



# 2018 Air Quality Annual Status Report (ASR)

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

September 2018

## Weymouth & Portland Borough Council

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## Executive Summary: Air Quality in Our Area

### Air Quality in Weymouth and Portland

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<sup>1,2</sup>.

The annual health cost to society of the impacts of particulate matter alone in the UK is estimated to be around £16 billion<sup>3</sup>.

The air quality issues in Weymouth and Portland are with traffic related NO<sub>2</sub>. The latest monitoring data shows a general decrease in NO<sub>2</sub>. The current hotspot locations are Boot Hill (Rodwell Road) and King Street in Weymouth. Weymouth and Portland Borough Council (“W&PBC”) are monitoring for NO<sub>2</sub> in these locations using diffusion tubes and undertake automatic (continuous) monitoring at Boot Hill.

All other potential sources of air pollution have been examined through the LAQM historical reporting system and not identified to be an issue.

### Actions to Improve Air Quality

W&PBC are continuing discussions with Dorset County Council (“DCC”) about actions that can be taken at Boot Hill to improve congestion and therefore pollution levels. Further information will be reported in the 2019 ASR.

### Conclusions and Priorities

Weymouth and Portland Borough Council is working proactively with Development Control, local businesses by way of the permitting regime and Dorset County Council to ensure that air quality is continually reviewed. In addition, Weymouth and Portland Borough Council is involved with plans for a pan-Dorset PM<sub>2.5</sub> project with Dorset Public Health.

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<sup>1</sup> Environmental equity, air quality, socioeconomic status and respiratory health, 2010

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

<sup>3</sup> Defra. Abatement cost guidance for valuing changes in air quality, May 2013

## Local Engagement and How to get Involved

Dorset For You website <https://www.dorsetforyou.gov.uk/travel/travel.aspx> includes measures the public can actively use to improve air quality within the area, these include matters such as interactive cycle maps, adult cycle training and walking routes and trails.

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## 1 Local Air Quality Management

This report provides an overview of air quality in Weymouth and Portland during 2017. 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 Weymouth and Portland Borough Council (W&PBC) 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.1 in Appendix E.

## 2 Actions to Improve Air Quality

### 2.1 Air Quality Management Areas

Air Quality Management Areas (AQMAs) are declared when there is an exceedance or likely exceedance of an air quality objective. After declaration, the authority 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.

Weymouth and Portland Borough Council currently does not have any AQMAs.

For reference, a map of Weymouth and Portland Borough Council's monitoring locations is available in Appendix D.



## 2.2 Progress and Impact of Measures to address Air Quality in Weymouth and Portland

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

*The Report sets out the Annual Status Report, which forms part of the Review & Assessment process required under the Environment Act 1995 and subsequent Regulations.*

*Poole and Weymouth Borough Council does not currently have any AQMAs, or associated AQAPs. In 2016, nitrogen dioxide was measured across a network of one automatic monitoring site and 14 passive diffusion tubes. PM<sub>10</sub> was also measured at the automatic monitoring site. In 2016 there was one exceedance of the mean annual objective for nitrogen dioxide, at site 52 (16 Rodwell Road), of 46.36µg/m<sup>3</sup>. There were no other exceedances of air quality objectives following the applications of appropriate corrections.*

*The Local Authority is currently in discussion with Dorset County Council about actions that can be taken at Boot Hill to improve congestion and subsequent air quality in the hotspot. Dorset County Council have implemented new re-phasing of the traffic lights at Boot Hill in 2017, and the results of these changes will be monitored in 2017 and reported in the 2018 ASR.*

*The Local Authority is also working in partnership with Dorset, Poole, Bournemouth and Public Health England on the Pan Dorset PM<sub>2.5</sub> Monitoring Project.*

*On the basis of the evidence provided by the local authority, the conclusions reached are acceptable for all sources and pollutants.*

*Following the completion of this report, Weymouth and Portland Borough Council should submit the next Annual Status Report in 2017.*

## Commentary

*The report is well structured, detailed, and provides the information specified in the Guidance. The following comments are designed to assist with future reports.*

- 1. There is a fairly significant exceedance of the mean annual nitrogen dioxide objective at Site 52. This is the second year that an exceedance has been reported at this site.*
- 2. It is noted that measures are being taken by the Council to improve air quality at this hotspot. We recommend that this site be kept under review, and if concentrations do not improve in 2017, that the Council consider undertaking a Detailed Assessment and proceeding to declare an AQMA.*
- 3. The Local Authority has been diligent in reviewing their air quality monitoring programme, removing and introducing sites as necessary. This is encouraged, and we recommend the Local Authority continue to review their monitoring programme, ensuring that monitoring is carried out at all locations of relevant exposure where exceedances may be occurring.*
- 4. The Local Authority should provide details of the annualisation applied to sites 55 and 57 in Appendix C, including an example calculation.*
- 5. Distance corrections should be applied to all sites that are not representative of relevant exposure, following the TG(16) guidance. It is noted that the Council followed the advice given by the Defra LAQM helpline and only applied distance corrections to site 10 where an exceedance was occurring. However...*
- 6. It would be useful if the maps presented in Appendix D would identify the locations of the monitoring sites with points rather than labels, as the exact locations of the sites are unclear.*

The following Strategies that will have a beneficial impact upon air quality are outlined below:

### Air Quality Planning Policies

West Dorset District Council (“WDDC”) and Weymouth & Portland Borough Council have prepared a joint Local Plan. The adopted Local Plan forms the main basis for making decisions on planning applications. It was adopted by Weymouth & Portland Borough Council on 15 October 2015 and by West Dorset District Council on 22 October 2015.

The Local Plan sets out a long term planning strategy for the area from 2011 - 2031 and includes detailed policies and site proposals for housing, employment, leisure and infrastructure and can be accessed via the following link:

<https://www.dorsetforyou.gov.uk/jointlocalplan/west/weymouth>

### Local Transport Plan 3 2011 – 2026

The Local Transport Plan 3 (LTP3) is a statutory document, which sets out a strategy for the management, maintenance and development of the County’s transport system. It sets out a way forward to deliver transport needs through short, medium and long term transport solutions and how transport can improve safety and health, support the local economy, protect the environment and reduce carbon emissions and pollution. The LTP3 came into effect in April 2011 and has been produced for the whole of Bournemouth, Poole and Dorset. It covers the period from 2011 to 2026 and is based on a longer term strategy (2011 – 2026) and shorter term implementation plan(s) (3 years), further details can be found at

<https://www.dorsetforyou.gov.uk/travel-dorset/roads-and-driving/road-information/road-and-transport-improvement-schemes/local-transport-plan-3>

### Travel Choice

This is a County wide initiative to raise awareness about the impacts of travel behaviour and to encourage people to make an informed decision about journeys they make. For example Cycle West, a project to promote our area as a destination for cross channel cycle tourism, promoting cycling events and cycle routes and providing training for adults wanting to get back on their bikes. This initiative also

promotes Car Share Dorset, an online tool to encourage and facilitate car sharing by matching journeys, run jointly by Dorset County Council and Bournemouth and Poole Borough Councils. More information can be found

<https://www.dorsetforyou.gov.uk/travel/travel.aspx>

### Industrial Installations

Certain industrial processes and activities which have the potential to cause pollution are required to have an Environmental Permit to operate. The Environmental Permitting (England and Wales) Regulations 2016 were made under the Pollution Prevention and Control Act 1999 and prescribe those processes and activities which require a permit. These processes are split into three categories: Part A(1), Part A(2) and Part B and are regulated by the Environment Agency and local authorities.

A list of Permitted Processes in Weymouth and Portland is provided in Appendix G. Emissions to air are monitored for Part B processes by W&PBC. W&PBC do not have any Part A Processes.

## 2.3 PM<sub>2.5</sub> – 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<sub>2.5</sub> (particulate matter with an aerodynamic diameter of 2.5µm or less). There is clear evidence that PM<sub>2.5</sub> has a significant impact on human health, including premature mortality, allergic reactions, and cardiovascular diseases.

Defra's national background maps have been used to identify the modelled PM<sub>2.5</sub> concentrations for the calendar year 2017.

The average of Total PM<sub>2.5</sub> of all 64 locations (centre point of 1 km x 1 km grids) was 8.32µg/m<sup>3</sup> (Min 7.48 µg/m<sup>3</sup> and Max 9.25µg/m<sup>3</sup>).

PM<sub>2.5</sub> concentrations are considered to be well below the EU Limit Value of 25 µg/m<sup>3</sup>.

Public Health England included a specific Health Protection Indicator within the Public Health Outcome Framework (PHOF), looking to improve the fraction of mortality attributable to particulate air pollution. To properly review the situation within Dorset, all the local authorities have collaborated with Public Health Dorset to formulate a project to monitor PM<sub>2.5</sub>.

This will look to create an air quality evidence base for the local authority areas of Dorset, Bournemouth and Poole and establish the local linkages with health outcomes. This will corroborate DEFRA modelling and the PHOF. It is possible that results will be used to validate research on satellite-derived particulate measurements undertaken by Southampton University.

The project will create a pan-Dorset monitoring network with monitoring locations selected by way of a formal review of pollution, health and demographic data, within a model created by Public Health Dorset. Locations are yet to be confirmed.

The monitoring methods will be by way of a number of AQMesh Pods (<http://www.aqmesh.com/product/>), which will be collocated and referenced to an existing Real-Time analyser within Weymouth and Portland Borough Council. In addition, Omni Samplers (<https://bqi.mesalabs.com/wp-content/uploads/sites/35/2014/10/OMNI-FT.19NOV2015.pdf>) will be used to collect

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physical samples of particulates and then analysed to establish the speciation of particles throughout our County.

The project's partners comprise:

- Public Health Dorset
- Weymouth and Portland Borough Council
- West Dorset District Council
- North Dorset District Council
- Poole Borough Council
- Bournemouth Borough Council
- Purbeck District Council
- Christchurch Borough Council
- Southampton University

The AQMesh have been in operation from early 2018 throughout Dorset. The project's initial duration is anticipated to be approximately 2 years. It is hoped that more details and results will be included in the 2019 ASR.

