Alconbury 1	54 Manor Lane	Roadside	518954	276010	NO_2	No	6	2	No	3
Alconbury 2	Lords Ways	Suburban	518955	275520	NO_2	No	10	1	No	3

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 NO_2 Monitoring Results

Site ID	Site Type	Monitoring Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2016 (%) (2)	NO_2 Annual Mean Concentration (µg/m^3) (3)				
					2012	2013	2014	2015	2016
PFH	Roadside	Automatic		98%	**55.5**	**45**	38.9	32.2	39.4
St Neots 1	Kerbside	Diffusion tube	100	100	22.8	20.6	19.6	20.5	22.1
St Neots 3	Urban Background	Diffusion tube	100	100	18.5	18.7	19.0	16.6	18.3
St Neots 4	Urban Background	Diffusion tube	100	100	15.8	15.4	15.3	14.3	16.8
St Neots 5	Kerbside	Diffusion tube	100	92	35.9	36.8	36.0	31.7	31.3
St Neots 6	Kerbside	Diffusion tube	100	92	35.5	31.0	31.6	28.7	29.6
St Neots 7	Suburban	Diffusion tube	100	100	22.3	21.4	20.3	19.9	20.5
St Neots 9	Suburban	Diffusion tube	100	100	27.9	24.5	23.5	24.5	28.4
Southoe 1	Roadside	Diffusion tube	100	100	18.5	20.3	19.2	17.4	18.6
Buckden 1	Roadside	Diffusion tube	100	100	23.7	27.6	26.8	21.2	24.9
Buckden 2	Roadside	Diffusion tube	100	100	23.3	23.8	25.3	25.6	25.8
Buckden 3	Roadside	Diffusion tube	100	100	31.3	32.2	32.2	28.9	29.6
Buckden 4	Roadside	Diffusion tube	100	100	20.0	19.5	19.5	19.4	22.3

Brampton 1	Roadside	Diffusion tube	100	100	14.3	17.1	14.1	14.4	15.4
Brampton 2	Roadside	Diffusion tube	100	100	N/A	N/A	N/A	16.8	16.3
Brampton 3	Roadside	Diffusion tube	100	100	26.9	29.4	25.6	22.7	27
Brampton 4	Roadside	Diffusion tube	100	100	N/A	N/A	N/A	18.8	19.8
Brampton 5	Roadside	Diffusion tube	100	92	16.3	18.4	16.9	15.9	17.5
Brampton 7	Suburban	Diffusion tube	100	100	N/A	N/A	N/A	17.0	17.5
A1	Suburban	Diffusion tube	100	100	17	19.2	18.0	15.7	18.4
Catworth 1	Rural	Diffusion tube	100	100	22.6	21.4	21.7	21.6	18.9
PFH 1	Roadside	Diffusion tube	100	100	**49.3**	**47.5**	**49.5**	**44.2**	**45.1**
PFH 2	Roadside	Diffusion tube	100	100	**49**	**48.8**	**52.0**	**44.7**	**46.1**
PFH 3	Roadside	Diffusion tube	100	100	**48.5**	**50.2**	**52.8**	**46.6**	**44.8**
Huntingdon 1	Suburban	Diffusion tube	100	100	20.2	21.3	18.5	17.1	19.3
Huntingdon 2	Kerbside	Diffusion tube	100	100	24.4	23.0	22.7	21.0	22.2
Huntingdon 3	Kerbside	Diffusion tube	100	100	**44.5**	**42.9**	**41.1**	**40.7**	39.9
Huntingdon 4	Kerbside	Diffusion tube	100	100	27.9	27.9	28.9	29.9	28.7
Huntingdon 5	Roadside	Diffusion tube	100	83	29.1	29.9	27.0	27.6	26.9
Huntingdon 6	Roadside	Diffusion tube	100	100	26.4	24.6	25.2	23.7	25.2

Huntingdon 7	Roadside	Diffusion tube	100	100	N/A	N/A	N/A	36.4	34.6
Godmanchester 1	Roadside	Diffusion tube	100	92	24.3	27.9	23.8	22.7	24.8
Wood Green Animal Shelter	Rural	Diffusion tube	100	100	N/A	N/A	N/A	12.4	13.7
Fenstanton 1	Roadside	Diffusion tube	100	100	35.5	29.5	32.8	31.5	31.2
Fenstanton 2	Roadside	Diffusion tube	100	100	24.5	22.0	22.5	19.9	20
Fenstanton 3	Rural	Diffusion tube	100	100	N/A	N/A	N/A	13.7	13.8
St Ives 1	Urban Background	Diffusion tube	100	92	18.9	17.8	18.7	17.6	18.6
St Ives 2	Suburban	Diffusion tube	100	100	N/A	N/A	N/A	21.3	22.9
Ramsey 1	Urban Background	Diffusion tube	100	100	17.2	17.2	18.0	17.8	19.7
Hilton	Suburban	Diffusion tube	100	92	N/A	N/A	N/A	13.9	13.4
Stibbington 1	Roadside	Diffusion tube	100	100	27.8	26.2	26.5	29.6	28.6
Offords	Suburban	Diffusion tube	100	92	N/A	N/A	N/A	20.3	18.8
Sawtry 1	Suburban	Diffusion tube	100	100	19.7	20.3	21.8	20.9	22.3
Alconbury 1	Roadside	Diffusion tube	100	100	21	24.3	21.4	19.9	21.8
Alconbury 2	Suburban	Diffusion tube	100	100	N/A	N/A	N/A	17.7	15.9

☒ **Diffusion tube data has been bias corrected**

☐ **Annualisation has been conducted where data capture is <75%**

☐ **If applicable, all data has been distance corrected for relevant exposure – See table B1.**

Notes:

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

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

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

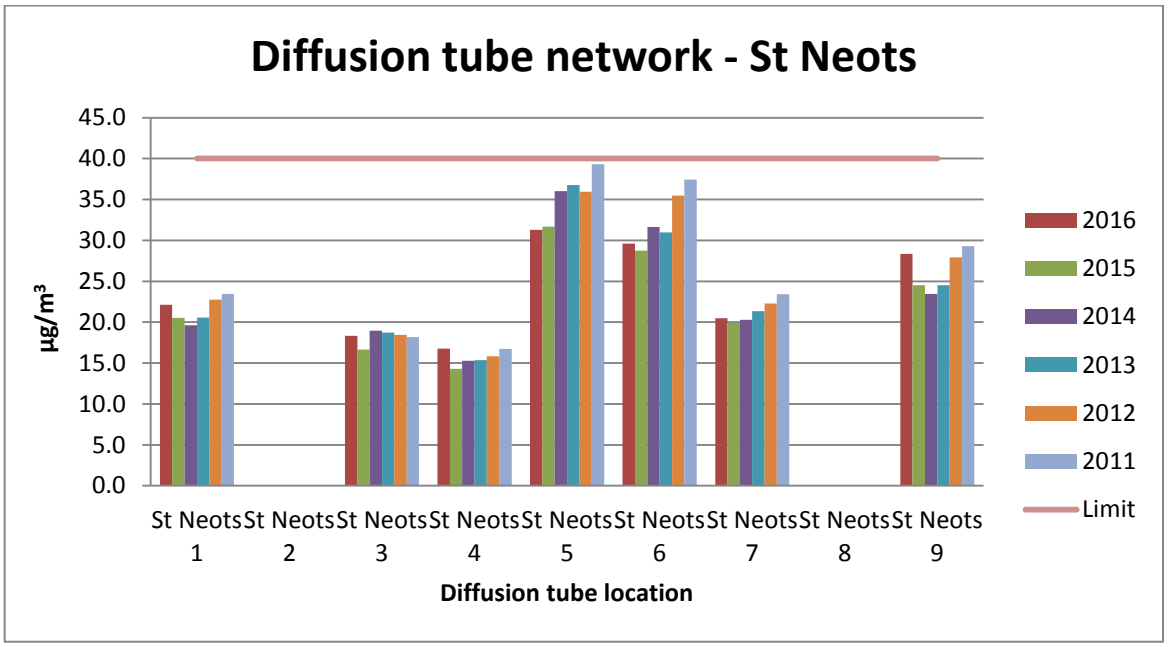
(2) Data capture for the full calendar year (e.g. if monitoring was carried out for 6 months, the maximum data capture for the full calendar year is 50%).

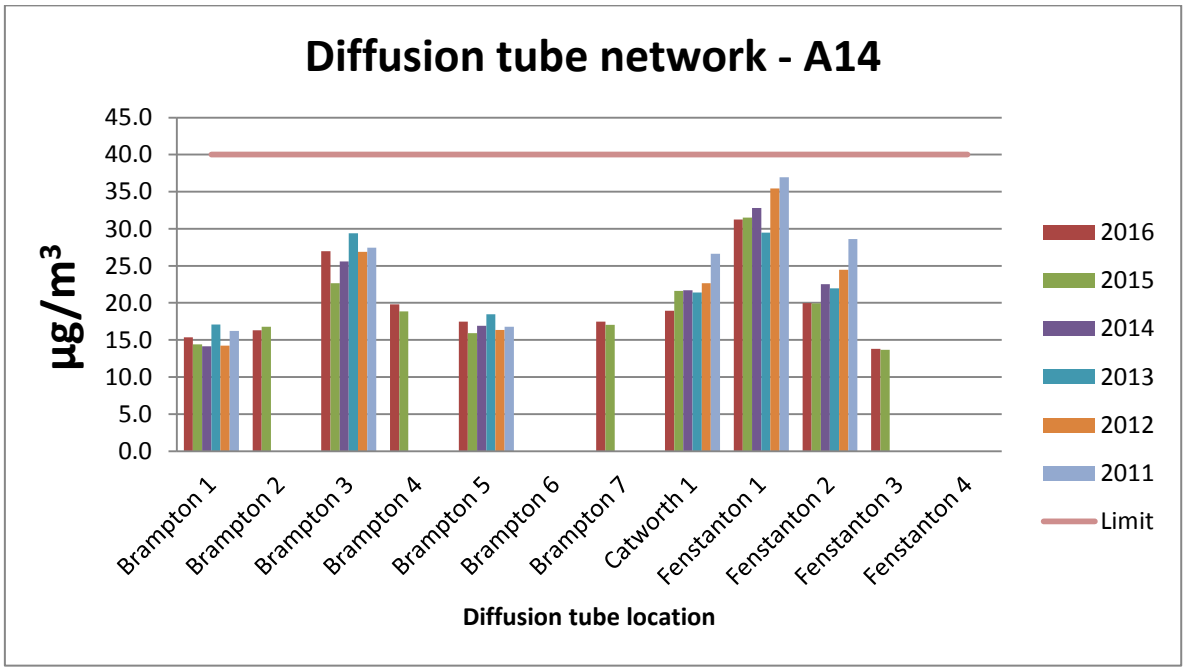
(3) Means for diffusion tubes have been corrected for bias. All means have been "annualised" as per Boxes 7.9 and 7.10 in LAQM.TG16 if valid data capture for the full calendar year is less than 75%. See Appendix C for details.

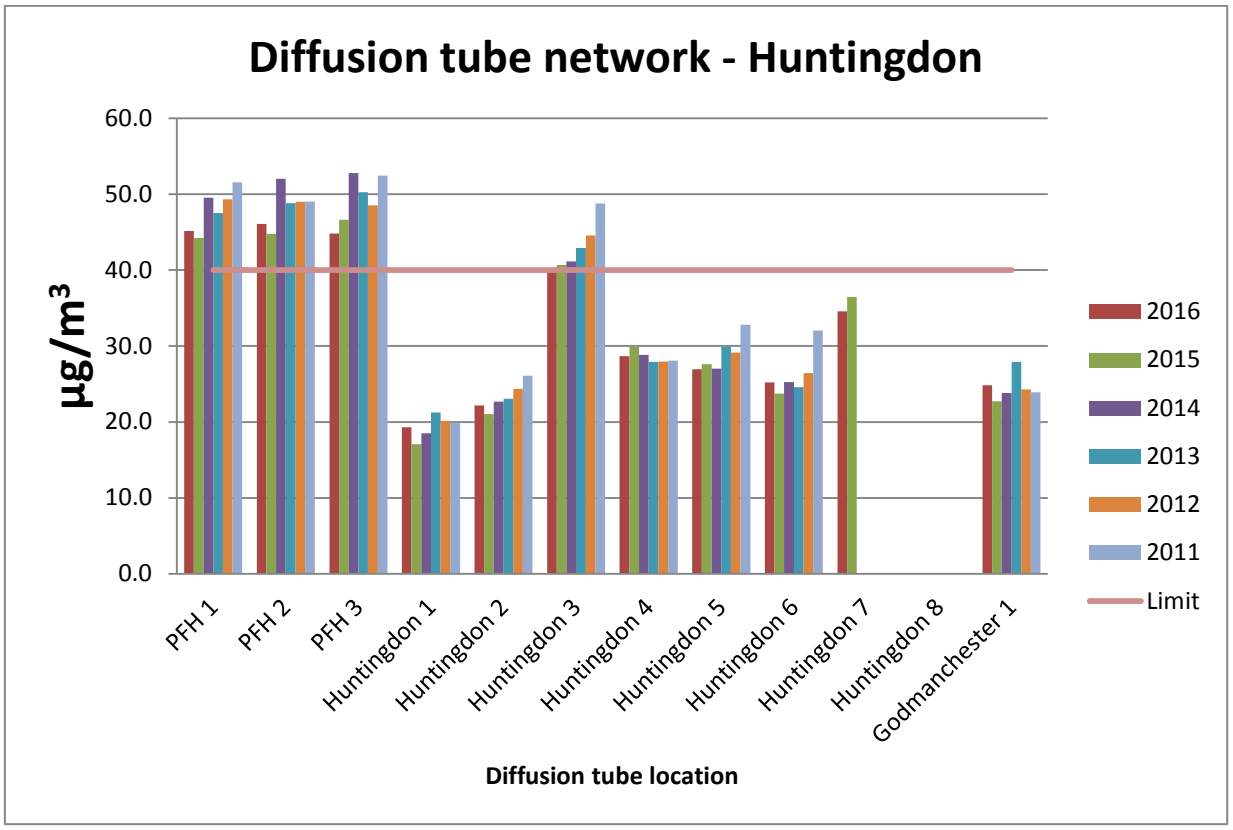
N/A indicates that the diffusion tube was not present in that location during the specified year.