In addition, the Council is taking the following measures to address PM<sub>2.5</sub>:

- Inspection of processes under the LAPPC Regime.
- Liaise with Dorset County Council (the Highway Authority) with regards to improvements schemes on the road infrastructure as and when necessary
- The AQAP in place in our adjacent local authority (WDDC) looks at measures to reduce the exposure of residents within their AQMAs to NO<sub>2</sub>, however, these initiatives will have a positive effect on PM<sub>2.5</sub> levels within our local authority.
- Travel choices as detailed above.

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

### **3.1 Summary of Monitoring Undertaken**

#### **3.1.1 Automatic Monitoring Sites**

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

Weymouth and Portland Borough Council undertook automatic (continuous) monitoring at one site during 2017. Table A.1 in Appendix A shows the details of the site.

Rodwell Road was an area of concern for a number of years for traffic related nitrogen dioxide. As there was thought to be a correlation between nitrogen dioxide and particulate matter, a grant application was put to Defra to enable purchase of a TEOM FDMS analyser for this location. Dorset County Council assisted W&PBC with purchasing a chemiluminescent analyser to be placed at this location. The site was installed in February 2010.

The analyser at Rodwell Road is not located within an AQMA. The Rodwell Road station is considered to be representative of relevant public exposure, as there are facades of residential properties located at approximately the same distance from the road in that area.

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

#### **3.1.2 Non-Automatic Monitoring Sites**

Weymouth and Portland Borough Council undertook non- automatic (passive) monitoring of NO<sub>2</sub> at 12 sites during 2017. Table A.2 in Appendix A shows the details of the sites.

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

W&PBC monitored at one additional location during 2017, at the request of a local Councillor. Diffusion tube number 58 is located at Fortuneswell, Portland. See figure D.5 for the diffusion tube location.

## **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<sub>2</sub>)**

Table A.3 in Appendix A compares the ratified and adjusted monitored NO<sub>2</sub> annual mean concentrations for the past 5 years with the air quality objective of 40µg/m<sup>3</sup>.

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

Table A.4 in Appendix A compares the ratified continuous monitored NO<sub>2</sub> hourly mean concentrations for the past 5 years with the air quality objective of 200µg/m<sup>3</sup>, not to be exceeded more than 18 times per year. There were no exceedences of this objective in 2017.

Monitoring for 2017 shows a general decrease in NO<sub>2</sub>. Results show that all of the diffusion tubes in Weymouth and Portland were below the objective in 2017.

W&PBC carried out a short term monitoring study during 2016. Results from the additional diffusion tube locations, (diffusion tube numbers 55, 56 and 57 at Boot Hill), were presented in the 2017 ASR. The results for diffusion tubes 55 and 57 showed the annual means to be well below the objective (diffusion tube 56 was not deployed following the guidance in TG16 (7.180)), therefore W&PBC decided not to continue monitoring at these locations during 2017.

The local bias adjustment factor for 2017 (figure C.1) is 0.81, lower than the figure for 2016 (1.05) and is more in line with previous local bias adjustment figures for this location (0.68 for 2013 and 0.76 for 2014).

W&PBC reported in the 2017 ASR that DCC had again re-phased the lights at Boot Hill in 2017 which may have had a contributing effect on the 2017 results. W&PBC will continue discussions with DCC about actions that can be taken at Boot Hill to improve congestion and therefore help to improve pollution levels.



Approximate shipping movements have been obtained from Portland Harbour Authority for Portland Port. The number of ship movements for 2017 was 734, well below the figure of 5000 large ship movements per year stated in LAQM TG(16), 7.20.

All monitoring data presented has been properly ratified and corrected for bias. Results have been distance corrected to the nearest receptor, where required.

### 3.2.2 Particulate Matter (PM<sub>10</sub>)

Table A.5 in Appendix A compares the ratified and adjusted monitored PM<sub>10</sub> annual mean concentrations for the past 5 years with the air quality objective of 40µg/m<sup>3</sup>.

Table A.6 in Appendix A compares the ratified continuous monitored PM<sub>10</sub> daily mean concentrations for the past 5 years with the air quality objective of 50µg/m<sup>3</sup>, not to be exceeded more than 35 times per year. W&PBC recorded 54.52% of valid data (using 18 hours or more data for the 24 hour average, as per TG(16) 7.161). There were no 24-hour mean values above 50µg/m<sup>3</sup> using this data. Following the guidance in TG(16), 1.164, the 90.4<sup>th</sup> percentile for 24 hour PM<sub>10</sub> has been provided in brackets in the Table A.6. As this value is below 50µg/m<sup>3</sup>, this means that if there had been 100% data capture, then there would have been less than 35 exceedances of 50µg/m<sup>3</sup> for 2017.

The Air Quality Objectives for PM<sub>10</sub> were achieved for 2017.

## 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) <sup>(1)</sup>	Distance to kerb of nearest road (m) <sup>(2)</sup>	Inlet Height (m)
Boot Hill	Boot Hill	Roadside	367541	78471	NO <sub>2</sub>	NO	Chemiluminescent	N/A	3.5	2
Boot Hill	Boot Hill	Roadside	367541	78471	PM <sub>10</sub>	NO	TEOM FDMS	N/A	3.5	2

**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.

The location of the automatic analyser on Boot Hill is representative of relevant exposure i.e. the distance of the inlet from the source is the same distance as the façade of residential dwellings in this area.

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) <sup>(1)</sup>	Distance to kerb of nearest road (m) <sup>(2)</sup>	Tube collocated with a Continuous Analyser?	Height (m)
4	St Georges Estate	Urban Background	368779	71706	NO <sub>2</sub>	N	Representative of façade	2	N	2.5
8	King Street	Roadside	368003	79527	NO <sub>2</sub>	N	N/A	2	N	2.5
10	Rodwell Road	Roadside	367542	78548	NO <sub>2</sub>	N	2.5	2.5	N	3
30	15 Rodwell Road	Roadside (on façade of dwelling)	367545	78550	NO <sub>2</sub>	N	0	6	N	2.5
31	Rodwell Roundabout	Roadside	367540	78471	NO <sub>2</sub>	N	Representative of façade	3.5	Y	3
32	To Portmore Gardens	Roadside	367528	78554	NO <sub>2</sub>	N	Representative of façade	2	N	3
49	Rodwell Roundabout II	Roadside	367540	78471	NO <sub>2</sub>	N	Representative of façade	3.5	Y	3
50	Rodwell Roundabout III	Roadside	367540	78471	NO <sub>2</sub>	N	Representative of façade	3.5	Y	3
51	Rodwell Inn	Roadside	367550	78485	NO <sub>2</sub>	N	Representative of façade	2	N	3
52	16 Rodwell Road	Roadside	367533	78531	NO <sub>2</sub>	N	0	2	N	3
44	Melcombe House	Roadside	367830	78595	NO <sub>2</sub>	N	N/A	3	N	3
45	Upwey Street	Roadside (on façade of dwelling)	367879	78567	NO <sub>2</sub>	N	0	1.5	N	3
46	Dominoes	Roadside	367995	79528	NO <sub>2</sub>	N	N/A	2.5	N	3

58		Roadside	368540	73593	NO <sub>2</sub>	N	0.9	1.5	N	2.5
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**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<sub>2</sub> Monitoring Results

Site ID	Site Type	Monitoring Type	Valid Data Capture for Monitoring Period (%) <sup>(1)</sup>	Valid Data Capture 2017 (%) <sup>(2)</sup>	NO <sub>2</sub> Annual Mean Concentration (µg/m <sup>3</sup> ) <sup>(3)</sup>				
					2013	2014	2015	2016	2017
Boot Hill	Roadside	Automatic	N/A	91	29.23	32.53	-	38.64	32.52
4	Urban Background	Diffusion Tube	N/A	100	5.77	5.82	7.60	8.53	6.13
8	Roadside	Diffusion Tube	N/A	83.33	23.29	25.65	31.44	34.87	27.11
10	Roadside	Diffusion Tube	N/A	100	30.38	33.99	35.9	37.6	27.9
29	Roadside	Diffusion Tube	N/A	100	17.07	19.57			
30	Roadside (on façade of dwelling)	Diffusion Tube	N/A	100	18.69	21.17	26.53	27.70	20.73
31	Roadside	Diffusion Tube	N/A	100	27.57	32.49	37.13	38.45	31.68
32	Roadside	Diffusion Tube	N/A	100	25.25	30.07	35.36	36.81	28.14
49	Roadside	Diffusion Tube	N/A	100	28.19	31.87	36.46	38.40	31.42
50	Roadside	Diffusion Tube	N/A	100	29.30	30.73	35.19	38.57	30.86
51	Roadside	Diffusion Tube	N/A	100	29.42	31.15	38.24	39.96	32.32
52	Roadside	Diffusion Tube	N/A	100	32.60	35.35	<b>43.82</b>	<b>46.36</b>	36.02
42	Roadside	Diffusion Tube	N/A	100	18.76	21.93			
44	Roadside	Diffusion Tube	N/A	100	21.24	25.75	26.89	30.26	24.13

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45	Roadside (on façade of dwelling)	Diffusion Tube	N/A	100	24.58	28.45	34.01	37.24	30.75
46	Roadside	Diffusion Tube	N/A	100	25.68	29.76	34.52	38.32	31.09
58	Roadside	Diffusion Tube	N/A	100					27.30

Diffusion tube data has been bias corrected

Annualisation has been conducted where data capture is <75% (N/A, all data capture is above 75%)

If applicable, all data has been distance corrected for relevant exposure

### Notes:

Exceedances of the NO<sub>2</sub> annual mean objective of 40µg/m<sup>3</sup> are shown in **bold**.

NO<sub>2</sub> annual means exceeding 60µg/m<sup>3</sup>, indicating a potential exceedance of the NO<sub>2</sub> 1-hour mean objective are shown in **bold and underlined**.

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

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

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

Figure A.1 – Trends in Annual Mean NO<sub>2</sub> Concentrations

Figure A.1.1 King Street Locations

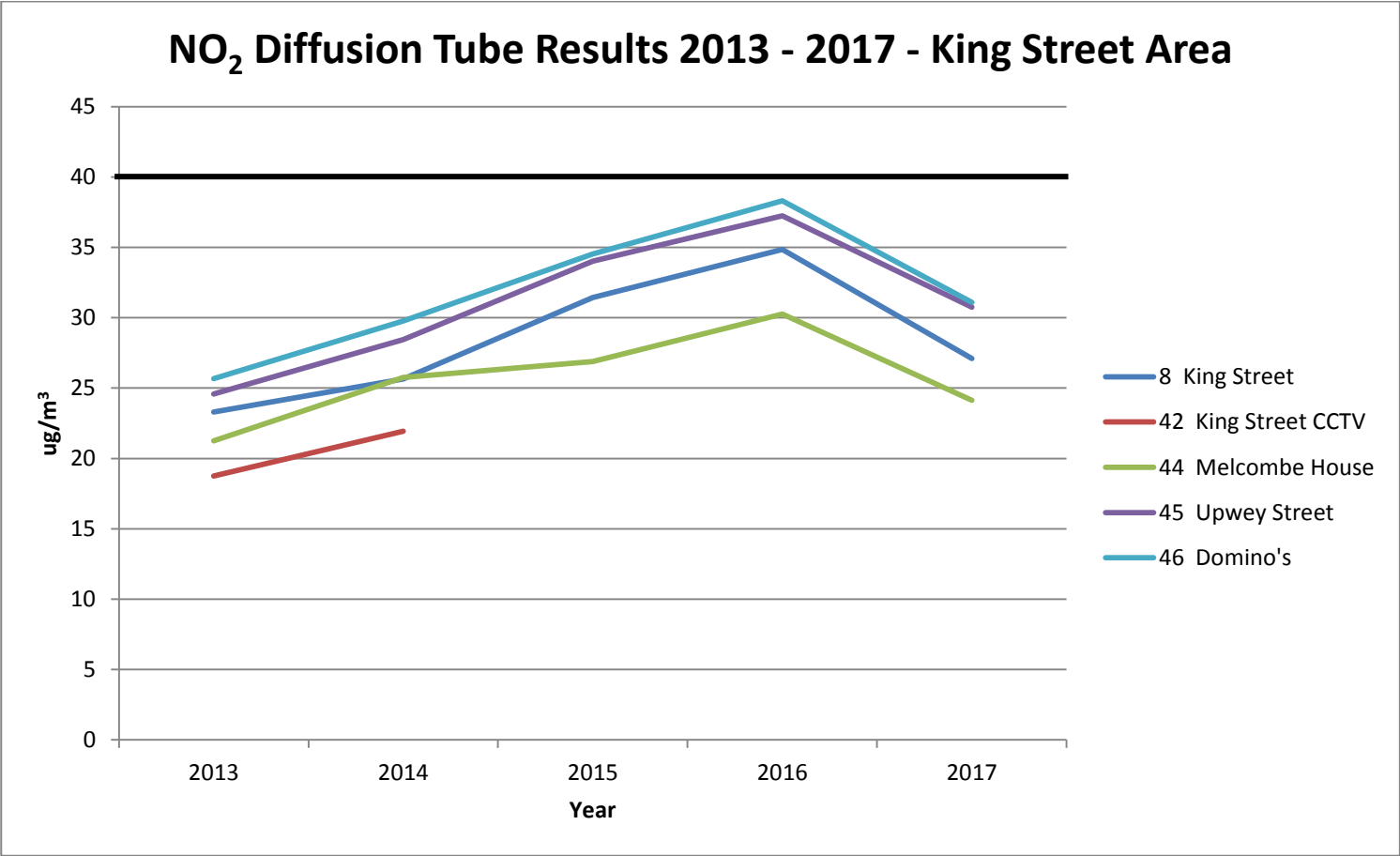


Figure A.1.2 Boot Hill Locations

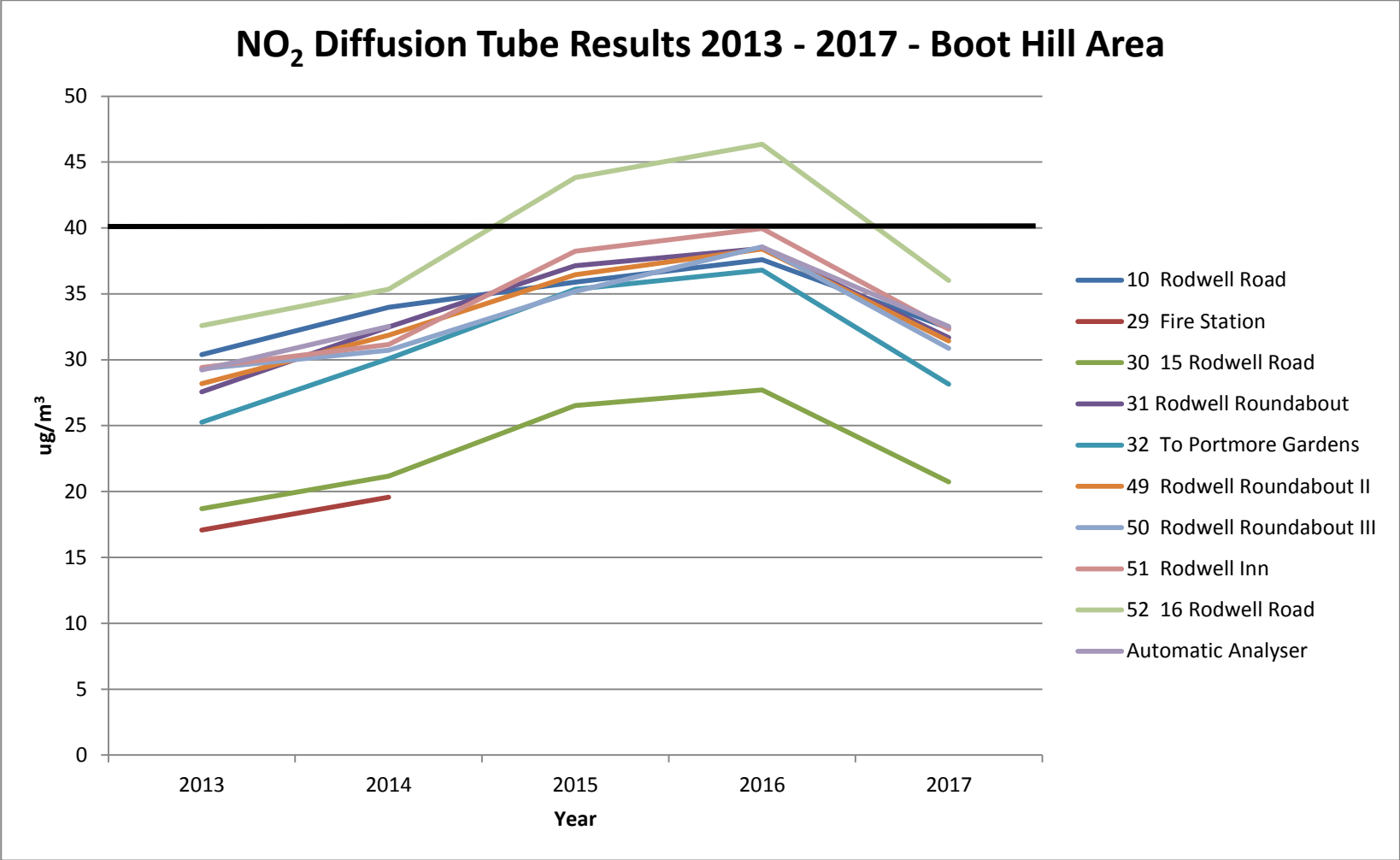




Table A.4 – 1-Hour Mean NO<sub>2</sub> Monitoring Results

Site ID	Site Type	Monitoring Type	Valid Data Capture for Monitoring Period (%) <sup>(1)</sup>	Valid Data Capture 2017 (%) <sup>(2)</sup>	NO <sub>2</sub> 1-Hour Means > 200µg/m <sup>3</sup> <sup>(3)</sup>				
					2013	2014	2015	2016	2017
Boot Hill	Boot Hill	Automatic	N/A	95	0	0	-	0	0

**Notes:**

Exceedances of the NO<sub>2</sub> 1-hour mean objective (200µg/m<sup>3</sup> 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 99.8<sup>th</sup> percentile of 1-hour means is provided in brackets.

Table A.5 – Annual Mean PM<sub>10</sub> Monitoring Results

Site ID	Site Type	Valid Data Capture for Monitoring Period (%) <sup>(1)</sup>	Valid Data Capture 2017 (%) <sup>(2)</sup>	PM <sub>10</sub> Annual Mean Concentration (µg/m <sup>3</sup> ) <sup>(3)</sup>				
				2013	2014	2015	2016	2017
Boot Hill	Roadside	N/A	75	30.91	30.02	-	18.87	17.41

Annualisation has been conducted where data capture is <75% (N/A data capture is 75%)

**Notes:**

Exceedances of the PM<sub>10</sub> annual mean objective of 40µg/m<sup>3</sup> 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.

Table A.6 – 24-Hour Mean PM<sub>10</sub> Monitoring Results

Site ID	Site Type	Valid Data Capture for Monitoring Period (%) <sup>(1)</sup>	Valid Data Capture 2017 (%) <sup>(2)</sup>	PM <sub>10</sub> 24-Hour Means > 50µg/m <sup>3</sup> <sup>(3)</sup>				
				2013	2014	2015	2016	2017
Boot Hill	Roadside	N/A	54.52	-	-	-	0	0 (36.69)

**Notes:**

Exceedances of the PM<sub>10</sub> 24-hour mean objective (50µg/m<sup>3</sup> 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 90.4<sup>th</sup> percentile of 24-hour means is provided in brackets.