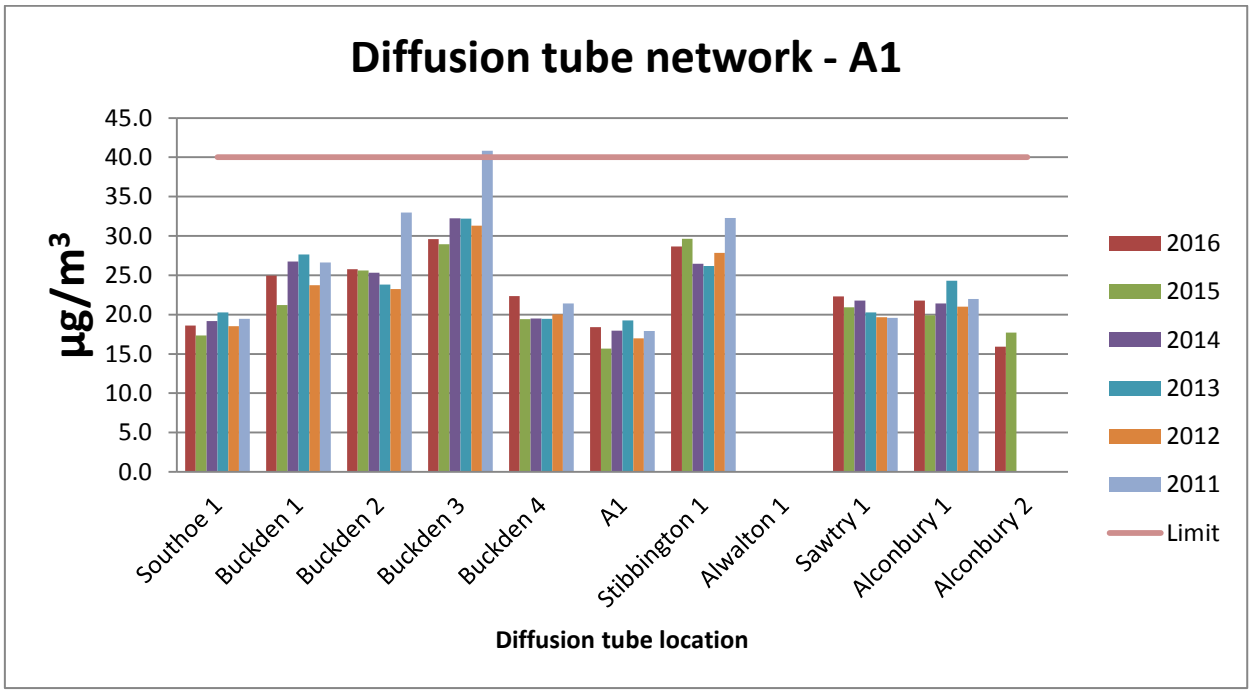
Figure A.1 – Trends in Annual Mean NO_2 Concentrations

Please note that the following graphs will be in a different format next year, similar to those for Particulate Matter in the next section.






Diffusion tube network - Huntingdon
µg/m³
60.0
50.0
40.0
30.0
20.0
10.0
0.0
PFH 1
PFH 2
PFH 3
Huntingdon 1
Huntingdon 2
Huntingdon 3
Huntingdon 4
Huntingdon 5
Huntingdon 6
Huntingdon 7
Huntingdon 8
Godmanchester 1
2016
2015
2014
2013
2012
2011
Limit
Diffusion tube location


Diffusion tube network - A1
µg/m³
45.0
40.0
35.0
30.0
25.0
20.0
15.0
10.0
5.0
0.0
Southoe 1
Buckden 1
Buckden 2
Buckden 3
Buckden 4
A1
Stibbington 1
Alwalton 1
Sawtry 1
Alconbury 1
Alconbury 2
2016
2015
2014
2013
2012
2011
Limit
Diffusion tube location

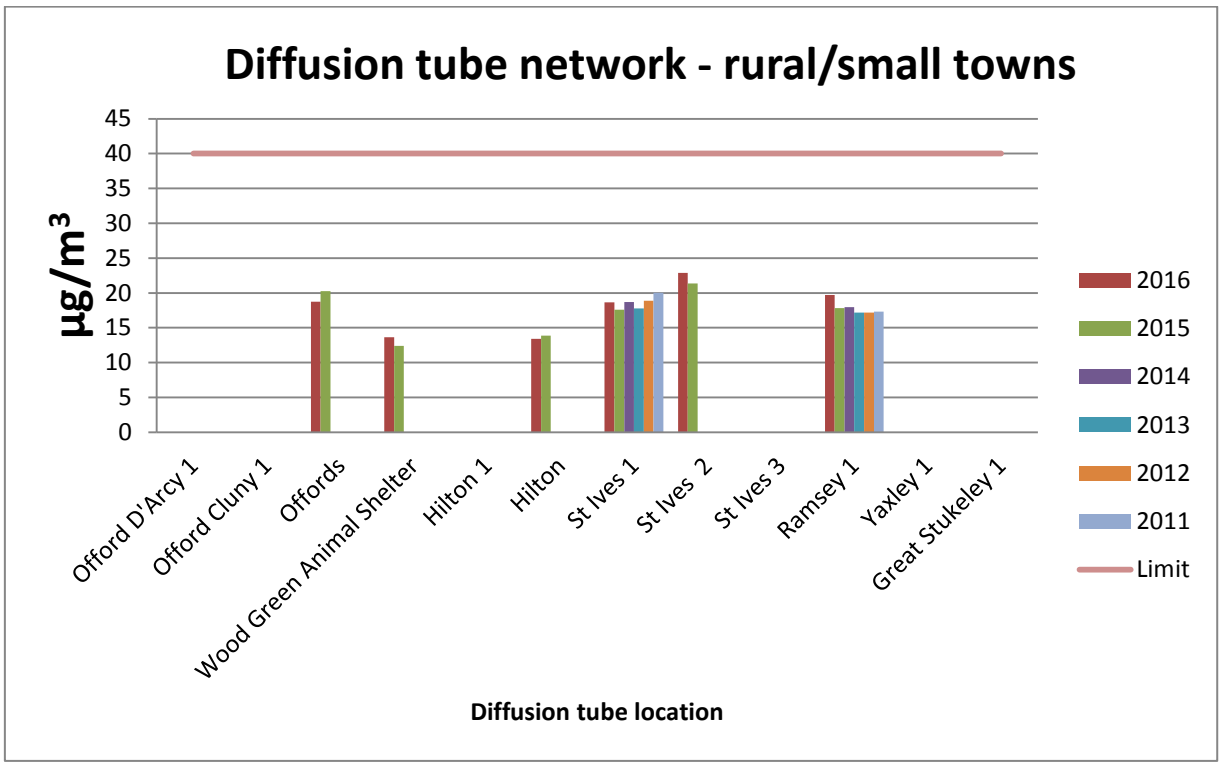

Diffusion tube network - rural/small towns
µg/m³
45
40
35
30
25
20
15
10
5
0
Offord D'Arcy 1
Offord Cluny 1
Offords
Wood Green Animal Shelter
Hilton 1
Hilton
St Ives 1
St Ives 2
St Ives 3
Ramsey 1
Yaxley 1
Great Stukeley 1
2016
2015
2014
2013
2012
2011
Limit
Diffusion tube location

Table A.4 – 1-Hour Mean NO_2 Monitoring Results

Site ID	Site Type	Monitoring Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2016 (%) (2)	NO_2 1-Hour Means > 200µg/m^3 (3)				
					2012	2013	2014	2015	2016
PFH	Roadside	Automatic		98	3	0	0	0	0

Notes:

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

(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.

Table A.5 – Annual Mean PM_{10} Monitoring Results

Site ID	Site Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2016 (%) (2)	PM_{10} Annual Mean Concentration (µg/m^3) (3)				
				2012	2013	2014	2015	2016
PFH	Roadside	Automatic	96.60	31.2	30	20.49	19.34	20.39

☐ **Annualisation has been conducted where data capture is <75%**

Notes:

Exceedances of the PM_{10} annual mean objective of 40µg/m^3 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.2 – Trends in Annual Mean PM_{10} Concentrations

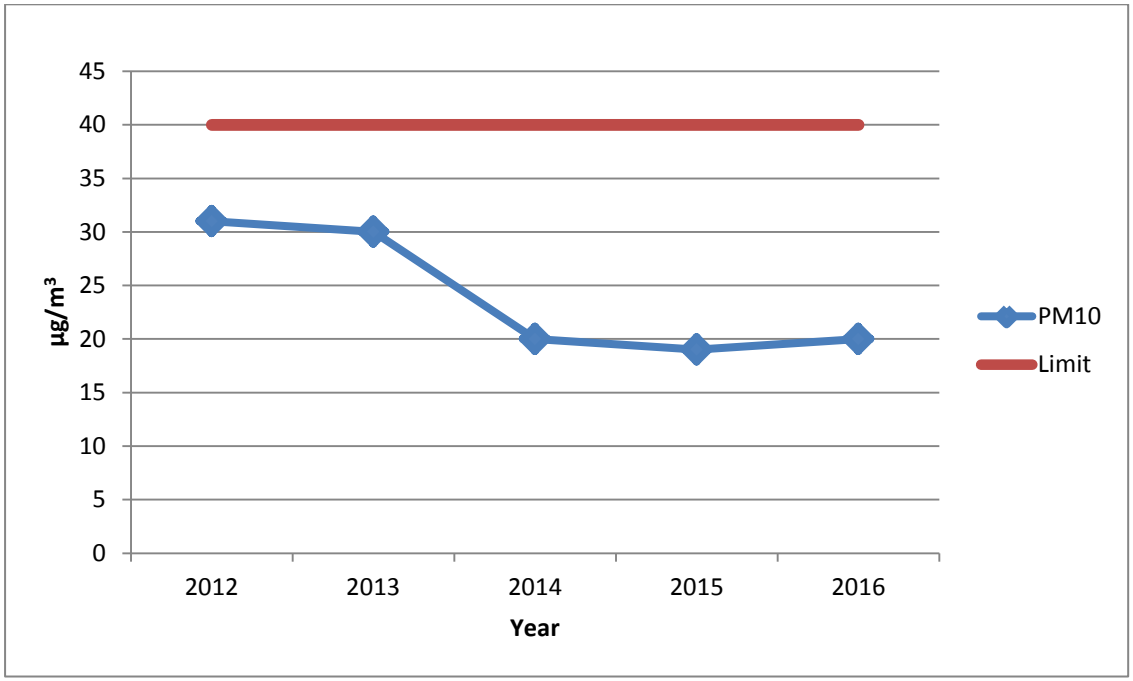


Table A.6 – 24-Hour Mean PM_{10} Monitoring Results

Site ID	Site Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2016 (%) (2)	PM_{10} 24-Hour Means > 50µg/m^3 (3)				
				2012	2013	2014	2015	2016
PFH	Roadside		96.60	**41**	26	6	3	5

Notes:

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

(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.3 – Trends in Number of 24-Hour Mean PM_{10} Results >50µg/m^3

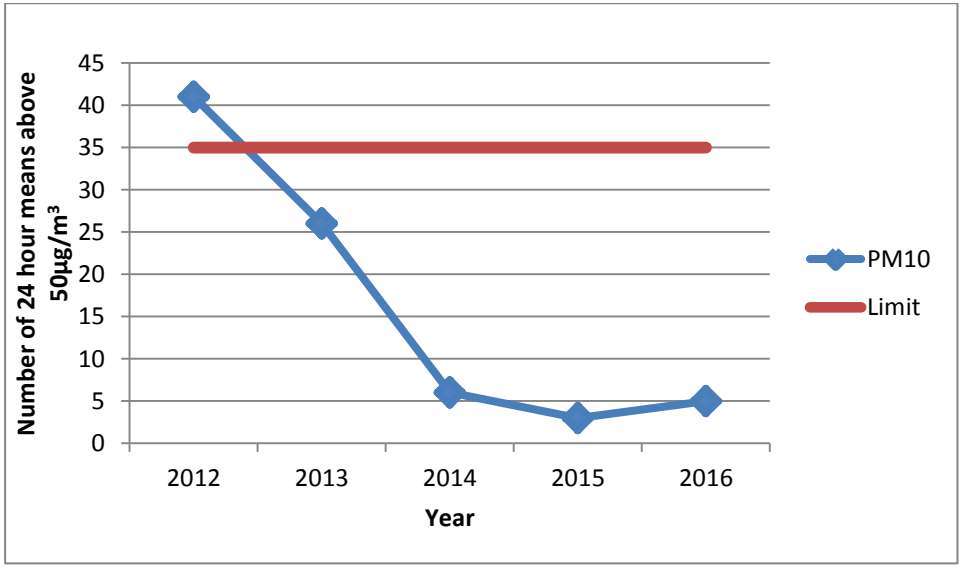


Table A.7 – $PM_{2.5}$ Monitoring Results

Site ID	Site Type	Valid Data Capture for Monitoring Period (%) (1)	Valid Data Capture 2016 (%) (2)	$PM_{2.5}$ Annual Mean Concentration (µg/m^3) (3)				
				2012	2013	2014	2015	2016
PFH	Roadside		98			13.9	12.3	11.8

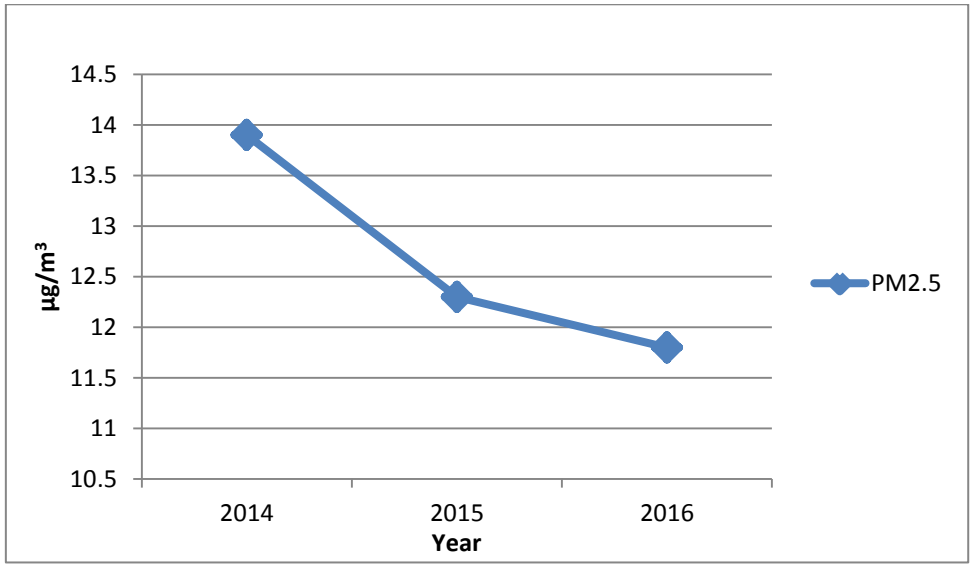
Notes:

(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.4 – Trends in Annual Mean $PM_{2.5}$ Concentrations



Appendix B: Full Monthly Diffusion Tube Results for 2016

Table B.1 – NO_2 Monthly Diffusion Tube Results - 2016

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 (0.77r) and Annualised (1)	Distance Corrected to Nearest Exposure (2)
St Neots 1	23.7	29.9	37.4	30.6	26.7	22	21.1	24.1	26.7	26.3	35.9	40.9	28.8	22.1	
St Neots 3	24.4	27.8	30.8	26.8	20.3	15	14.4	15.6	22.1	19.2	31.3	38.7	23.8	18.3	
St Neots 4	31.1	26.1	23.9	19.6	19.5	13	12.8	14.8	21.1	18.3	27.8	33.7	21.8	16.8	
St Neots 5	50.1	41	43	46.6	41.3	32	34.7	31.2		34.5	44.2	47.9	40.6	31.3	
St Neots 6	43.4	39.2	43.7	42.9	36.9	30	30.1	31.4		36.6	40.6	48.4	38.5	29.6	
St Neots 7	28.9	32.6	32.2	28.9	25.2	19	17.7	17.7	27.1	23.8	31.1	35	26.6	20.5	
St Neots 9	49.4	43.5	39.6	39	31.2	28	27.1	29.5	34.4	25.3	46.9	48.4	36.8	28.4	
Southoe 1	29.1	26.6	24.6	28.8	25.9	24	11.3	17.8	22.8	26.1	20.9	31.8	24.2	18.6	
Buckden 1	29.7	33.7	37.6	36.9	34	29	17.8	24	32	37.6	33.5	42.7	32.4	24.9	
Buckden 2	34.5	36.3	39.8	36.7	27.8	24	32.4	33.3	28.8	27.8	38.9	41.4	33.5	25.8	
Buckden 3	44.6	41.3	47.1	34.9	40.1	28	30.3	30.1	39.4	32.4	39.5	53.2	38.4	29.6	
Buckden 4	31.4	42.9	31.3	26.2	23.6	19	30.5	19.7	26.7	23.5	36.3	37.2	29.0	22.3	
Brampton 1	26.3	23.3	18.9	19.7	17.1	11	9.6	12.3	19.7	18.3	27.7	35.5	19.9	15.4	
Brampton 2	32.9	24.6	22.2	20.4	15.2	13	11.7	15	18.2	20.5	30.1	31	21.2	16.3	
Brampton 3	35.4	36.5	48.5	44.4	34.2	27	18	26.1	28.9	38.8	40.6	42.3	35.1	27.0	

Brampton 4	26	29.3	32.5	31.2	22.1	18	12.5	17.5	24.3	27.9	34.6	32.1	25.7	19.8	
Brampton 5	23.2	28	29.2	21.3	20.5		13.1	14.4	21.1	19.7	27.8	31.5	22.7	17.5	
Brampton 7	29.4	25.9	27.7	21.2	15	15	13.6	16.7	20.7	23.8	30.1	32.9	22.7	17.5	
A1	23.5	24	29.4	27.7	24	20	10.8	15.3	21.7	26.9	29.7	34	23.9	18.4	
Catworth 1	25.3	32.6	20.8	27.6	22.5	15	21.1	22.3	27	16.4	26.5	37.5	24.6	18.9	
PFH 1	58.9	58	60.3	63.8	59.6	57	52	50.7	63.1	54.2	61.5	64	58.6	**45.1**	**42.1**
PFH 2	56.4	60.9	66.2	56.3	61.1	53	56.9	53.2	61	55	69.7	68.2	59.8	**46.1**	**43**
PFH 3	44.1	60.3	62.4	61.3	56.5	59	56.9	54.7	64.5	50.3	64.1	63.9	58.2	**44.8**	**41.9**
Huntingdon 1	26.2	25.3	34.6	30.3	28.1	22	11.6	19.7	21.1	27.6	33.5	21.1	25.1	19.3	
Huntingdon 2	37.3	29.3	31.2	29	30.4	17	24.4	21.2	29.7	22.9	37.5	35.1	28.8	22.2	
Huntingdon 3	59.5	59.6	54.3	52.5	53	41	52.8	43.9	53.7	41.2	58.9	52.1	51.9	39.9	39.9
Huntingdon 4	43.8	38.3	43.1	38.7	31.8	32	27.3	28.4	38.5	32.5	48.1	44.1	37.2	28.7	
Huntingdon 5			35.9	36.9	35.6	26	35.7	29.8	36.9	28.4	40	44.2	35.0	26.9	
Huntingdon 6	48.1	33.8	33.7	34.3	28.2	27	25.6	26.2	32.7	23.6	36.7	43.5	32.8	25.2	
Huntingdon 7	61.7	48.6	41.2	47.5	40.5	33	32.8	38.4	46	31.3	56.1	62.1	44.9	34.6	
Godmanchester 1	28.4	33.7	43.6		35.9	31	14.9	24.2	30.4	39.2	36	37.3	32.2	24.8	
Wood Green Animal Shelter	27.2	19.3	19.3	17.4	9.1	9.6	9	9.6	18.6	16.3	25.5	32	17.7	13.7	
Fenstanton 1	48	45.9	38.6	41.1	33.3	31	44.1	38	44.1	28.9	45.5	48.5	40.6	31.2	
Fenstanton 2	35	26.7	27.6	27.8	24.5	16	21.7	20.1	27.6	18.7	30.3	35.2	26.0	20.0	
Fenstanton 3	23.5	17.8	21.5	18.5	12.9	12	10.3	13	18.1	18.4	22.3	26.5	17.9	13.8	
St Ives 1	31.8	27.8	21.3	24	27.8		14.7	16.3	21.1	16.4	30	35.2	24.2	18.6	
St Ives 2	34.2	32.8	33.2	39.3	22.4	23	25.7	21.5	26.8	23.7	34.7	39.3	29.7	22.9	
Ramsey 1	28	26.6	29.5	28.3	26.6	20	15.9	17.4	24.9	23.2	30.3	36.2	25.6	19.7	
Hilton	26.7	20.4	15.7		11.7	11	10	12	15.7	18.7	25.4	23.7	17.4	13.4	
Stibbington 1	53.2	42.1	32.1	40.5	33.3	27	34.2	32.2	39.5	25.2	40.1	47.1	37.2	28.6	
Offords		28.5	26.6	26.7	15.9	19	17	17.7	33.5	23.7	27.5	32.4	24.4	18.8	

Sawtry 1	32.1	30.4	37.1	29.1	32.1	24	16.2	20.4	23.7	27.2	36.4	39.4	29.0	22.3	
Alconbury 1	32.8	30.3	29.6	33.6	30.6	22	15.6	18.3	26.7	29.8	33.3	37	28.3	21.8	
Alconbury 2	25.9	16.9	22.3	24.7	14.7	15	15.5	14.9	26	21.5	22.8	28.4	20.7	15.9	

☐ **Local bias adjustment factor used**

☒ **National bias adjustment factor used**

☐ **Annualisation has been conducted where data capture is <75%**

Notes:

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

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

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

(2) Distance corrected to nearest relevant public exposure where levels are indicated to be above 36µg/m^3, in line with good practice (Objective -10% for uncertainty).

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

C.1 Diffusion Tubes:

The Environmental Scientifics Group analyse the nitrogen dioxide tubes for Huntingdonshire District Council at Didcot using the spiking acetone: triethanolamine (50:50) method.

Exposure periods for the diffusion tubes are in line with the recommended Diffusion Tube Monitoring Calendar provided by DEFRA (available at https://laqm.defra.gov.uk/diffusion-tubes/data-entry.html), with the tubes being changed every four or five weeks.

C.2 Diffusion tube bias adjustment factors:

Diffusion tube values have been multiplied by a bias correction factor of 0.77 gained from the DEFRA LAQM Helpdesk national bias adjustment database (version 09/17 available at https://laqm.defra.gov.uk/bias-adjustment-factors/national-bias.html). The national adjustment figure was utilised due to increased uncertainty in figures obtained by Huntingdonshire District Council's NOx monitor.

Figure C.1: Diffusion Tube Bias Adjustment:

National Diffusion Tube Bias Adjustment Factor Spreadsheet — Spreadsheet Version Number: 09/17

Follow the steps below **in the correct order** to show the results of **relevant** co-location studies
Data only apply to tubes exposed monthly and are not suitable for correcting individual short-term monitoring periods
Whenever presenting adjusted data, you should state the adjustment factor used and the version of the spreadsheet
This spreadhseet will be updated every few months: the factors may therefore be subject to change. This should not discourage their immediate use.

This spreadsheet will be updated at the end of March 2018
LAQM Helpdesk Website

The LAQM Helpdesk is operated on behalf of Defra and the Devolved Administrations by Bureau Veritas, in conjunction with contract partners AECOM and the National Physical Laboratory.

Spreadsheet maintained by the National Physical Laboratory. Original compiled by Air Quality Consultants Ltd.

Step 1: Select the Laboratory that Analyses Your Tubes from the Drop-Down List

If a laboratory is not shown, we have no data for this laboratory.

Step 2: Select a Preparation Method from the Drop-Down List

If a preparation method is not shown, we have no data for this method at this laboratory.

Step 3: Select a Year from the Drop-Down List

If a year is not shown, we have no data [2]

Step 4: **Where there is only one study for a chosen combination, you should use the adjustment factor shown with caution. Where there is more than one study, use the overall factor [3] shown in blue at the foot of the final column.**

If you have your own co-location study then see footnote [4]. If uncertain what to do then contact the Local Air Quality Management Helpdesk at LAQMHelpdesk@uk.bureauveritas.com or 0800 0327953

Analysed By [1]	Method To add your selection, choose (All) from the pop-up list	Year [2] To add your selection, choose (All)	Site Type	Local Authority	Length of Study (months)	Diffusion Tube Mean Conc. (Dm) (µg/m³)	Automatic Monitor Mean Conc. (Cm) (µg/m³)	Bias (B)	Tube Precision [4]	Bias Adjustment Factor (A) (Cm/Dm)
ESG Didcot	50% TEA in acetone	2016	R	Cambridge City Council	10	43	37	32.6%	G	**0.75**
ESG Didcot	50% TEA in acetone	2016	R	City of Wolverhampton Council	12	44	39	13.5%	G	**0.88**
ESG Didcot	50% TEA in acetone	2016	R	City of Wolverhampton Council	11	53	43	22.7%	G	**0.81**
ESG Didcot	50% TEA in acetone	2016	B	Gravesham Borough Council	12	31	23	33.5%	G	**0.75**
ESG Didcot	50% TEA in acetone	2016	B	Gravesham Borough Council	12	40	30	36.1%	G	**0.73**
ESG Didcot	50% TEA in acetone	2016	R	Horsham District Council	12	35	27	30.3%	G	**0.77**
ESG Didcot	50% TEA in acetone	2016	KS	Horsham District Council	11	33	29	13.9%	G	**0.88**
ESG Didcot	50% TEA in acetone	2016	R	Horsham District Council	10	34	24	39.4%	G	**0.72**
ESG Didcot	50% TEA in acetone	2016	B	Maidstone Borough Council	11	15	12	25.3%	G	**0.80**
ESG Didcot	50% TEA in acetone	2016	R	Medway Council	12	35	26	36.6%	G	**0.73**
ESG Didcot	50% TEA in acetone	2016	B	Medway Council	9	21	11	88.1%	G	**0.53**
ESG Didcot	50% TEA in acetone	2016	KS	Suffolk Coastal DC	12	43	37	17.3%	G	**0.85**
ESG Didcot	50% TEA in acetone	2016	UB	City of York Council	9	22	16	38.6%	G	**0.72**
ESG Didcot	50% TEA in acetone	2016	R	City of York Council	12	39	29	34.1%	G	**0.75**
ESG Didcot	50% TEA in acetone	2016	R	City of York Council	12	33	25	33.4%	G	**0.75**
ESG Didcot	50% TEA in acetone	2016	R	City of York Council	12	41	27	51.2%	G	**0.66**
ESG Didcot	50% TEA in acetone	2016	KS	Leeds City Council	9	66	55	20.1%	S	**0.83**
ESG Didcot	50% TEA in acetone	2016	R	Leeds City Council	12	57	44	27.6%	S	**0.78**
ESG Didcot	50% TEA in acetone	2016	R	City and County Swansea	9	35	31	12.7%	G	**0.89**
ESG Didcot	50% TEA in acetone	2016	R	North East Lincolnshire Council	10	36	30	20.0%	G	**0.83**
ESG Didcot	50% TEA in acetone	2016	R	North East Lincolnshire Council	10	57	42	37.3%	G	**0.73**
ESG Didcot	50% TEA in acetone	2016	R	North East Lincolnshire Council	11	44	29	52.0%	G	**0.66**
ESG Didcot	50% TEA in acetone	2016	SU	Reigate and Banstead BC	12	27	20	33.6%	G	**0.75**
ESG Didcot	50% TEA in acetone	2016	B	Reigate and Banstead BC	12	20	17	20.7%	G	**0.83**
ESG Didcot	50% TEA in acetone	2016	KS	Slough Borough Council	11	42	33	27.6%	G	**0.78**
ESG Didcot	50% TEA in acetone	2016	R	Wrexham County Borough Council	9	20	18	8.2%	G	**0.92**
ESG Didcot	50% TEA in acetone	2016		**Overall Factor [3] (38 studies)**				Use		**0.77**

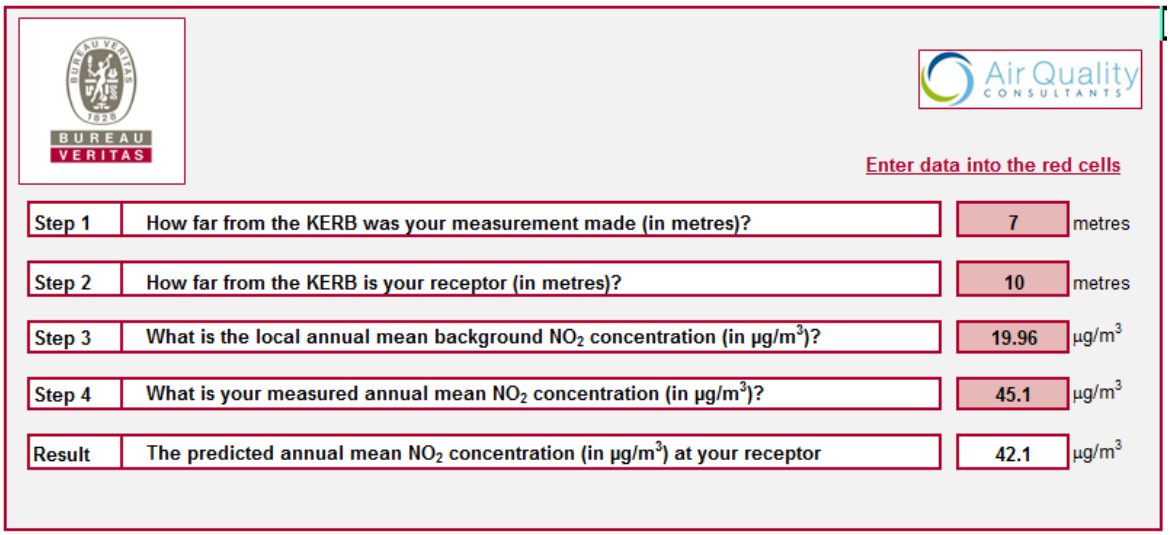
C.3 Distance correction:

Correspondance with both Fang Lin and Anthony of the LAQM Helpdesk team clarified that a distance calculation is only required for locations with exceedances over the AQ objective and the inclusion of any other sites within 10% is considered good practice, i.e. any above 36µg/m^3. The LAQM NO_2 fall off with distance calculator was utilised, as the following figures demonstrate.