## Appendix B: Full Monthly Diffusion Tube Results for 2017

Table B.1 – NO<sub>2</sub> Monthly Diffusion Tube Results – 2017

Site ID	NO <sub>2</sub> Mean Concentrations (µg/m <sup>3</sup> )												Annual Mean		
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Raw Data	Bias Adjusted (0.81) and Annualised <sup>(1)</sup>	Distance Corrected to Nearest Exposure <sup>(2)</sup>
4 St Georges Estate	12.23	11.26	8.36	7.27	8.65	8.15	4.94	6.78	5.13	4.05	7.48	6.46	7.56	6.13	6.13
8 King Street	39.43	36.37	32.28	38.03	32.42	34.82	30.02			28.20	34.17	28.94	33.47	27.11	27.11
10 Rodwell Road	49.55	43.41	40.50	43.33	43.01	45.51	37.55	38.11	35.21	34.69	36.81	32.46	40.01	32.41	27.9
30 15 Rodwell Road	28.01	27.59	26.67	34.43	24.55	22.92	21.34	30.07	26.57	9.80	28.01	27.17	25.59	20.73	20.73
31 Rodwell Roundabout	42.41	40.22	40.30	44.97	37.54	41.88	38.95	39.68	34.47	37.68	37.96	33.31	39.11	31.68	31.68
32 To Portmore Gardens	33.35	40.04	30.02	37.89	35.12	39.28	35.40	37.56	32.63	35.59	29.70	30.36	34.75	28.14	28.14
49 Rodwell Roundabout II	38.50	39.53	36.95	46.08	39.59	40.11	37.35	41.06	36.94	35.88	39.32	34.22	38.79	31.42	31.42
44 Melcombe House	35.09	30.17	30.23	28.06	27.55	28.25	30.48	31.16	26.77	30.45	27.28	31.94	29.79	24.13	24.13

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45 Upway Street	38.39	37.78	35.89	38.75	35.98	42.32	42.12	42.60	37.84	38.69	32.57	32.60	37.96	30.75	30.75
46 Dominoes	34.68	36.29	41.10	43.74	38.86	41.30	37.01	41.35	37.23	39.33	35.75	33.88	38.38	31.09	31.09
50 Rodwell Roundabout	37.63	45.52	36.84	42.63	37.39	39.56	38.13	38.80	34.79	35.29	42.96	27.65	38.10	30.86	30.86
51 Rodwell Inn	43.80	39.17	43.82	45.50	47.37	42.93	39.69	38.83	28.94	36.95	37.43	34.39	39.90	32.32	32.32
52 16 Rodwell Road	39.31	47.74	42.76	47.48	39.67	45.86	44.87	46.34	46.95	44.31	44.88	43.46	44.47	36.02	36.02
58	44.51	40.03	37.02	35.57	39.52	35.22	35.43	35.41	38.18	34.45	36.38	28.54	36.69	29.72	27.30

Local bias adjustment factor used

National bias adjustment factor used

Annualisation has been conducted where data capture is <75% (N/A, all data capture is above 75%)

### Notes:

Exceedances of the NO<sub>2</sub> annual mean objective of 40µg/m<sup>3</sup> are shown in **bold**.

NO<sub>2</sub> annual means exceeding 60µg/m<sup>3</sup>, indicating a potential exceedance of the NO<sub>2</sub> 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.

The results for diffusion tube number 8 for August and September 2017 were <1.23 and 68.91 respectively. This has been reviewed with the Technical Officer who deployed the diffusion tubes. A new, unexposed diffusion tube was returned to the laboratory at the end of August meaning that the results for September are from a diffusion tube which was exposed for two months. W&PBC have therefore decided to omit these results from the data being reported above.

Table B.2 – NO<sub>2</sub> Monthly Diffusion Tube Results – 2016

Site ID	NO <sub>2</sub> Mean Concentrations (µg/m <sup>3</sup> )												Annual Mean		
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Raw Data	Bias Adjusted (1.05) and Annualised <sup>(1)</sup>	Distance Corrected to Nearest Exposure <sup>(2)</sup>
4 St Georges Estate	5.72		8.59	7.73	7.96	7.27	4.5	4.98	7.37	10.65	10.57	14.04	8.13	8.53	8.53
8 King Street	29.82	28.03	31.12	33.39	33.9	36.75	26.24	32.22	29.06	34.7	42.31	40.95	33.21	34.87	34.87
10 Rodwell Road	33.19	41.07	42.2	39.62	55.91	46.67	32.16	38.45	44.22	50.55	46.05	27.96	41.50	<b>43.58</b>	37.6
30 15 Rodwell Road	25.8	30.77	27.01	25.48	26.69	28.59	20.07	7.63	29.21	28.97	31.1	35.26	26.38	27.70	27.70
31 Rodwell Roundabout	28.36	32.88	38.53	35.02	38.7	39.01	32.32	31.29	43.16	36.04	38.32	45.81	36.62	38.45	38.45
32 To Portmore Gardens	32.51	31.7		32.43	39.56	35.51	29.35	36.98	42.1	29.95	29.9	45.68	35.06	36.81	36.81
49 Rodwell Roundabout II	25.62	32.28	37.35	38.39	42.16	37.57	31.74	35.62	44.85	35.43	39.8	38.01	36.57	38.40	38.40
50 Rodwell Roundabout III	29.67	30.14	33.56	32.85	38.66	41.55	30.33	34.32	45.19	38.09	38.43	47.97	36.73	38.57	38.57
51 Rodwell Inn	30.96	33.57	34.58	35.78	44.33	44.17	34.64	19.05	43.3	40.57	40.77	55.01	38.06	39.96	39.96

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52 16 Rodwell Road	48.69	43.67	39.41	37.62	44.13	44.69	40.06	42.00	52.61	34.85	46	56.13	44.16	<b>46.36</b>	<b>46.36</b>
44 Melcombe House	25.09	28.93	25.78	22.91	32.5	25.85	22.82	29.04	33.87	M	31.39	38.83	28.82	30.26	30.26
45 Upwey Street	31.76	31.47	34.87	30.86		M	37.46	42.93	42.68	26.63	33.57	42.43	35.47	37.24	37.24
46 Dominoes	32.88	32.18	32.81	38.80	37.41	37.79	37.39	43.65	M	29.63	35.02	43.86	36.49	38.32	38.32
55 Franchise Street					26.39	24.77	23.88	25.52	29.22	22.41	26.60	37.40	27.02	25.82	25.82
56 16 Rodwell Road II							49.84	48.00	56.11	34.78	43.54		46.45	N/A	N/A
57 25 Rodwell Road							22.09	25.24	33.38	33.64	31.99		29.27	32.27	32.27



Table B.3 2015 Diffusion Tube Data

Site ID	NO <sub>2</sub> Mean Concentrations (µg/m <sup>3</sup> )													Annual Mean	
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Raw Data	Bias Adjusted <sup>(1)</sup>	
	4 St Georges Estate	9.26		9.57		6.34	6.88	6.18	7.98	9.14	11.34	7.06			5.38
8 King Street	29.53	32.05	33.77	39.55	27.30	31.27	27.67	42.08	40.90	43.30	27.17	18.46	32.75	31.44	
10 Rodwell Road	44.31	36.02	46.13	54.25	34.59	44.69	38.06	48.32	54.30	56.76	34.41	30.98	43.57	<b>41.83</b> Distance corrected: 35.9	
29 Fire Station	26.45	29.68	28.06												
30 15 Rodwell Road	33.16	29.04	29.98	26.04	22.93	28.01	24.04	29.77	28.49	39.89	21.66	18.6	27.63	26.53	
31 Rodwell Roundabout	38.29			38.47	33.54	33.53	35.26	47.36	40.41	53.10	35.12	31.65	38.67	37.13	
32 To Portmore Gardens	30.21	32.92	36.23	42.64	34.75			44.78	33.76	41.82	32.92	38.25	36.83	35.36	
49 Rodwell Roundabout II	39.21	38.88	41.40	38.65	37.67	32.43	35.54	40.55	39.04	48.05	33.02	31.31	37.98	36.46	
50 Rodwell Roundabout III	38.83	35.60	36.64	39.77	36.28	37.85	35.64	38.76	37.43	45.01	32.29	25.76	36.66	35.19	

Site ID	NO <sub>2</sub> Mean Concentrations (µg/m <sup>3</sup> )													Annual Mean	
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Raw Data	Bias Adjusted <sup>(1)</sup>	
	51 Rodwell Inn	33.94	35.60	41.70	55.68	35.39	37.01	37.32	45.15	45.71	49.79	33.14			27.55
52 16 Rodwell Road	46.84	46.96	44.24	46.10	40.06	48.99			43.83	52.77	45.18	41.48	45.64	<b>43.82</b>	
42 King Street CCTV	25.11	23.05													
44 Melcombe House	22.32	25.98	26.23	29.26	29.32	27.95	29.87	34.96	28.64	28.60	28.46	24.59	28.02	26.89	
45 Upwey Street	27.80	28.88	36.03	38.60	34.17	36.85	41.41	44.96	34.95	35.03	32.83	33.61	35.43	34.01	
46 Dominoes	32.26	29.28	32.59	43.26	37.65	38.06	39.03	41.94	34.89	38.09	32.87	31.53	35.95	34.52	

Table B.4 2014 Diffusion Tube Data

Monitoring Location	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean	Bias Adjustment Factor	Annual Mean corrected for bias
4 St Georges Estate	6.66	5.99	11.05	8.6	8.75	7.77	6.08	4.23	7.25	5.3	13.65	6.61	7.66	0.76	5.82
8 King Street	28.13	24.74	33.3	36.76	40.25	35.38	44.18	32.91	40.23	24.66	30.78		33.76	0.76	25.65
10 Rodwell Road	53.19	31.59	52.8	57.48	28.63	53.72	46.1	32.41	60.35	35.7	56.55	28.23	44.73	0.76	33.99
29 Fire Station			31.77	27.95	28.63	27.87	24.98	16.21	31.57	14	31.04	23.53	25.76	0.76	19.57
30 15 Rodwell Road	28.37	22.1	29.69	32.31	26.96	26.26	30.01	24.82	28.62	26.72	31.07	27.4	27.86	0.76	21.17
31 Rodwell Roundabout		31.2	47.18	45.69	44.32	41.66	45.48	35.46	43	33.59	69.58	33.13	42.75	0.76	32.49
32 To Portmore Garden5	40.32	35.12	41.02	46.57	43.11	40.68	39.1	41.19	39.23	37.09	43.07	28.22	39.56	0.76	30.07
49 Rodwell Roundabout II	42.32	36.57	40.54	41.73	40.98	38.91	46.78	34.31	42.56	37.17	71.48	29.83	41.93	0.76	31.87
50 Rodwell Roundabout III	35.75	33.3	31.19		67.79	42.25	42.84	36.73	44.33	36.59	43.08	30.86	40.43	0.76	30.73
51 Rodwell Inn	41.94	32.49	44.73	46	28.64	45.64	42.23	41	58.62	36.47	44.42	29.61	40.98	0.76	31.15
52 16 Rodwell Road	58.81		39.64	51.15	47.38	51.94	51.53	49.87	44.77	45.85	24.85	45.85	46.51	0.76	35.35
42 King Street CCTV	31.62	23.53	32.38	31.78	33.53	28.46	27.77	26.36	32.46	23.55	31.06	23.8	28.86	0.76	21.93
44 Melcombe House	38.75	26.08	35.32	40.03	45.36			32.85	31.4	25.35	38.07	25.63	33.88	0.76	25.75
45 Upwey Street	37.44	33.26	35.52	42.68	41.11	40.87	42.74	42.67	38.73	31.65	34.5	28.01	37.43	0.76	28.45
46 Dominoes	39.32	33.25	35.48	42.4	44.29	44.45	41.98	42.1	38.41	43.07	34.89	30.28	39.16	0.76	29.76

Table B.5 2013 Diffusion Tube Data

Monitoring Location	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean	Bias Adjustment Factor	Annual Mean corrected for bias
4 St Georges Estate	11.97	13.24			4.92	7.28	7.56	7.82	7.7	6.45	11.78	6.17	8.49	0.68	5.77
5 Fortuneswell	21.6	23.03			14.73								19.79	0.68	13.45
8 King Street	32.64	39.14			37.29	30.27	39.96	37.3	33.61	28.34	35.86	28.03	34.24	0.68	23.29
10 Rodwell Road	51.4	58.04			41.06	43.46	57.3	42.94	42.21	38.17	38.57	33.62	44.68	0.68	30.38
12 Portland Road	27.24	M			9.39								18.32	0.68	12.45
14 Lanehouse Rocks Road	18.78	22.1			6.42								15.77	0.68	10.72
17 Colocation	22.64	17.63			14.13								18.13	0.68	12.33
20 Colocation II	22.57	16.58			14.14								17.76	0.68	12.08
21 Colocation III	24.1	15.01			7.92								15.68	0.68	10.66
29 Fire Station	28.05	33.13			21.59	22.73	26.64	22.99	24.65	20.58	29.88	20.82	25.11	0.68	17.07
30 15 Rodwell Road	30.63	39.01			7.49	26.7	28.51	32.69	23.26	26.46	36.46	23.61	27.48	0.68	18.69
31 Rodwell Roundabout	46.12	40.58			41.88	36.68	41.13	47.37	32.06	36.08	46.87	36.69	40.55	0.68	27.57
32 To Portmore Gardens	38.91	28.61			42.99	34.27	45.61	37.54	32.36	37.25	29.63	44.15	37.13	0.68	25.25
49 Rodwell Roundabout II	M	38.08			39.77	38.35	41.96		42.46	37.8	44.35	40.31	40.39	0.68	28.19
50 Rodwell Roundabout III	44.66	M			43.18	37.73	43.88	47.08	38.29	39.44	54.64	38.83	43.08	0.68	29.30
51 Rodwell Inn	46.29	45.73			41.37	34.1	57.06	42.52	42.19	43.39	44.75	35.19	43.26	0.68	29.42
52 16 Rodwell Road	60.45	44.3			41.39	42.18	59.73	44.21	43.68	48.91	47.18	47.37	47.94	0.68	32.60
53 Wyke Road	33.2	31.6			25.86								30.22	0.68	20.55
34 Wyke Juniors	20.61	19.74			7.17								15.84	0.68	10.77
35 Cockles Lane	31.15	31.56			25.52								29.41	0.68	20.00
36 60 Lanehouse Rocks Road	20.75	20.59			15.29								18.88	0.68	12.84

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37 Wyke Rd / Cross Rd Junc	19.42	16.22			13.88								16.51	0.68	<b>11.22</b>
38 Buxton Rd / Cross Rd Junc	13.87	15.07			7.57								12.17	0.68	<b>8.28</b>
39 Wyke Rd / Lanehouse Rocks Rd	M	M												0.68	
42 King Street CCTV	28.25	24.12			26.23	23.29	34.88	33.05	26.82	25.95	26.75	26.52	27.59	0.68	<b>18.76</b>
44 Melcombe House	31.79	24.43			25.21	27.12	36.21	40.53	29.51	31.36	33.77	32.36	31.23	0.68	<b>21.24</b>
45 Upwey Street	35.55	30.44			30.45	30.27	54.56	44.19	33.69	33.9	33.83	34.59	36.15	0.68	<b>24.58</b>
46 Dominoes	34.05	27.45			31.21	33.38	57.07	46.05	34.21	37.52	37.79	38.97	37.77	0.68	<b>25.68</b>

Due to a laboratory error, diffusion tubes for March 2013 were exposed for 8 weeks. Following advice from the LAQM Helpline, these results were discounted.

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Table B.6 2012 Diffusion Tube Data

Monitoring Location	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean	Bias Adjustment Factor	Annual Mean corrected for bias
2 Newstead Road	16.85	19.79	24.41	11	13.45	11.81	9.87	14.97					15.27	0.81	12.37
4 St Georges Estate	9.34	14.53	18.98	5.1	7.43	6.39	5.22	6.76	4.92	11.69	10.94	8.87	9.18	0.81	7.44
5 Fortuneswell	17.06	24.03	23.1	11.18	15.63	11.42	9.96	15.23	10.16	20.66	18.71	15.9	16.09	0.81	13.03
7 Littlemoor Road	19.88	22.33	25.72	14.23	17.72								19.98	0.81	16.18
8 King Street	27.6	30.25	41.4	22.81	28.96	21.7	17.56	20.91	27.12	30.4	44.27	21.34	27.86	0.81	22.57
9 St Mary Street	13.57	17.05	20.68	7.82	9.84	9.6	9.05	15.66	9.04	11.95			12.43	0.81	10.07
10 Rodwell Road	37.92	40.03	53.89	30.2	40.36	39.45	30.68	41.05	29.9	53.3	47.61	41.49	40.49	0.81	32.80
11 Preston Road	19.84	22.31	26.9	14.17	20.16								20.68	0.81	16.75
12 Portland Road	19.98	22.78	25.06	11.4	13.19	11.47	10.66	12.97	10.92	22.87			16.13	0.81	13.07
13 St Thomas Street	21.56	25.69	23.42	12.49	14.32	17.38	13.87	13.96	19.3	19.26			18.13	0.81	14.68
14 Lanehouse Rocks Road	14.13	19.66	25	8.72	12.37	11.79	7.73	11.67			20.14	8.66	13.99	0.81	11.33
15 Manor Roundabout	34.46	34.71	42.55	24.02	23.03	20.19	19.41	23.7					27.76	0.81	22.48
16 Kestrel View	17.01	19.18	17.36	9.48	10.01								14.61	0.81	11.83
17 Colocation	21.21	18.85	22.75	11.45	15.32	14.68	13.48	18.54	17.53	14.03	23.09	15.64	17.21	0.81	13.94
20 Colocation II	20.41	19.34	24.45	11.85	14.58	15.54	13	17.99	17.79	15.01	21.45	16.33	17.31	0.81	14.02
21 Colocation III	20.72	19.95	22.4	11.34	17.56	14.91	13.15	17.73	18.57	14.43	22.17	17.34	17.52	0.81	14.19
29 Fire Station	28.36	33.53	34.03	18.51	21.54	18.73	12.53	15.28	24.26	21.63	27.04	23.92	23.28	0.81	18.86
30 15 Rodwell Road	31.72	34.54	35.46	26.66	30.94	22.01	17.6	23.52	27.09	32.05	30.5	29.54	28.47	0.81	23.06
31 Rodwell Roundabout	32.58	39.03	45.13	29.22	34.76	34.77	25.98	28.54	33.83	50.39	45.23	33.21	36.06	0.81	29.21
32 To Portmore Gardens	31.63	32.42	37.88	24.47	31.33	34.42	24.36	38.64	30.44	36.91	41.07	33.02	33.05	0.81	26.77
49 Rodwell	32.12	37.67	44.31	27.89	39.08	35.4	24.43	36.88	35.18	43.87	44.24	35.13	36.35	0.81	29.44