C.4 Automatic Monitoring

Calibration and Service information are attached in figures C.5 and C.6.

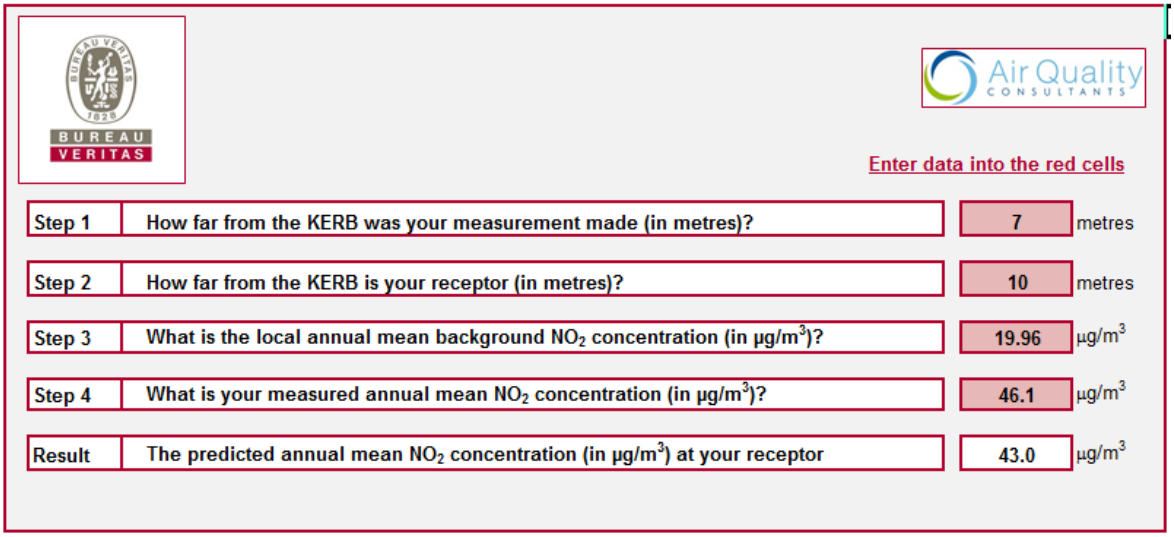
Figure C.2: PFH DT 1 distance correction calculation:



Enter data into the red cells

Step 1	How far from the KERB was your measurement made (in metres)?	7	metres
Step 2	How far from the KERB is your receptor (in metres)?	10	metres
Step 3	What is the local annual mean background NO_2 concentration (in µg/m^3)?	19.96	µg/m^3
Step 4	What is your measured annual mean NO_2 concentration (in µg/m^3)?	45.1	µg/m^3
Result	The predicted annual mean NO_2 concentration (in µg/m^3) at your receptor	42.1	µg/m^3

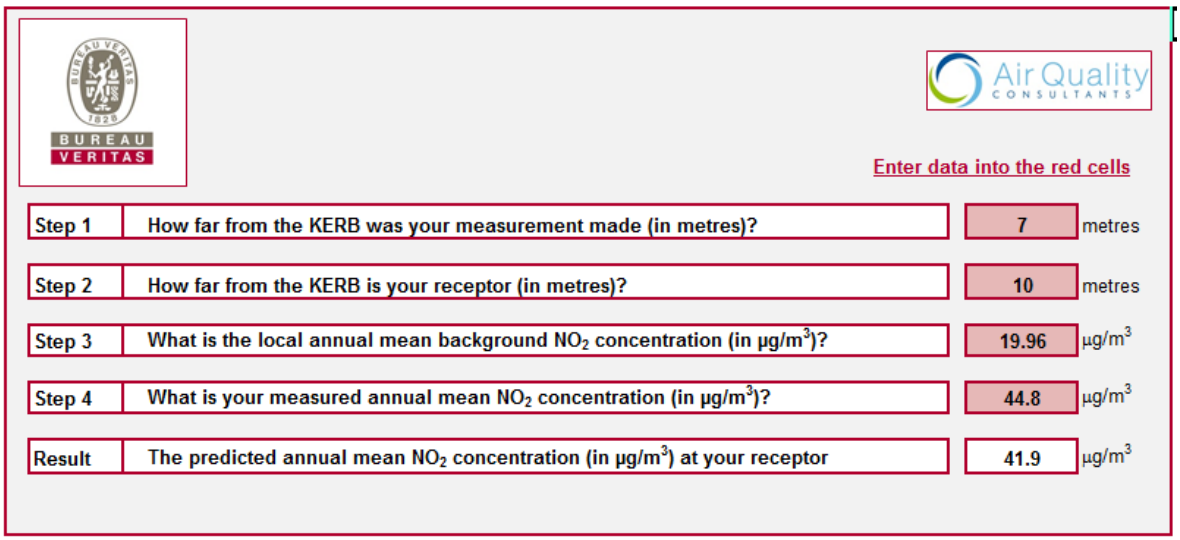
Figure C.3: PFH DT 2 distance correction calculation:



Enter data into the red cells

Step 1	How far from the KERB was your measurement made (in metres)?	7	metres
Step 2	How far from the KERB is your receptor (in metres)?	10	metres
Step 3	What is the local annual mean background NO_2 concentration (in µg/m^3)?	19.96	µg/m^3
Step 4	What is your measured annual mean NO_2 concentration (in µg/m^3)?	46.1	µg/m^3
Result	The predicted annual mean NO_2 concentration (in µg/m^3) at your receptor	43.0	µg/m^3

Figure C.4: PFH DT 3 distance correction calculation:



Enter data into the red cells

Step 1	How far from the KERB was your measurement made (in metres)?	7	metres
Step 2	How far from the KERB is your receptor (in metres)?	10	metres
Step 3	What is the local annual mean background NO_2 concentration (in µg/m^3)?	19.96	µg/m^3
Step 4	What is your measured annual mean NO_2 concentration (in µg/m^3)?	44.8	µg/m^3
Result	The predicted annual mean NO_2 concentration (in µg/m^3) at your receptor	41.9	µg/m^3

Figure C.5: Third party QA/QC reports:

0401

CERTIFICATE OF CALIBRATION

Ricardo Energy and Environment, Gemini Building, Fermi Avenue Harwell, Didcot,

RICARDO

Page 1 of 3

Approved Signatories:

- ☐ S. Eaton
- ☐ D Hector
- ☑ N Rand
- ☐ B Stacey
- ☐ S Stratton
- ☐ A Madle

Signed:

Date of Issue: 05 Jul 2016

Certificate Number: 03406

Customer Name and Address:

Dave Bass
Huntingdonshire District Council
Pathfinder House
St Mary's Street
Huntingdon
Cambridgeshire
PE29 3TN

Description: Calibration factors for the air monitoring station at Huntingdon Pathfinder House

Ricardo Energy & Environment ID: ED20645084

The reported expanded uncertainties are based on a standard uncertainty multiplied by a coverage factor k=2 providing a level of confidence of approximately 95% The uncertainty evaluation has been carried out in accordance with UKAS requirements.

This certificate is issued in accordance with the laboratory accreditation requirements of the United Kingdom Accreditation Service. It provides traceability of measurement to the SI system of units and/or to units of measurement realised at the National Physical Laboratory or other recognised national metrology institutes. This certificate may not be reproduced other than in full, except with the prior written approval of the issuing laboratory

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Registered in England No.
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ee.ricardo.com

CERTIFICATE OF CALIBRATION

0401

Date of issue: 05 Jul 2016

Certificate Number: 03406

Ricardo Energy & Environment ID: ED20645084

Huntingdon Pathfinder House
Date of audit: 06 Jun 2016

Species	Analyser Serial no	Zero Response[1]	Zero uncertainty pob	Calibration Factor[2]	Factor uncertainty %	Converter eff. (%)[3]
NOx	426608503	0.7	2.5	0.9563	3.5	96.3
NO	426608503	-0.1	2.5	0.9486	3.5	n/a

Huntingdon Pathfinder House
Date of audit: 06 Jun 2016

Species	Analyser Serial no	Parameter	Specified Value	Measured Value	Deviation %	Uncertainty %
PM_{10}	CM09510 077	Total Flow[4]	16.67	16.43	-1.4	2.25
		k_0[5]	0			1.00

Huntingdon Pathfinder House
Date of audit: 06 Jun 2016

Species	Analyser Serial no	Parameter	Specified Value	Measured Value	Deviation %	Uncertainty %
$PM_{2.5}$	CM09510 083	Total Flow[4]	16.67	16.35	-1.9	2.25
		k_0[5]	0			1.00

0401

CERTIFICATE OF CALIBRATION

Date of issue: 05 Jul 2016

Certificate Number: 03406

Ricardo Energy & Environment ID: ED20645084

The gaseous ambient analysers listed above have been tested for zero response, calibration factor, linearity and converter efficiency (NOx analysers) by documented methods. The factors have been calculated using certified gas standards. The particulate analysers listed above have been tested for sample flow rates and k_0(where appropriate) by documented methods. Note that the test results are valid on the day of test only, as analyser drift over time cannot be quantified. All results for gaseous species are given in ppb (parts per billion) mole fractions or ppm (parts per million) mole fractions.

[1] The zero response is the zero reading on the data logging system of the analyser when audit zero gas was introduced to the analysers under test.

[2] The calibration factor is the multiplying factor required to scale the reading on the data logging system of the analyser into reported concentration units (ppb for NO, NOx, SO_2, O_3 and ppm for CO. Where 1ppm = 1000ppb). It should be used in conjunction with the zero response. A corrected concentration is calculated using the following equation:

Concentration = F(Output - Zero Response)
Where F = Calibration Factor provided on this certificate
Output = Reading on the data logging system of the analyser
Zero Response = Zero Response provided on this certificate

[3] Converter eff. is the measured efficiency of the NO_2 to NO converter within the oxides of nitrogen analyser under test.

[4] The measured main flow rate (where this is applicable) is the flow rate through the sensor unit of the TEOM particulate analyser under test. The measured aux flow rate (where this is applicable) is the flow rate through the bypass tubing of the TEOM particulate analyser under test. The measured total flow rate is the total flow rate through the particulate analyser under test. Units of flow are $l.min^{-1}$, reported at prevailing ambient conditions unless otherwise specified. Where flow rates are highlighted in bold, it indicates that measurements were not made at the analyser sample inlet. These measurements therefore may not accurately reflect analyser performance in normal operation.

[5] The calculated k_0 value (specifically for TEOM analysers) is the calculated k_0 spring constant based on tests undertaken with filters of known weight. The % deviation indicates the closeness of the calculated result to the manufacturer's specified value of k_0.

The calibration results shaded are those that fall within our scope of accreditation, all other results on this certificate are not UKAS accredited, but have been included for completeness.

Richard Hollingsworth
Huntingdonshire District Council
Pathfinder House
St Mary's Street
Huntingdon
Cambridgeshire
PE29 3TN

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Ricardo Energy & Environment
Gemini Building
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Tel: +44 (0)1235 753 484
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W: ee.ricardo.com

05th June 2016
Reference 20645084/R20

AIR MONITORING QA/QC AUDIT RESULTS

Ambient air monitoring stations: Huntingdon Pathfinder House

Date of Audits: 06th June 2016

Dear Richard,

This report documents the results of quality control audit to Huntingdonshire District Council's Pathfinder House ambient air monitoring station. The work programme is supplied under contract Ricardo Energy & Environment/20645084 for the supply of audit services.

The Huntingdon Pathfinder House monitoring station was audited on 06th June 2016. The equipment audits utilise procedures that are applied within the Department for Environment, Food and Rural Affairs (Defra) national automatic air monitoring network quality control programme.

AUDIT RESULTS

The following sections provide details of the audit results on a pollutant basis with recommendations for data management action where appropriate.

Oxides of Nitrogen Analysers

A major factor governing the analyser's performance is the NO_x analyser's converter and its ability to reduce the nitrogen dioxide to nitric oxide. The recommended range for instrumentation in the national automatic air monitoring network is in the range of 98% - 102% efficient. Our tests show the converter in this analyser to be 96.3% efficient with NO_2 concentrations of 231 ppb. This result has failed the audit pass criteria, our second repeat test showed the converter at 96.6% efficient with an NO_2 concentration of 142 ppb, this also failed the audit pass criteria.