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Roundabout II																
50 Rodwell Roundabout III	32.76	38.03	38.21	31.49	35.99	35.73	27.77	38.99	33.4	48.17	41.77	28.88	35.93	0.81	<b>29.11</b>	
51 Rodwell Inn	32.41	38.74	52.91	28.19	40.21	37.39	29.16	37.29	46.3	46.18	43.92	32.94	38.80	0.81	<b>31.43</b>	
52 16 Rodwell Road	41.69	45.57	50	32.7	38.31	38.86	32.83	43.63	41.18	42.91	57.39	42.13	42.27	0.81	<b>34.24</b>	
53 Wyke Road	29.24	31.68	40.17	20.84	26.13	29.46	17.56		28.65	34.84	34.63	26.9	29.10	0.81	<b>23.57</b>	
54 Chickerell Road	23.65	25.72	32.19	15.23	19.03	14.13	9.96	14.18					19.26	0.81	<b>15.60</b>	
33 Buxton Road	16.07	21.13	23.75	10.71	13.66								17.06	0.81	<b>13.82</b>	
34 Wyke Juniors	12.94	20.18	23.1	9.21	13.3	10.69	9.33	15.51	7.57	22.45	14.19	14.26	14.39	0.81	<b>11.66</b>	
35 Cockles Lane	25.68	31.15	42.06	20.21	26.75	23.16	17.74	25.66	19.5	34.29	29.18	27.77	26.93	0.81	<b>21.81</b>	
36 60 Lanehouse Rocks Road	16.44	23.88	28.42	11.63	14.74	12.14	9.99	17.04	9.69	22.7	17.5	15.45	16.64	0.81	<b>13.47</b>	
37 Wyke Rd / Cross Rd Junc	16.63	21.2	22.97	8.37	13.76	10.65	10.57	13.05		18.71	15.12	14.11	15.01	0.81	<b>12.16</b>	
38 Buxton Rd / Cross Rd Junc	15.27	19.82	23.96	9.13	12.94	14.7	10.2	16.46	10.67	19.39	14.49	15.23	15.19	0.81	<b>12.30</b>	
39 Wyke Rd / Lanehouse Rocks Rd	17.79	21.95	24.08	10.13	15.58	11.36	9.61	13.25	11.63	18.97	16.57	18.49	15.78	0.81	<b>12.79</b>	
40 St Edmund St	19.18	23.55	23.55	13.7	16.33	15.52	13.39						17.89	0.81	<b>14.49</b>	
41 Commercial Road	16.71	19.77	27.93	13.12									19.38	0.81	<b>15.70</b>	
42 King Street CCTV	25.47	26.99	34.27	17.14	19.13	20.72	18.28	23.64	24.91	21.94	34.11	19.6	23.85	0.81	<b>19.32</b>	
43 Queen Street	17.79	19.13	26.08	12.88	14.87								18.15	0.81	<b>14.70</b>	
44 Melcombe House	38.92	30.66	37.18	19.78	21.69	29.2	20.28	29.33	28.74	24.38	36.77	34	29.24	0.81	<b>23.69</b>	
45 Upwey Street	33.33	36.3	46.19	26.82	28.94	30.36	30.82	39.15	34.3	29.88	39.02	25.7	33.40	0.81	<b>27.05</b>	
46 Dominoes	31.04	35.48	43.77	26.54	30.24	32.8	30.43	34.19	35.22	27.27	42.02	27.22	33.02	0.81	<b>26.74</b>	

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**Table B.7 2011 Diffusion Tube Data**

Monitoring Location	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	MEAN	2011 BA Figure of 0.95
2 Newstead Road	23.85	25.04	26.33	24.62	10.65	14.74	17.53	14.43	16.34	21.49	27.19	9.53	19.31	18.35
4 St Georges Est	14.86	13.94	15.15	12.38	5.96	8	7.57	7.78	6.67	10.12	14.54	4.19	10.10	9.59
5 Fortuneswell	25.51	20.95	26.74	22.37	9.24	12.24	13.01	12.49	8.48	16.72	25.59	10.81	17.01	16.16
7 Littlemoor Road	36.83	40.19	28.91	25.73		10.07	21.1	23.08	21.25	19.59	22.26	14.14	23.92	22.73
8 King St	38.88	26.33	35.83	28.37	16.71	20.19	25.9	28.79	22.67	27.03	32.31	20.11	26.93	25.58
9 St Mary Street	18.49	17.59	19.86	17.95	7.67	10.93	12.28	12.37	10.77	16.29	17.89	8.52	14.22	13.51
10 Boot Hill	53.32	57.27	61.32	62.05	29.24	37.82	41.06	37.10	35.13	49.71	54.34	19.18	44.80	42.56
11 Preston Road	24.9	26.6	26.99	28.48	17.9	21.42	26.21	28.17	23.55	28.6	28.62	15	24.70	23.47
12 Portland Road	22.56	20.75	29.03	20.02	10.35	12.61	14.79	14.62	10.93	17.58	22.58		17.80	16.91
13 St Thomas Street	30.55	29.05	27.64	24.68	17.62	22.4	23.57	25.14	21.81	24.57	24.86	20.03	24.33	23.11
14 Lanehouse Rocks Road	23.83	18.92	31.82	24.58	7.65	11.98	17.66	12.84	10.83	17.48	23.14	5.29	17.17	16.31
15 Manor Roundabout	30.75	30.83	32.27	34.3	21.23	30.83	27.32	31.24	25.72	31.58	29.12	24.05	29.10	27.65
16 Kestrel View	17.03	10.59	16.6	13.09	7.5	9.97	10.22	12.06	10.67	15.46	16.81	9.78	12.48	11.86
17 Collocation Site	29.14	35.67	32.39	21.79	14.91	17.96	18.92	20.39	20.6	24.9	27.64	14.2	23.21	22.05
18 719 Dorchester Rd	38.25	33.27	31.90	16.82	7.47	12.24	12.58	20.25	12.53	15.72	19	9.99	19.17	18.21
19 Dorchester Road	53.71	43.32	41.03	26.96	12.22	19.02	22.62	18.67	15.89		26.74	11.84	26.55	25.22
20 Co-location II	28.36	35.54	32.35	21.51	14.33	18.8	19.21	17.2	19.84	24.24	27.85	15.94	22.93	21.78
21 Co-location III	30.88	35.36	31.49	24.52	14.91	19.41	19.07	17.55	20.23	24.7	27.68	12.79	23.22	22.06
22 Wey Valley School	18.39	15.7	16.38	11.91	5.5	7.8	7.22	6.29	8.56	9.17	14.99	5.83	10.65	10.11
23 Jubilee Sidings	22.48	22.3	23.42	20.93	8.73		15.35	16.95	13.49	18.15	26.58		18.84	17.90
29 Fire Station	37.16	28.38	35.63	33.17	14.51	20.09	25.52	21.81	21.74	27.58	31.45	16.77	26.15	24.84
30 15 Rodwell Road	36.22	31.18	33.17	32.46	18.05	27.21	29.01	29.77	21.97	26.21	30.02	22.77	28.17	26.76
31 Rodwell Roundabout	56.51	41.42	31.04	47.67	26.01	39.97	43.68	41.03	36.81	42.06	40.95	25.37	39.38	37.41
32 To Portmore Gardens	34.46	45.23	39.39	39.85	21.62	31.31	M	31.41	32.8	38.59	43.49	21.83	34.54	32.82
47 Fire Station II	34.6	27.29	37.22										33.04	31.38



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<b>48 Fire III</b>	35.32	28.48	40.38										34.73	32.99
<b>33 Buxton Road</b>	22.48	19.29	23.38	12.69	9.6	14.03	14.32	12.47	11.08	13.73	19.14	9.66	15.16	14.40
<b>34 Wyke Juniors</b>	20.15	11.88	24.65	19.93	7.31	10.95	15.05	9.42	9.19	14.84	24.41	4.06	14.32	13.60
<b>35 Cockles Lane</b>	34.75	33.44	42.34	41.52	16.9	23.83	18.12	21.81	19.72	18.08	33.91	16.94	26.78	25.44
<b>36 60 Lanehouse Rocks Rd</b>	25.1	27.17	29.28	26.54	9.29	13.86	18.51	11.94	12.02	19.43	26.82	8.6	19.05	18.09
<b>37 Junction Wyke Rd / Cross Rd</b>	20.88	18.3	22.75	13.43	8.14	11.96	13.55	10.13	11.24	14.1	20.99	7.98	14.45	13.73
<b>38 Junction Buxton Rd / Cross Rd</b>	17.46	16.87	19.31	18.62	10.16	9.81	17.4	13.82	15.27	13.22	22.93	7.5	15.20	14.44
<b>39 Junction Wyke Rd, LHRocks Rd</b>	25.49	19.25	24.94	19.54	9.66	11.98	17.22	12.53	12.1	16.87	23.01	9.86	16.87	16.03
<b>40 St Edmund Street</b>	24.28	25.82	34.56	20.03	13.69	19.7	21.03	17.89	17.79	24.67	26.33	16.04	21.82	20.73
<b>41 Commercial Rd</b>	23.5	22.75	25.88	24.06	10.27	14.05	18.02	12.65	11.96	17.31	24.61	10.86	17.99	17.09
<b>42 King St CCTV Column</b>	28.4	30.63	28.42	31.15	15.45	20.27	23.21		22.69	29.88	38.53	21.29	26.36	25.04
<b>43 Queen Street</b>	24.43	21.15	24.24	24.19	10.25	14.03	16.18	14.8	14.5	16.71	24.94	11.68	18.09	17.19
<b>44 Melcombe House</b>	35.11	37.22	31.86	32.94		23.1	26.54	30.3	29.14	29.68	36.49	25.9	30.75	29.22
<b>45 Upway Street</b>	36.44	42.44	35.99	29.79	22.03	28.26	28.55	37.55	34.68	0	43.04	28.76	30.63	29.10
<b>46 Dominoes</b>	38.76	41.15	31.12	35.72	23	29.59		33.91	35.54	37.79	39.19	29.16	34.08	32.38
<b>49 Rodwell Roundabout II</b>				52.28	32.46	36.87	43.5	40.91	28.11	41.34	41.85	25.37	38.08	36.17
<b>50 Rodwell Roundabout III</b>				52.22	28.7	38	46.91	36.28	36.08	41.18	43.37	24.55	38.59	36.66

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Table B.8 2010 Diffusion Tube Data

LOCATION	Jan-10	Feb-10	Mar-10	Apr-10	May-10	Jun-10	Jul-10	Aug-10	Sep-10	Oct-10	Nov-10	Dec-10	MEAN	Bias Adj Mean 1.03
NEWSTEAD RD	29.16	21.52	23.05	22.38	22.08	20.5	15.88	15.44	16.95	17.71	16.93	22.96	20.38	20.99
ST GEORGES EST	14.84	12.35	12.67	9.38	8.76	9.36	7.41	6.16	8.5	8.73	12.04	15.82	10.50	10.82
FORTUNESWELL	28.76	24.12	22.01	21.13	19.1	16.13	10.39	12.71	16.58	16.41	23.22	29.29	19.99	20.59
LITTLEMOOR RD	31.61	33.15	27.68	30.43	36.59	33.54		5.61		32.04	25.96	27.88	28.45	29.30
KING ST	38.1	35.97	34.15	39.17	47.26	37.51	26.91	30.94	32.55	31.65	30.79	34.53	34.96	36.01
ST MARY ST	24.86	18.18	17.51	15.58	13.46	13.92	14.52	12.16	29.59	14.48	19.96	19.36	17.80	18.33
BOOT HILL	64.5	57.19	52.87	51.19	54.71	40.25	24.72	29.40	14.09	34.07	39.29	43.93	42.18	43.45
PRESTON RD	19.69	25.16	26.04	24.24	27.26	25.27	26.73	25.96	39.56	23.55	22.81	22.44	25.73	26.50
PORTLAND RD	24.8	22.11	21.67	22.01	16.74	15.36	11.38	13.45	25.61	18.23	17.77	24.24	19.45	20.03
ST THOMAS ST	29.19	28.79	30.96	28.56	26.76	25.84	29.12	23.75	15.11	26.86	18.63	25.09	25.72	26.49
LANEHOUSE ROCKS RD	25.22	20.5	20.64	17.61	19.17	19.14	12.63	12.65	28.95	18.57	21.15	22.1	19.86	20.46
MANOR ROUNDABOUT	34.53	24.69	22.67	22.62	21.62	16.38		24.14	18.63	26.37	30.45	32.56	24.97	25.72
KESTREL VIEW	17.77	13.55	12.69	9.89	9.91	9.15	6.54	8.46	27.58	11.07	13.27	17.67	13.13	13.52
COLLOCATION SITE	29.06	33.01	27.76	28.69	30.86	27.85	32.17	26.25	11.36	28.86	27.68	27.03	27.55	28.37
719 Dorchester Rd	38.56	38.06	18.63	26.64	33.25	34.15	33.39	33.37	33.23	33.97	36.61	29.12	32.42	33.39
DORCHESTER	42.23	44.16	40.01	44.02	44.23	42.63	36.3	39.07	33.39	33.22	42.01	42.37	40.30	41.51
CO-LOCATION II	29.09	32.82	28.99	25.63	28.73	27.56	30.7	26.86	45.19	30.5	31.33	27.96	30.45	31.36
COLLOCATION III	28.27	28.87	31.98	28.17	31.91	25.88	31.77	25.35	32.84	30.63	27.07	30.96	29.48	30.36
WEY-VALLEY	13.48	13.7	13.72	10.42	11.55	11.94	11.15	9.66	34.03	12.6	14.6	17.64	14.54	14.98
JUBILEE SIDINGS	23.26	20.54	23.26	19.23	16.97	16.95	14.47	14.82	12.84	17.23	17.4	21.77	18.23	18.78

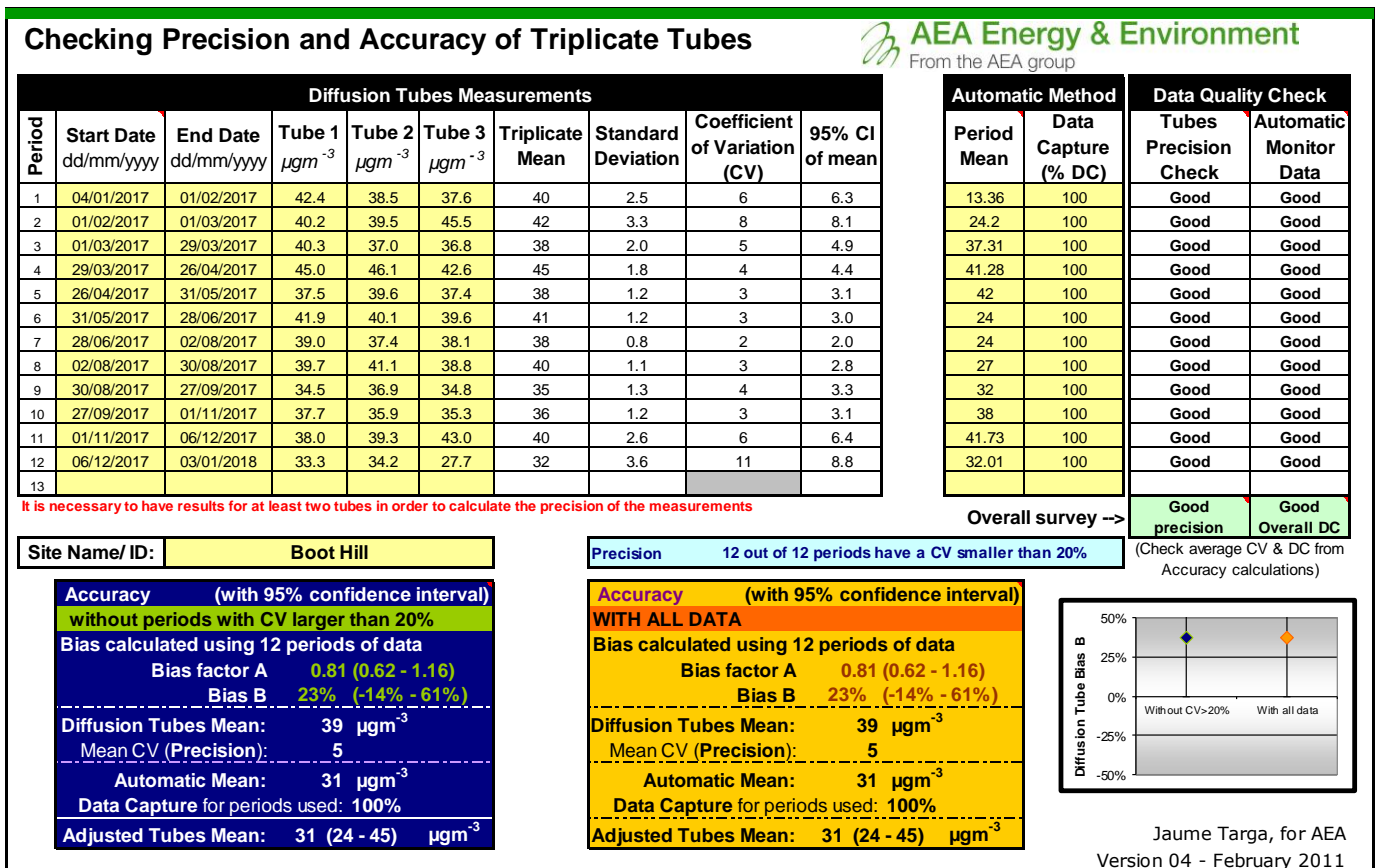
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<b>FIRE STATION</b>	39.48	35.56	36.04	27.76	31.55	26.41	20.86	24.67		31.68	38.86	35.22	31.64	32.59
<b>15 RODWELL ROAD</b>	37.84	37.63	31.69	29.48	31.45	28.3	20.57	25.12	22.79	26.63	36.08	35.49	30.26	31.16
<b>RODWELL RDBT</b>	45.31	49.55	48.93	39.56	34.79	40.95	38.01	34.79	45.49	49.12	38.92	50.78	43.02	44.31
<b>TO PORTMORE GDNS</b>	31.61	39.72	41.2	35.03	38.53	35.34	39.47	31.76	32.47	43.54	39.54	30.68	36.57	37.67
<b>Fire Station II</b>					37.08	24	26.74	23.38		35.58	39.64	36.99	31.92	32.87
<b>Fire III</b>					37.58	24.04	24.08	23.2		32.14	33.7	34.38	29.87	30.77
<b>Buxton Road</b>	26.11	20.74	17.94	16.75	16.04	12.92	10.02	13.98	14.6	17.31	17.81	24.91	17.43	17.95
<b>Wyke Juniors</b>	23.49	20.74	19.66	20.97	17.8	16.11	9.53	11.28	15.34	M	19.49	21.33	17.79	18.33
<b>Cockles Lane</b>	33.81	32.76	28.26	35.34	30.96	32.82	23.22	27.89	36.71	30.3	34.34	35.99	31.87	32.82
<b>60 Lanehouse Rocks Rd</b>	23.19	22.91	22.05	19.53	18.54	18.26	15.71	14.72	22.26	20.08	24.14	25.49	20.57	21.19
<b>Junction Wyke Rd / Cross Rd</b>	22.54	17.81	18.2	16.28	13.81	15.38	15.63	8.95	13.8	15.4	20.15	23.57	16.79	17.30
<b>Junction Buxton Rd / Cross Rd</b>	18.38	17.32	17.06	14.21	17.33	14.11	14.13	10.48	36.36	11.74	15.81	18.95	17.16	17.67
<b>Junction Wyke Rd, LHRocks Rd</b>	25.75	20.23	19.74	16.99	16.35	18.08	12.34	19.68	23.98	18.48	22.52	23.64	19.82	20.41
<b>St Edmund Street</b>	27.58	25.55	22.28	25.27	23.13	20.68	18.36	21.11	25.55	21.82	20.68	26.13	23.18	23.87
<b>Commercial Rd</b>	26.8	24.04	23.46	20.33	17.4	17.34	14.11	14.5	18.18	15.66	19.08	22.98	19.49	20.07
<b>King St CCTV Column</b>	31.38	28.81	33.5	35.01	26.73	27.8	25.49	23.03	27.99	23.59	27.44	27.49	28.19	29.03
<b>Queen Street</b>	23.49	23.2	28.05	22.89	21.26	18.57	16.56	17.71	18.92	20.05	18.55	23.73	21.08	21.71
<b>Melcombe House</b>	32.6	33.15	32.55	30.73	32.69	35.22	33.18	32.25	M	26.8	28.87	33.74	31.98	32.94
<b>Upway Street</b>	38.39	38.23	47.01	41.44	44.29	40.91	45.16	40.11	38.68	32.33	33.09	25.11	38.73	39.89
<b>Dominoes</b>	46.68	47.28	49.18	47.58	54.32	42.1	48.88	39.64	43.32	37.94	40.09	35.07	44.34	43.90

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

The AEA Energy and Environment Precision and Accuracy Spreadsheets were used to ascertain a locally derived bias adjustment factor and if this was suitable for use on the results. Data from the 24 hour average for the automatic monitor has been used. The spreadsheets for 2017 is supplied in Figure C.1 and shows a factor of 0.81. As the overall survey was deemed to be of good precision and good data capture, and the diffusion tubes at Boot Hill are exposed in the same area as the co-location site, this local bias adjustment factor was chosen to be applied to all of the diffusion tube results.