In order for NO_x data to be BS EN14211 compliant, NO_x datasets where converter results are less than 98% efficient can be rescaled, provided any impact on data quality is accounted for in the rescaling process. It is the responsibility of the data ratification team to critically assess all evidence including calibrations, audits and equipment support unit reports to quantify this impact. We advised following the audit that you request that your equipment support unit attend for an immediate call out to investigate any underlying reasons for this outlier and to aim to get the converter within the recommended audit pass range.

To ensure that the analysers are sampling only ambient air the instruments were leak checked. The results were satisfactory, indicating that the analyser sampling systems were free of significant leaks. The analysers exhibited good steady state responses to both zero and span (calibration) gases with acceptable levels of variation (noise).

The NO_x analyser sample flow rate was measured using a calibrated flow meter and compared against the analyser's flow rate sensor displayed value to evaluate its accuracy. The analyser's flow rate sensor reading was within 10% of the calibrated flow meter reading and therefore passed this test.

Based on the NO_x analyser's response to the audit standard and audit zero, the concentrations of the stations NO cylinders have been reassessed. This provides an indication of the on-site standards stability (the gas concentration stabilities). For the purpose of these stability checks, the criteria adopted within the national network, and used here, is that the recalculated concentration should lie within 10% of the suppliers stated concentrations. The results of the recalculations are presented below:

Pathfinder House - NO cylinder 115131D				
	NO_x (ppb)	% change from stated	NO (ppb)	% change from stated
Manufacturers Stated Concentration	469	---	469	--
Recalculated Concentration (03/06/14)	440	-6.2	432	-7.8
Recalculated Concentration (03/12/14)	427	-9.0	424	-9.6
Recalculated Concentration (02/06/15)	414	-11.8	413	-12.0
Recalculated Concentration (07/12/15)	413	-11.8	412	-12.1
Recalculated Concentration (06/06/16)	428	-8.9	423	-9.8

The latest June 2016 audit results indicate that the NO cylinder concentrations for the Pathfinder House monitoring station were within the audit pass criteria of ±10%. Previous results in December 2015 and June 2015 were just outside the audit pass criteria. The last 4 station audits all agree within 3% of each other, this shows evidence the cylinder concentrations are stable enough to reliably scale ambient data.

Thermo 5015i PM_{10} & $PM_{2.5}$ analysers

To ensure that a true PM_{10} measurement is made, the total flow through the sample inlet must be 16.7 litres per minute. Volumetric flow tests were carried out on the instrument. The measured flows showed good agreement with the system flow set points. To ensure that the analyser was sampling only ambient air, the instrument flow rates were also checked again with a flow restricting test adaptor. The aim here is to identify a leak in the system by comparing these restricted flow readings against the previously recorded unrestricted flow readings. No large discrepancy was found and the instrument was deemed as being free of major leaks.

Certificate of Calibration

Calibration factors and zeros have been produced on the basis of the audit calibrations conducted. All of these calibrations were conducted with transfer standards traceable to national metrology standards. The attached Certificate of Calibration provides the calibration and zero response factors for the oxides of nitrogen analysers under test on the day of the audits as well as the measured flows and calculated calibration constant for the particulate analysers.

DATA MANAGEMENT

The following recommendations and comments can be made as a result of these audits:

- Compare the Huntingdonshire District Council database scaling factors for the day of the audits with the factors and zeros on the Certificate of Calibration. If a deviation greater than the uncertainty of the respective factors on the Certificate exists, investigate the underlying reason and implement suitable data management actions.
- Consider the impact of the outlying NO_x converter efficiency result at 96.6%. For data to be BS EN14211 compliant it can be rescaled, provided any impact on data quality is accounted for in the rescaling process. It is the responsibility of the data ratification team to critically assess all evidence including calibrations, audits and equipment support unit reports to quantify this impact. We advised following the audit that you request that your equipment support unit attend for an immediate call out to investigate any underlying reasons for this outlier and to aim to get the converter within the recommended audit pass range.

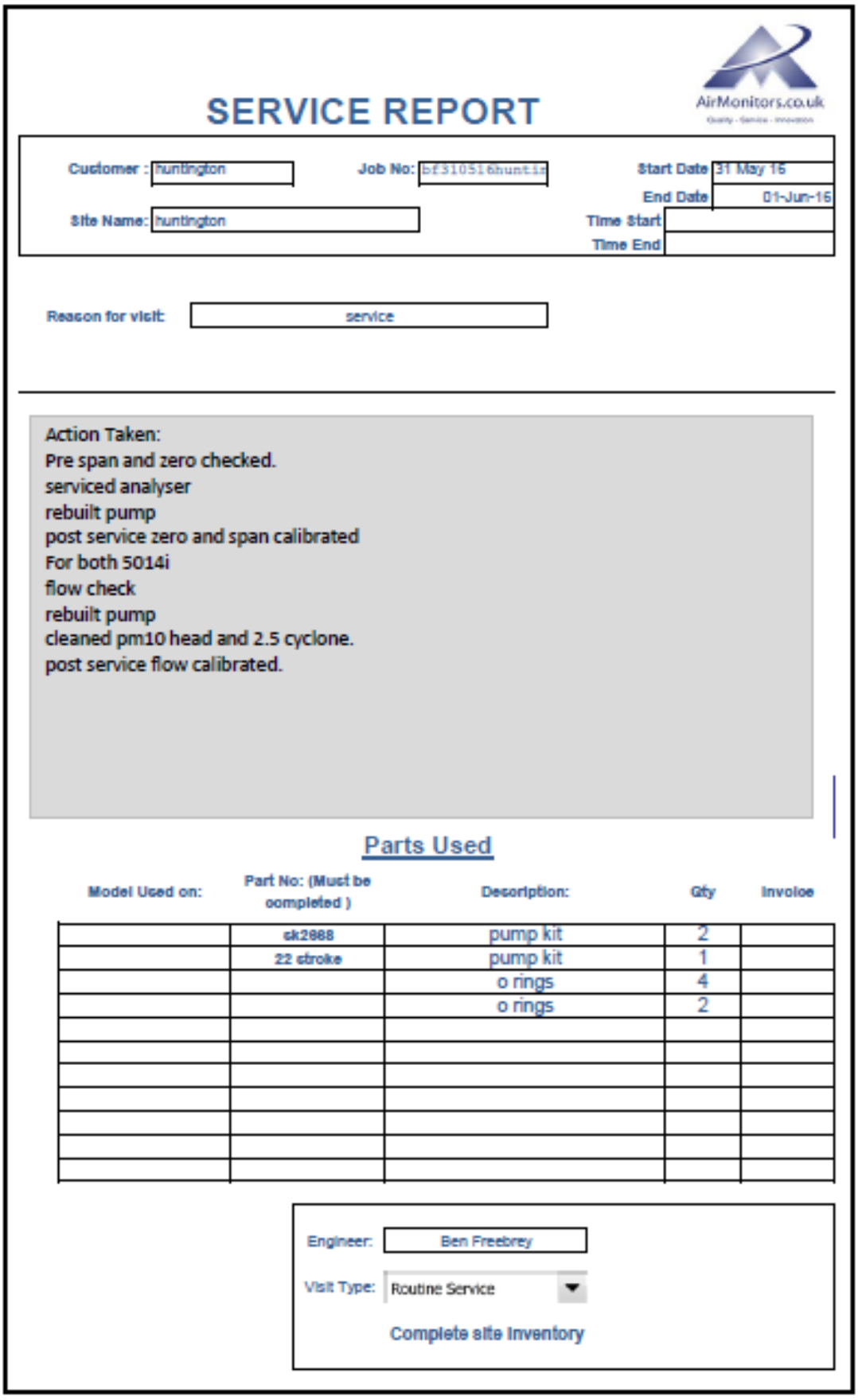
If you have any questions relating to our audit results or wish to discuss any aspect of air pollution monitoring, please don't hesitate to contact me on 01235 753484 or 07968 707 588 nick.rand@ricardo.com

Yours sincerely

Nick Rand

Air Quality - Ricardo Energy and Environment
www.airqualityengland.co.uk/
ee.ricardo.com

Figure C.6: AQMS service reports:



SERVICE REPORT

AirMonitors.co.uk

Customer : huntington
Job No: bf310516huntin
Start Date 31 May 16
End Date 01-Jun-16
Site Name: huntington
Time Start
Time End

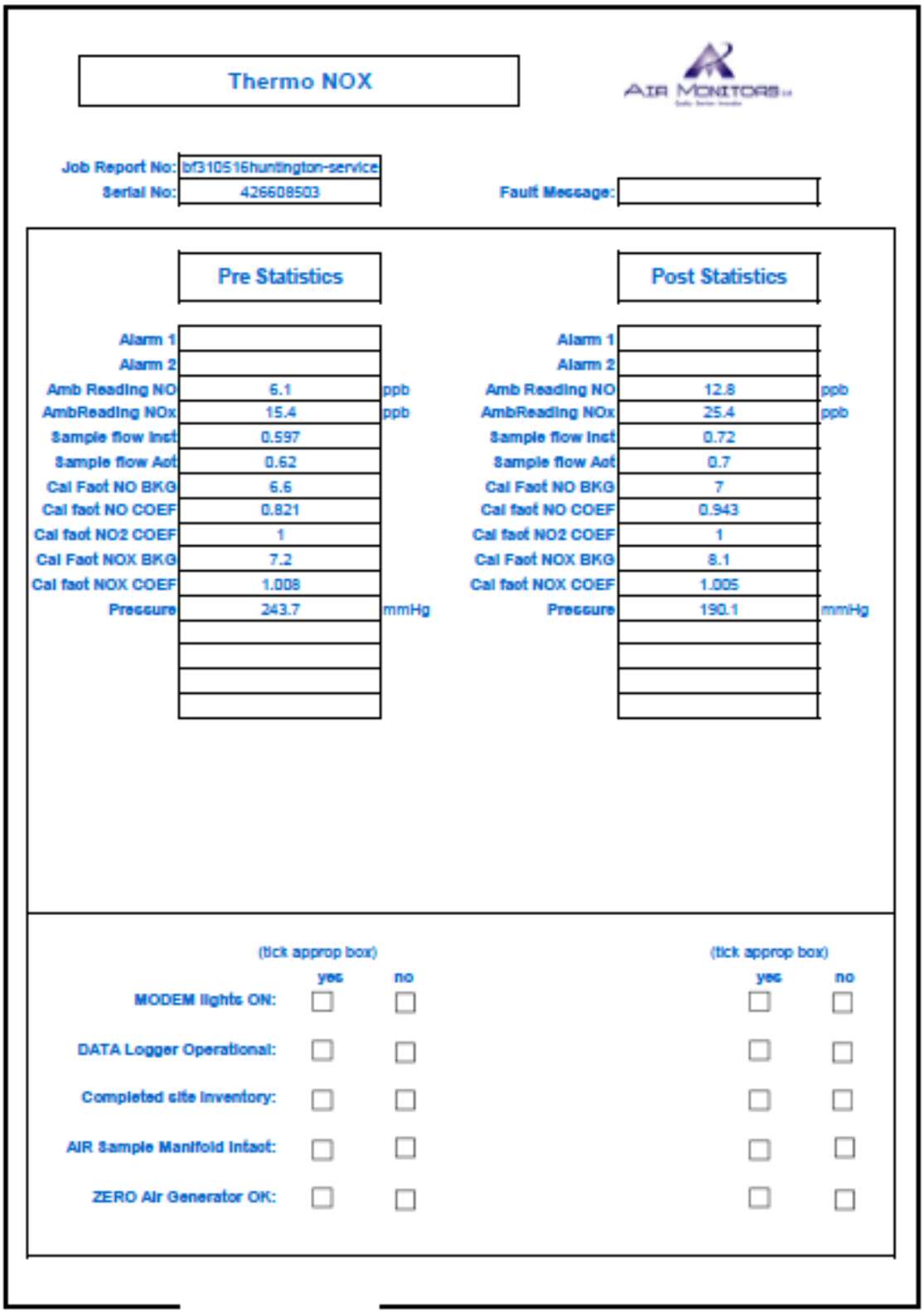
Reason for visit: service

Action Taken:
Pre span and zero checked.
serviced analyser
rebuilt pump
post service zero and span calibrated
For both 5014i
flow check
rebuilt pump
cleaned pm10 head and 2.5 cyclone.
post service flow calibrated.

Parts Used

Model Used on:	Part No: (Must be completed)	Description:	Qty	Invoice
	ak2888	pump kit	2	
	22 stroke	pump kit	1	
		o rings	4	
		o rings	2	

Engineer: Ben Freebrey
Visit Type: Routine Service
Complete site Inventory



Thermo NOX

AIR MONITORS

Job Report No:	bf310516huntington-service
Serial No:	426608503
Fault Message:	

Pre Statistics			Post Statistics		
Alarm 1			Alarm 1		
Alarm 2			Alarm 2		
Amb Reading NO	6.1	ppb	Amb Reading NO	12.8	ppb
AmbReading NOx	15.4	ppb	AmbReading NOx	25.4	ppb
Sample flow Inst	0.597		Sample flow Inst	0.72	
Sample flow Aot	0.62		Sample flow Aot	0.7	
Cal Faot NO BKG	6.6		Cal Faot NO BKG	7	
Cal faot NO COEF	0.821		Cal faot NO COEF	0.943	
Cal faot NO2 COEF	1		Cal faot NO2 COEF	1	
Cal Faot NOX BKG	7.2		Cal Faot NOX BKG	8.1	
Cal faot NOX COEF	1.008		Cal faot NOX COEF	1.005	
Pressure	243.7	mmHg	Pressure	190.1	mmHg

	(tick approp box)		(tick approp box)	
	yes	no	yes	no
MODEM lights ON:	☐	☐	☐	☐
DATA Logger Operational:	☐	☐	☐	☐
Completed site inventory:	☐	☐	☐	☐
AIR Sample Manifold Intact:	☐	☐	☐	☐
ZERO Air Generator OK:	☐	☐	☐	☐

Air Monitors Ltd - Unit 2 Bredon Court - Brockeridge Park - Twyning - Tewkesbury - Glos - GL20 6FF
Tel: 01684 857530 Fax 01684 857538 Email: karen@airmonitors.co.uk Web: www.airmonitors.co.uk

Thermo NOX

Thermo 5014

Job Report No: bf310516huntington-service
Serial No:
Fault Message:

	Pre Statistics	Post Statistics
Alarm 1	n/a	
Alarm 2	n/a	
AmbReading PM	14.2	
Amb RH	100	100
Sample RH	43.7	47.9
Amb Tmp	8.8	8.9
Sample Tmp	22.3	20.9
Vacuum	41.2	47.7
Flow	16.68	16.67
f low Int	15.78	flow Int 16.7

	(tick approp box) yes	no	(tick approp box) yes	no
MODEM lights ON:	☐	☐	☐	☐
DATA Logger Operational:	☐	☐	☐	☐
Completed site inventory:	☐	☐	☐	☐
AIR Sample Manifold Intact:	☐	☐	☐	☐
ZERO Air Generator OK:	☐	☐	☐	☐

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Thermo 5014 pm2.5

Thermo 5014

Job Report No:	bf310516huntington-service
Serial No:	
Fault Message:	

	Pre Statistics	Post Statistics
Alarm 1		
Alarm 2		
AmbReading PM	12.4	
Amb RH	100	100
Sample RH	40	39.3
Amb Tmp	9.1	9.1
Sample Tmp	24.3	24.5
Vacuum	50.8	43.6
Flow	16.82	16.66
flow Int	16.66	26
pump	25	26

	(tick approp box)		(tick approp box)	
	yes	no	yes	no
MODEM lights ON:	☐	☐	☐	☐
DATA Logger Operational:	☐	☐	☐	☐
Completed site inventory:	☐	☐	☐	☐
AIR Sample Manifold Intact:	☐	☐	☐	☐
ZERO Air Generator OK:	☐	☐	☐	☐

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Tel: 01684 857530 Fax 01684 857538 Email: karen@airmonitors.co.uk Web: www.airmonitors.co.uk

Thermo 5014 pm10

NOx Analyser Calibration/Linearity Report

AIR MONITORS

Model: 42c | Serial No: 426808503 | Report No. bf310518h

Pre-Service/ Repair Calibration

Gas \ Result	NO		NO2		NOX	
	PPB	mV	PPB	mV	PPB	mV
External Zero	-0.6		-0.1		-0.5	
Injection of NO	266		0.1		267	
Injection of NO2						

Span Source Details

	NO	NO2
Cyl. No:	115131d	
Cyl. PSI:	600	
Cyl. Conc:	469	

Post Service/Repair Calibration

Gas \ Result	NO		NO2		NOX	
	PPB	mV	PPB	mV	PPB	mV
External Zero	0		0		0	
Injection of NO	468		1		469	
Injection of NO2						

External Zero Source Details

On Site ZAG:	☑
Cylinder:	☐
Scrubber:	☐

GPT Check

	Display (PPB)	Injected (NO)	Injected (03)
NO			0ppb
NO2			
NO			
NO2			

NO	0
NO2	0
Moly Effeciency	#DIV/0!

Post Service Linearity Check

Requested Span Point	Gas Type	V out (mV)	Display (ppb)	Photo-meter (ppb)
200	NO			
160	NO			
120	NO			
80	NO			
40	NO			
0	ZERO AIR			

Blender Details

Blender Model / SN°	
High Conc. Cyl N°	
High Conc. Cyl PSI	
High Conc. Cyl Conc	

Engineer:-	
Date:-	

SERVICE REPORT

AirMonitors.co.uk
Quality · Service · Innovation

Customer :		Job No:	II22082016
Site Name:	HUNTINGDONSHIRE PATHFINDER H		

Start Date	22 Aug 16
End Date	
Time Start	12:00
Time End	

Reason for visit: NOX REMOVAL

Action Taken:
PRES READS COMPLETED.
PUMP -22
SPAN AND ZERO COMPLETED.
SAMPLE FLOW CHECKED 0.65 FROM SAMPLE PORT
NOX AND PUMP REMOVED TAKEN DOWN TO THE OFFICE.

Parts Used

Model Used on:	Part No: (Must be completed)	Description:	Qty	Invoice

Engineer: Igwe Igwike

Visit Type: Callout/service

Complete site Inventory

NOx Analyser Calibration/Linearity Report

AirMonitors.co.uk

Model: 42C Serial No: 429608503 Report No. I22082015

Pre-Service/ Repair Calibration

Gas \ Result	NO		NO2		NOX	
	PPB	mV	PPB	mV	PPB	mV
External Zero	0.2		0.2		0.4	
Injection of NO	340		51		302	
Injection of NO2						

Span Source Details

	NO	NO2
Cyl. No:	D335356	
Cyl. PSI:		
Cyl. Conc:	459	

459

Post Service/Repair Calibration

Gas \ Result	NO		NO2		NOX	
	PPB	mV	PPB	mV	PPB	mV
External Zero						
Injection of NO						
Injection of NO2						

External Zero Source Details

On Site ZAG:	☑
Cylinder:	☐
Scrubber:	☑

GPT Check

	Display (PPB)	Injected (NO)	Injected (03)
NO			Oppb
NO2			
NO			
NO2			

NO	0
NO2	0
Moly Effeciency	#DIV/0!

Post Service Linearity Check

Requested Span Point	Gas Type	V out (mV)	Display (ppb)	Photo-meter (ppb)
200	NO			
160	NO			
120	NO			
80	NO			
40	NO			
0	ZERO AIR			

Blender Details

Blender Model / SN°	
High Conc. Cyl N°	
High Conc. Cyl PSI	
High Conc. Cyl Conc	

Engineer:-	
Date:-	

Thermo NOX

AirMonitors.co.uk
Quality · Service · Innovation

Job Report No:	II22082016		
Serial No:	426608503	Fault Message:	NONE

	Pre Statistics		Post Statistics	
Alarm 1	.....	Alarm 1		
Alarm 2	.....	Alarm 2		
Amb Reading NO	16.8	ppb	Amb Reading NO	ppb
AmbReading NOx	30.9	ppb	AmbReading NOx	ppb
Sample flow Inst	0.697		Sample flow Inst	
Sample flow Aot	0.65		Sample flow Aot	
Cal Faot NO BKG	7.1		Cal Faot NO BKG	
Cal faot NO COEF	0.943		Cal faot NO COEF	
Cal faot NO2 COEF	1		Cal faot NO2 COEF	
Cal Faot NOX BKG	8.2		Cal Faot NOX BKG	
Cal faot NOX COEF	1.005		Cal faot NOX COEF	
Preccure	200	mmHg	Preccure	mmHg
PUMP	-22			

	(tick approp box)		(tick approp box)	
	yes	no	yes	no
MODEM lights ON:	☐	☐	☐	☐
DATA Logger Operational:	☐	☐	☐	☐
Completed site inventory:	☐	☐	☐	☐
AIR Sample Manifold Intact:	☐	☐	☐	☐
ZERO Air Generator OK:	☐	☐	☐	☐

Air Monitors Ltd - Units 2/3 Miller Court - Severn Drive – Tewkesbury – Glos - GL20 8DN
Tel: 01684 857530 Fax 01684 857538 Email: service@airmonitors.co.uk Web: www.airmonitors.co.uk

Thermo NOX

SERVICE REPORT

AirMonitors.co.uk
Quality / Service / Innovation

Customer :		Job No: 1124082016	Start Date 24 Aug 16
			End Date 24-Aug-16
Site Name:	pathfinder house huntingdonshire		Time Start 10:17
			Time End 13:00

Reason for visit: Nox Reinstallation

Action Taken:
installed 42c analyzer,allowed to warm up connected pump reading -22.
post reads completed.
posts reads and gas sheet completed.

Parts Used

Model Used on:	Part No: (Must be completed)	Description:	Qty	Invoice

Engineer: Igwe Igwike

Visit Type: Installation

Complete site Inventory

Thermo NOX

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Job Report No:	I240820I6
Serial No:	426608503
Fault Message:	none

	Pre Statistics		Post Statistics	
Alarm 1			.....	
Alarm 2			.....	
Amb Reading NO		ppb	35.6	ppb
AmbReading NOx		ppb	94.6	ppb
Sample flow Inst			0.689	
Sample flow Act			0.65	
Cal Fact NO BKG			7	
Cal fact NO COEF			0.943	
Cal fact NO2 COEF			1	
Cal Fact NOX BKG			8.1	
Cal fact NOX COEF			1.005	
Pressure		mmHg	200	mmHg

	(tick approp box) yes	no	(tick approp box) yes	no
MODEM lights ON:	☐	☐	☐	☐
DATA Logger Operational:	☐	☐	☐	☐
Completed site inventory:	☐	☐	☐	☐
AIR Sample Manifold Intact:	☐	☐	☐	☐
ZERO Air Generator OK:	☐	☐	☐	☐

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Thermo NOX

NOx Analyser
Calibration/Linearity Report

AirMonitors.co.uk

Model: 42c Serial No: 426808503 Report No. I24082016

Pre-Service/ Repair Calibration

Result / Gas	NO		NO2		NOX	
	PPB	mV	PPB	mV	PPB	mV
External Zero						
Injection of NO						
Injection of NO2						

Span Source Details

	NO	NO2
Cyl. No:		
Cyl. PSI:		
Cyl. Conc:	459	

459

Post Service/Repair Calibration

Result / Gas	NO		NO2		NOX	
	PPB	mV	PPB	mV	PPB	mV
External Zero	0.49		0		0.49	
Injection of NO	349		46		395	
Injection of NO2	.....		.....		.....	

External Zero Source Details

On Site ZAG:	☑
Cylinder:	☐
Scrubber:	☑

GPT Check

	Display (PPB)	Injected (NO)	Injected (03)
NO			0ppb
NO2			
NO			
NO2			

NO	0
NO2	0

Moly Effeciency: #DIV/0!

Post Service Linearity Check

Requested Span Point	Gas Type	V out (mV)	Display (ppb)	Photo-meter (ppb)
200	NO			
160	NO			
120	NO			
80	NO			
40	NO			
0	ZERO AIR			

Blender Details

Blender Model / SN°	
High Conc. Cyl N°	
High Conc. Cyl PSI	
High Conc. Cyl Conc	

Engineer:-	
Date:-	

SERVICE REPORT

AirMonitors.co.uk

Customer :	huntingdon cc	Job No:	bf81116hunting
Site Name:	huntingdon	Start Date	08/11/16
		Start Time	08:30
		End Date	08/11/16
		End Time	11:30

Reason for visit: NOX

Additional Reason for visit: Please select

Action Taken:
pre zero and span checks
serviced analyser
rebuilt pump
post service span and zero calibrated
bottle oxidized calibrated percentage difference to pre checks difference
both 5014
flow checked
rebuilt pumps
flow calibrated

Parts Used

Model Used on:	Part No: (Must be completed)	Description:	Qty	Invoice
	9212	o ring	2	
	4800	o ring	4	
	diffbn60	small dfu	1	
	ck81744	pump kit	1	
	ck2888	pump kit	2	

Engineer: Ben Freebrey

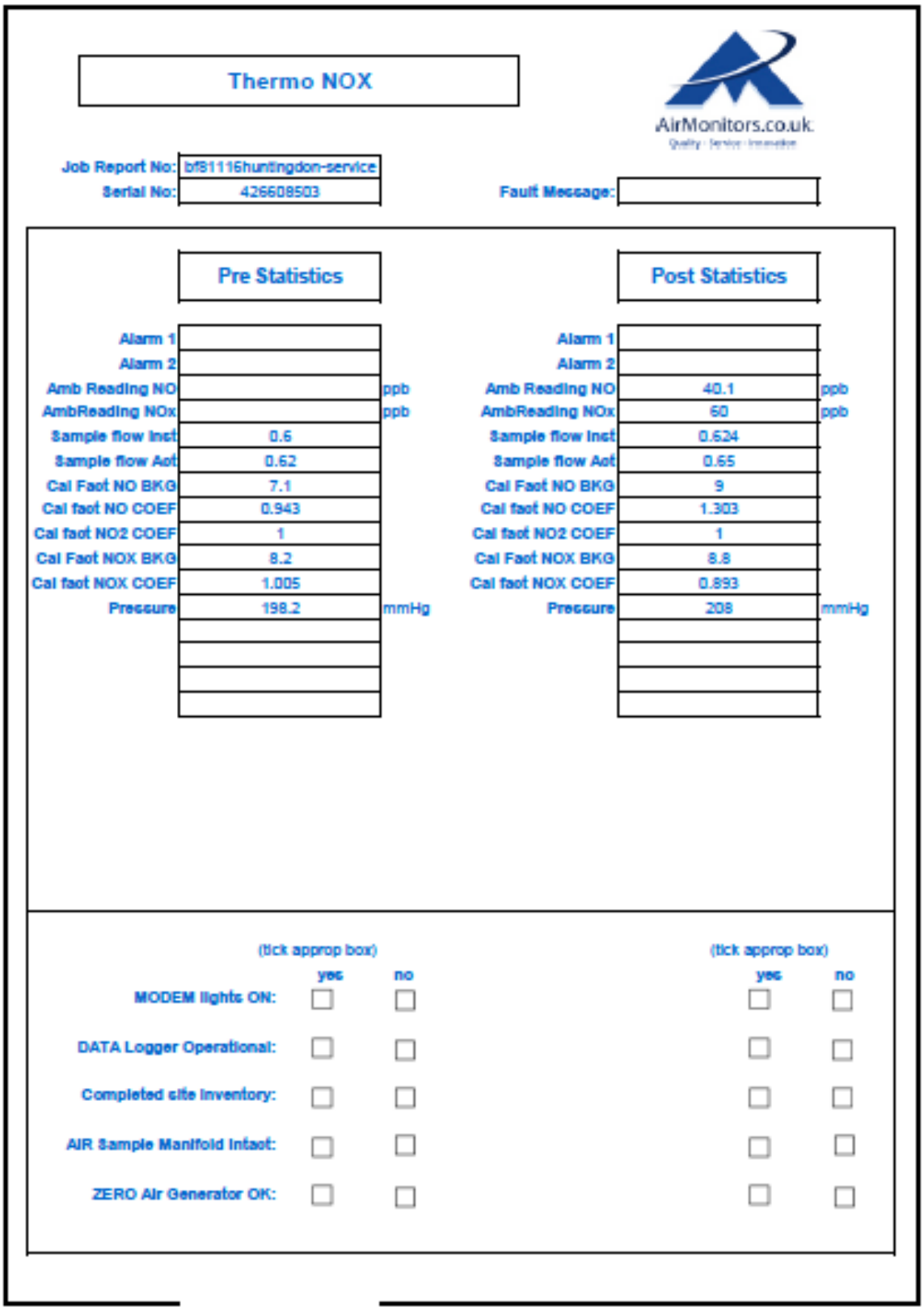
Visit Type: Routine Service

Complete site Inventory

For Office Use Only:

TTS: 4

VDT: A



Thermo NOX

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Job Report No:	bf81116huntingdon-service				
Serial No:	426608503		Fault Message:		

Pre Statistics			Post Statistics		
Alarm 1			Alarm 1		
Alarm 2			Alarm 2		
Amb Reading NO		ppb	Amb Reading NO	40.1	ppb
AmbReading NOx		ppb	AmbReading NOx	60	ppb
Sample flow Inst	0.6		Sample flow Inst	0.624	
Sample flow Aot	0.62		Sample flow Aot	0.65	
Cal Faot NO BKG	7.1		Cal Faot NO BKG	9	
Cal faot NO COEF	0.943		Cal faot NO COEF	1.303	
Cal faot NO2 COEF	1		Cal faot NO2 COEF	1	
Cal Faot NOX BKG	8.2		Cal Faot NOX BKG	8.8	
Cal faot NOX COEF	1.005		Cal faot NOX COEF	0.893	
Pressure	198.2	mmHg	Pressure	208	mmHg

	(tick approp box)		(tick approp box)	
	yes	no	yes	no
MODEM lights ON:	☐	☐	☐	☐
DATA Logger Operational:	☐	☐	☐	☐
Completed site inventory:	☐	☐	☐	☐
AIR Sample Manifold Intact:	☐	☐	☐	☐
ZERO Air Generator OK:	☐	☐	☐	☐

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Thermo NOX

Thermo 5014

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Job Report No: bf81116huntingdon-service
Serial No:
Fault Message:

	Pre Statistics	Post Statistics
Alarm 1		
Alarm 2		
AmbReading PM	43	
Amb RH	100	84.6
Sample RH	31.7	30.9
Amb Tmp	-1.4	0.5
Sample Tmp	16.3	16.2
Vaouum	47.3	26.3
Flow	15.64	16.7

	(tick approp box) yes	no	(tick approp box) yes	no
MODEM lights ON:	☐	☐	☐	☐
DATA Logger Operational:	☐	☐	☐	☐
Completed site inventory:	☐	☐	☐	☐
AIR Sample Manifold Intact:	☐	☐	☐	☐
ZERO Air Generator OK:	☐	☐	☐	☐

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Thermo 5014 (2.5)

Thermo 5014

AirMonitors.co.uk

Job Report No: bf81116huntingdon-service
Serial No:

Fault Message:

Pre Statistics		Post Statistics	
Alarm 1		Alarm 1	
Alarm 2		Alarm 2	
AmbReading PM	37.5	AmbReading PM	
Amb RH	100	Amb RH	100
Sample RH	26	Sample RH	31
Amb Tmp	-1.6	Amb Tmp	0.2
Sample Tmp	19.5	Sample Tmp	18.5
Vacuum	54.5	Vacuum	47.6
Flow	15.78	Flow	16.7

	(tick approp box) yes	no	(tick approp box) yes	no
MODEM lights ON:	☐	☐	☐	☐
DATA Logger Operational:	☐	☐	☐	☐
Completed site inventory:	☐	☐	☐	☐
AIR Sample Manifold Intact:	☐	☐	☐	☐
ZERO Air Generator OK:	☐	☐	☐	☐

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Thermo 5014

NOx Analyser Calibration/Linearity Report

AirMonitors.co.uk

Model: thermo | Serial No: 429608503 | Report No. bf81116hu

Pre-Service/ Repair Calibration

Gas \ Result	NO		NO2		NOX	
	PPB	mV	PPB	mV	PPB	mV
External Zero	0.1		0.3		0.4	
Injection of NO	240		56		296	
Injection of NO2						

Span Source Details

	NO	NO2
Cyl. No:	d335356	
Cyl. PSI:	1700	
Cyl. Conc:	459	

Post Service/Repair Calibration

Gas \ Result	NO		NO2		NOX	
	PPB	mV	PPB	mV	PPB	mV
External Zero	0		0		0	
Injection of NO	371		104		459	
Injection of NO2						

External Zero Source Details

On Site ZAG:	☑
Cylinder:	☐
Scrubber:	☐

GPT Check

	Display (PPB)	Injected (NO)	Injected (03)
NO			0ppb
NO2			
NO			
NO2			

NO	0
NO2	0
Moly Effeciency	4DMV0I

Post Service Linearity Check

Requested Span Point	Gas Type	V out (mV)	Display (ppb)	Photo-meter (ppb)
200	NO			
160	NO			
120	NO			
80	NO			
40	NO			
0	ZERO AIR			

Blender Details

Blender Model / SN°	
High Conc. Cyl N°	
High Conc. Cyl PSI	
High Conc. Cyl Conc	

Engineer:-	
Date:-	

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

Figure D.1: Map indicating location of Automatic NO_2, PM_{10} and $PM_{2.5}$ monitor:

Figure D.2: Mapvshowing location of Automatic NO_2, PM_{10} and $PM_{2.5}$ monitor:

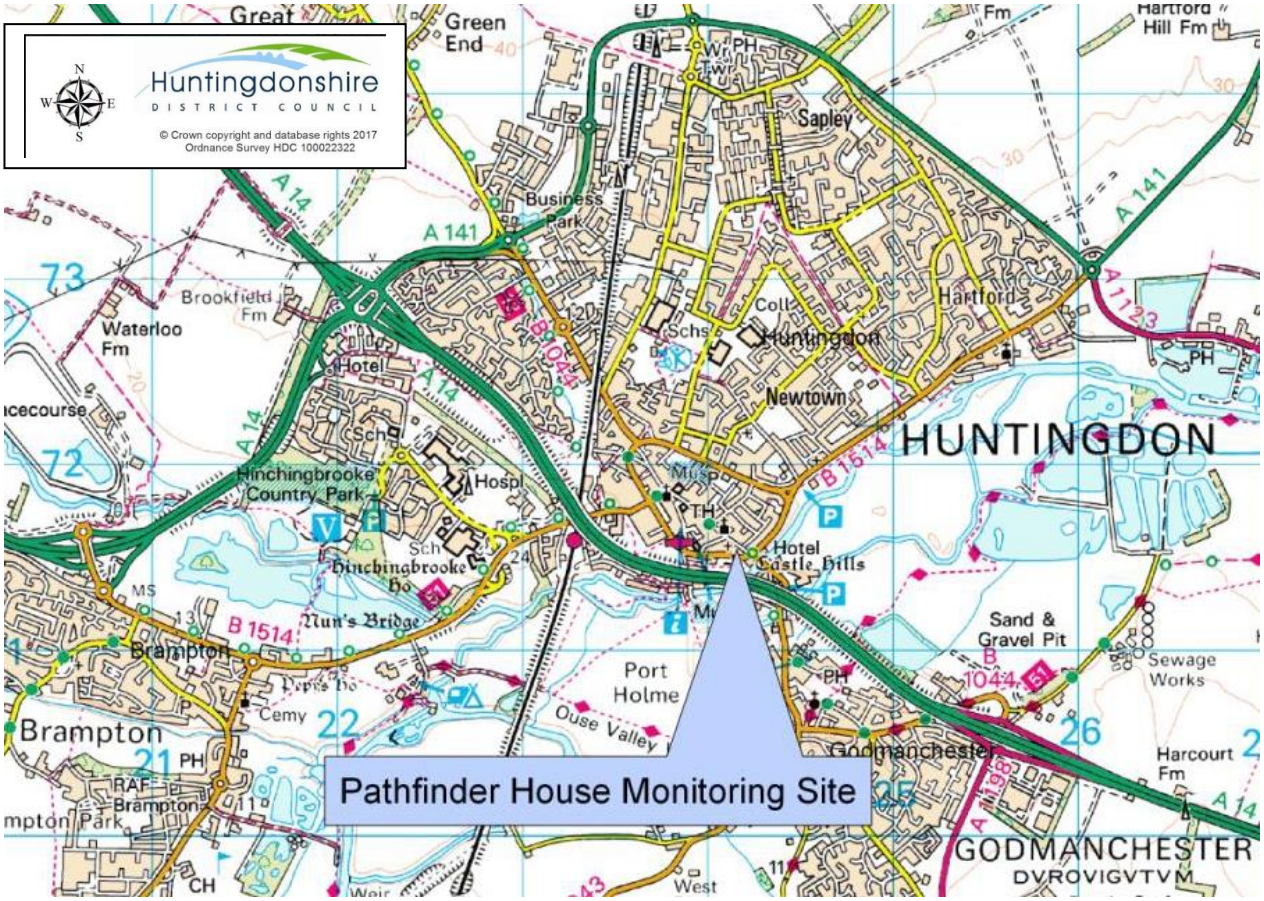
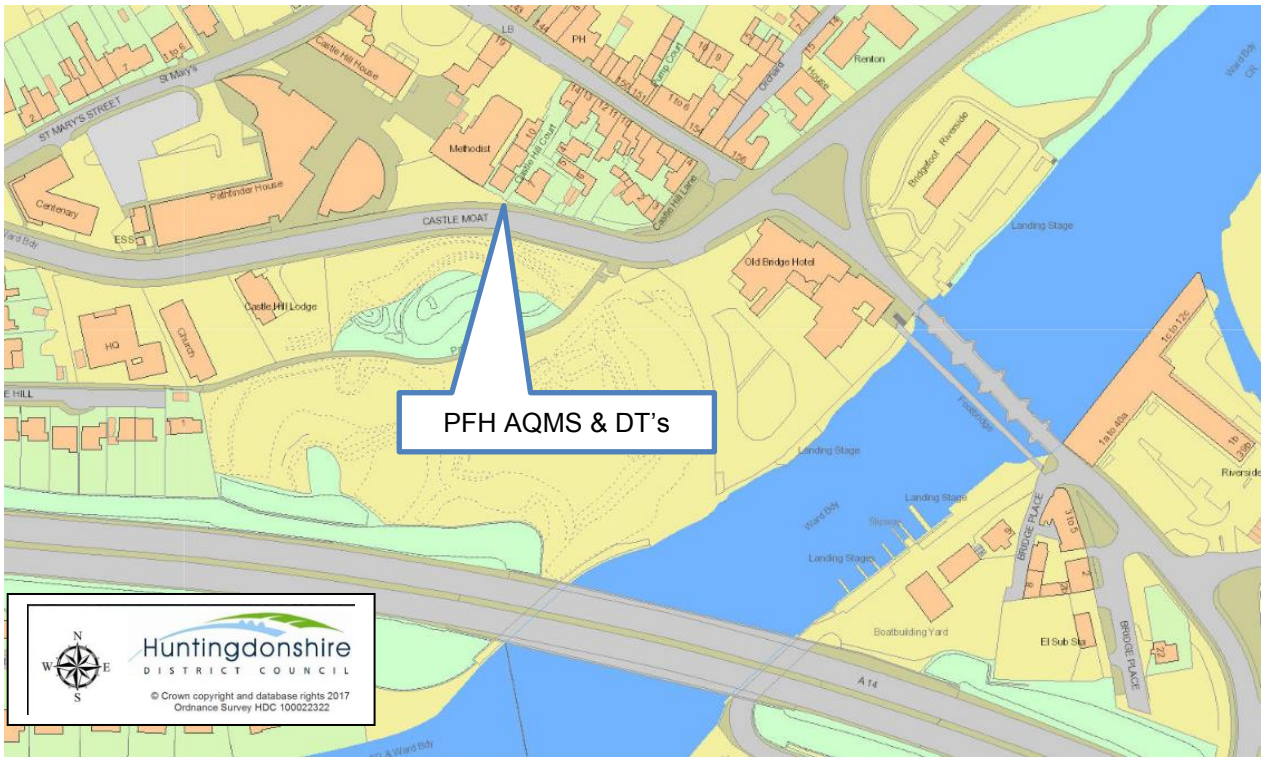


Figure D.3: Close up of location of Automatic NO_2, PM_{10} and $PM_{2.5}$ monitor:



Please note – The AQMS can be seen in relation to the AQMA, on figure D5 as 'PFH'.

Figure D.4: Map indicating location of non automatic (Diffusion Tube) NO_2 monitoring locations:

Figure D.5: Huntingdon AQMA Diffusion Tube NO_2 monitoring locations:

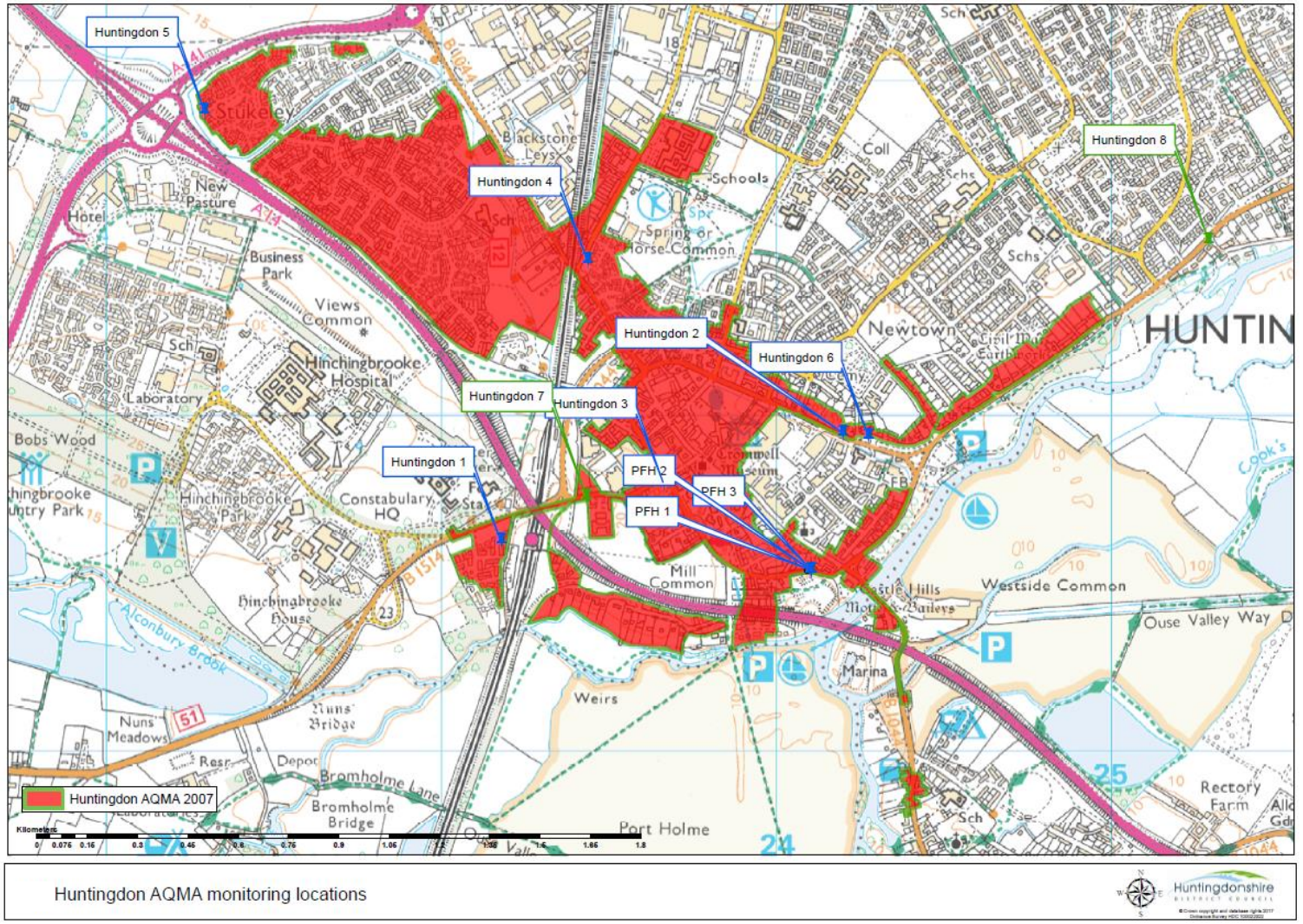


Figure D.6: St Neots AQMA Diffusion Tube NO_2 monitoring locations:

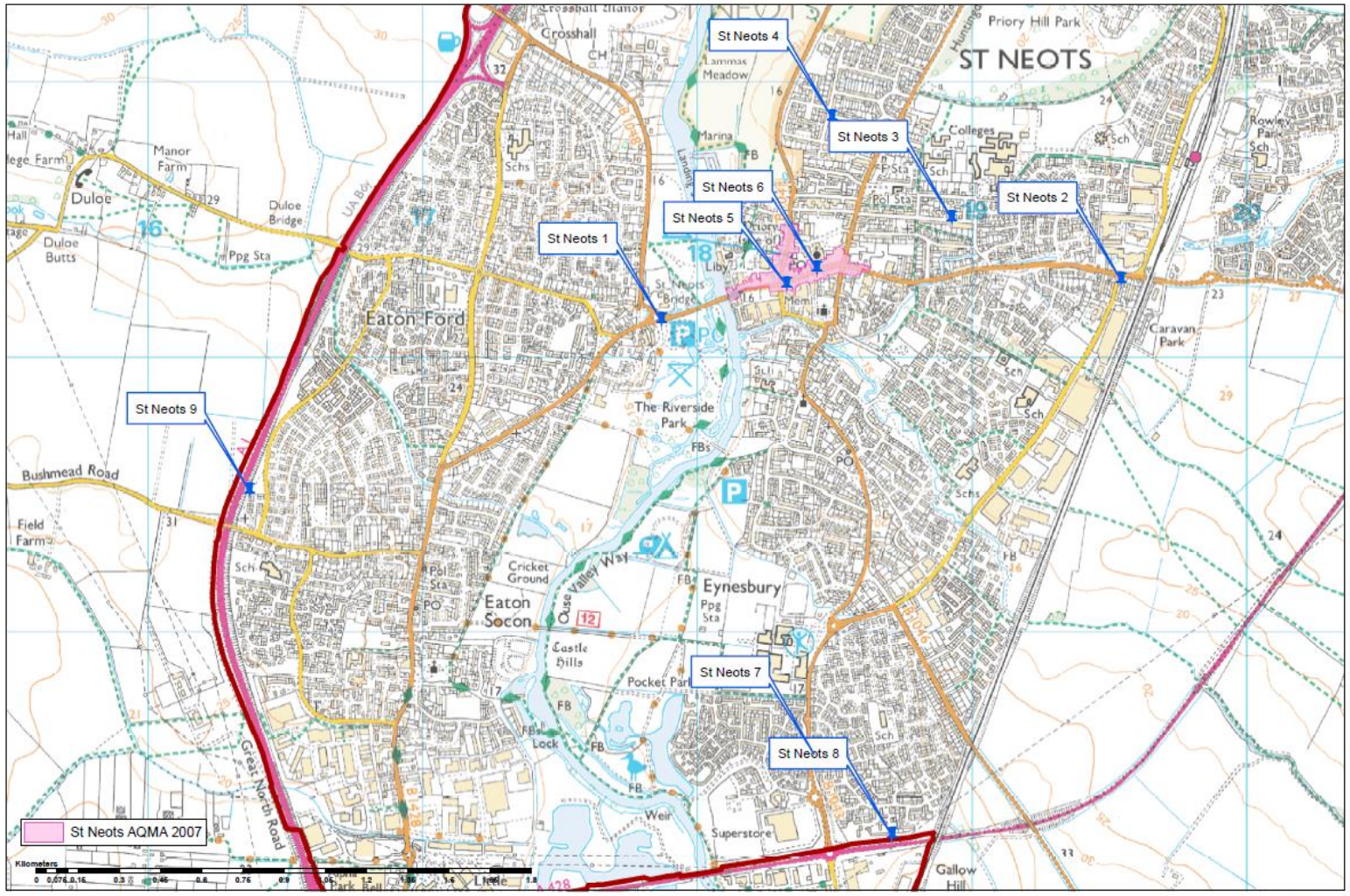


Figure D.7: A14 Fenstanton AQMA Diffusion Tube NO_2 monitoring locations:

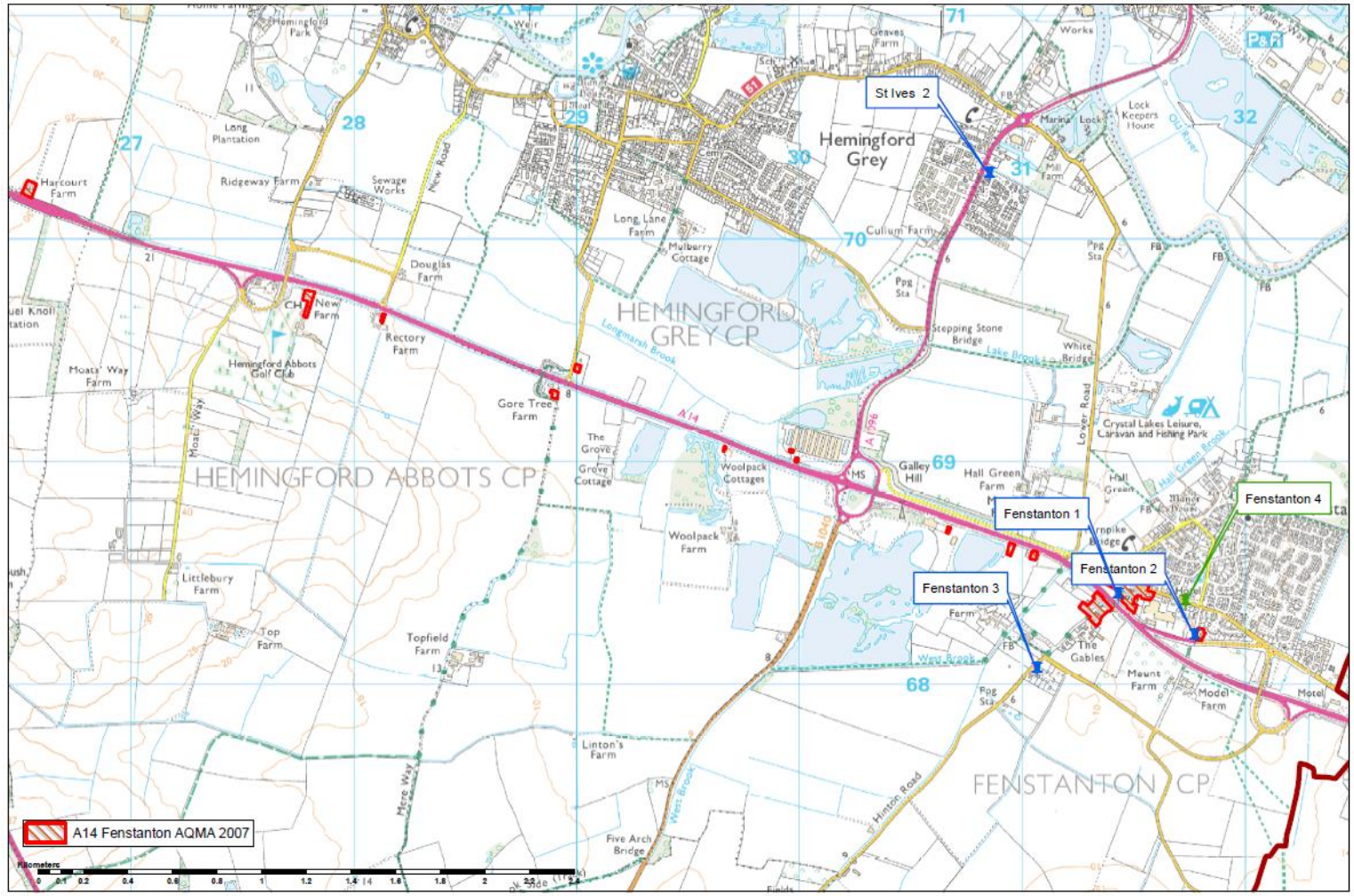
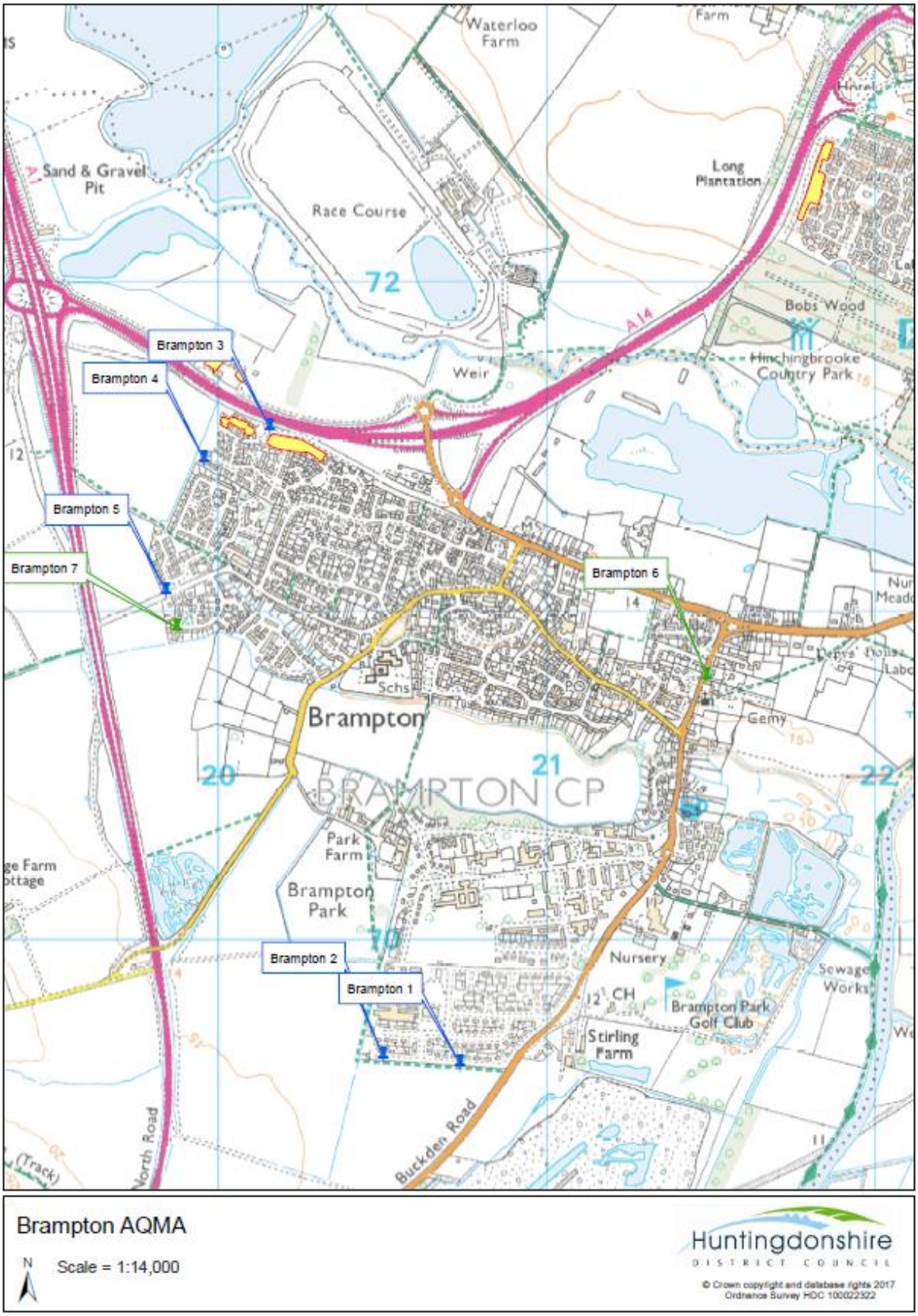


Figure D.8: Brampton AQMA Diffusion Tube NO_2 monitoring locations:



Appendix E: Summary of Air Quality Objectives in England

Table E.1 – Air Quality Objectives in England

Pollutant	Air Quality Objective[4]	
	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

[4] The units are in micrograms of pollutant per cubic metre of air (µg/m^3).

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
AQMS	Air Quality Monitoring Station
ASR	Air quality Annual Status Report
Defra	Department for Environment, Food and Rural Affairs
DMRB	Design Manual for Roads and Bridges – Air quality screening tool produced by Highways England
EU	European Union
FDMS	Filter Dynamics Measurement System
LAQM	Local Air Quality Management
NO_2	Nitrogen Dioxide
NO_x	Nitrogen Oxides
PM_{10}	Airborne particulate matter with an aerodynamic diameter of 10µm (micrometres or microns) or less
$PM_{2.5}$	Airborne particulate matter with an aerodynamic diameter of 2.5µm or less
QA/QC	Quality Assurance and Quality Control
SO_2	Sulphur Dioxide