**Figure C.1 AEA Energy and Environment Precision and Accuracy Spreadsheet – Boot Hill 2017**



## QA/QC of Diffusion Tube Monitoring

The UKAS accredited laboratory, Gradko International Limited supply and analyse the diffusion tubes, which are a preparation of 50% TEA (triethanolamin) / Acetone. Tubes are handled in accordance with the instruction within LAQM.TG(16), 7.186.

Gradko International participate in the AIR/WASP NO<sub>2</sub> Proficiency Testing Scheme. In the four periods assessed in 2017 the laboratory received a score of 100%.

<http://laqm.defra.gov.uk/diffusion-tubes/ga-qc-framework.html>

For the purposes of Local Air Quality Management, tube precision is separated into two categories, “Good” or “Poor”, tubes are considered to have good precision where the coefficient of variation of duplicate or triplicate diffusion tubes for eight or more periods during the year is less than 20% and the average CV of all monitoring periods is less than 10%.

The results of precision testing show that Gradko International had “Good” precision for 23 out of 25 studies for 2017. <http://laqm.defra.gov.uk/diffusion-tubes/precision.html>

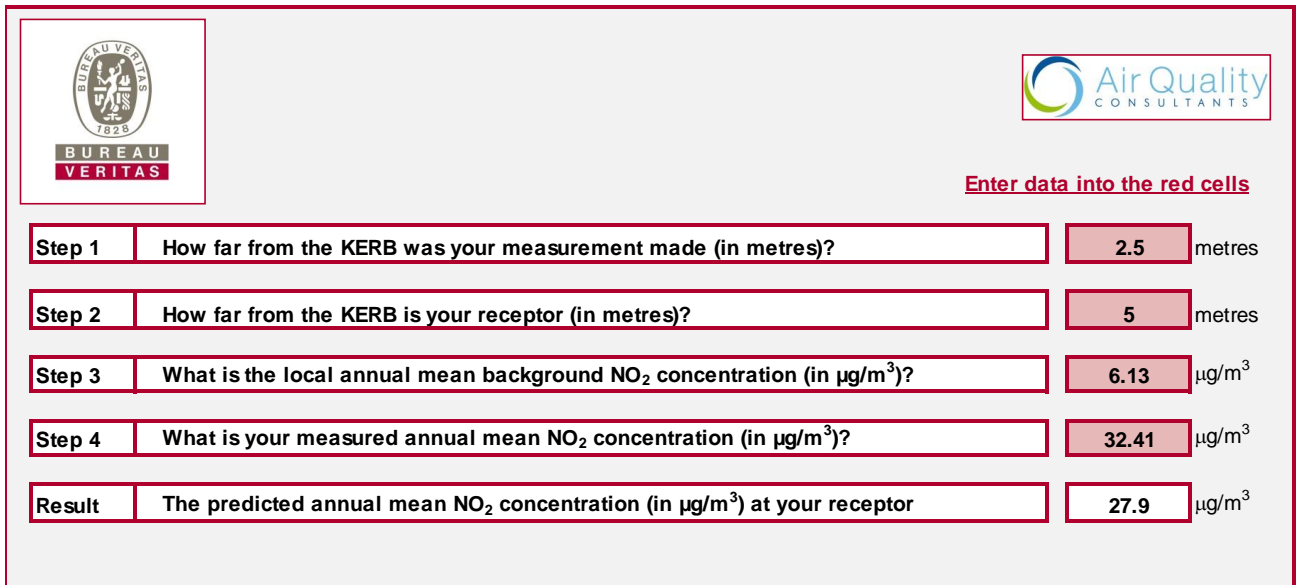
### NO<sub>2</sub> Fall-Off With Distance Calculator (Version 4.1) – Diffusion Tube 10

The annual mean (bias adjusted) for diffusion tube number 10, for 2017 was 32.41µg/m<sup>3</sup>. This diffusion tube is located on a lamppost, 2.5m from the façade of the nearest residential property. The Bureau Veritas NO<sub>2</sub> Fall-Off With Distance Calculator has been used to predict the annual mean at the façade of the nearest residential property at this location, where the objective applies. The predicted annual mean NO<sub>2</sub> concentration at the façade at this location is 27.9µg/m<sup>3</sup>. See Figure C.2 below for calculations.

### NO<sub>2</sub> Fall-Off With Distance Calculator (Version 4.1) – Diffusion Tube 58

The annual mean (bias adjusted) for diffusion tube number 58, for 2017 was 29.72µg/m<sup>3</sup>. This diffusion tube is located on a lamppost, 0.9m from the façade of the nearest residential property. The Bureau Veritas NO<sub>2</sub> Fall-Off With Distance Calculator has been used to predict the annual mean at the façade of the nearest residential property at this location, where the objective applies. The predicted annual mean NO<sub>2</sub> concentration at the façade at this location is 27.3µg/m<sup>3</sup>. See Figure C.2 below for calculations.

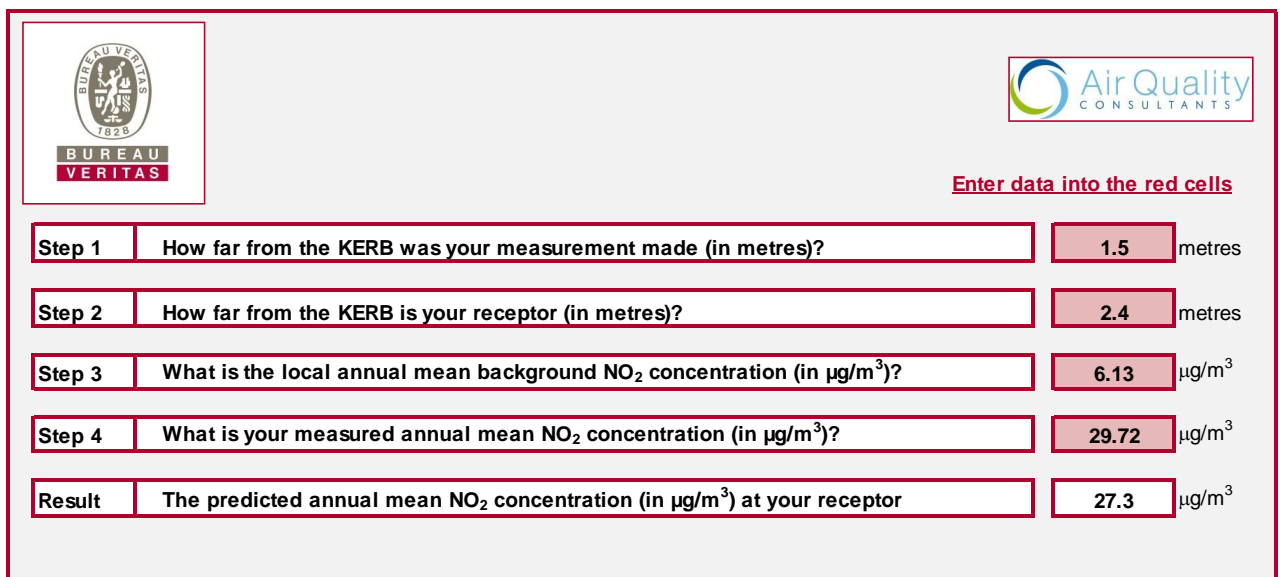
Figure C.2 Diffusion Tube 10, NO<sub>2</sub> Fall-Off With Distance Calculator (Version 4.1)



The screenshot shows a calculator interface for Diffusion Tube 10. It includes the Bureau Veritas logo on the left and the Air Quality Consultants logo on the right. A red instruction box says "Enter data into the red cells". The calculator consists of five rows, each with a step number, a question, an input field, and a result field. The input fields are highlighted in red.

Step 1	How far from the KERB was your measurement made (in metres)?	2.5	metres
Step 2	How far from the KERB is your receptor (in metres)?	5	metres
Step 3	What is the local annual mean background NO <sub>2</sub> concentration (in µg/m <sup>3</sup> )?	6.13	µg/m <sup>3</sup>
Step 4	What is your measured annual mean NO <sub>2</sub> concentration (in µg/m <sup>3</sup> )?	32.41	µg/m <sup>3</sup>
Result	The predicted annual mean NO <sub>2</sub> concentration (in µg/m <sup>3</sup> ) at your receptor	27.9	µg/m <sup>3</sup>

Figure C.3 Diffusion Tube 58, NO<sub>2</sub> Fall-Off With Distance Calculator (Version 4.1)



The screenshot shows a calculator interface for Diffusion Tube 58. It includes the Bureau Veritas logo on the left and the Air Quality Consultants logo on the right. A red instruction box says "Enter data into the red cells". The calculator consists of five rows, each with a step number, a question, an input field, and a result field. The input fields are highlighted in red.

Step 1	How far from the KERB was your measurement made (in metres)?	1.5	metres
Step 2	How far from the KERB is your receptor (in metres)?	2.4	metres
Step 3	What is the local annual mean background NO <sub>2</sub> concentration (in µg/m <sup>3</sup> )?	6.13	µg/m <sup>3</sup>
Step 4	What is your measured annual mean NO <sub>2</sub> concentration (in µg/m <sup>3</sup> )?	29.72	µg/m <sup>3</sup>
Result	The predicted annual mean NO <sub>2</sub> concentration (in µg/m <sup>3</sup> ) at your receptor	27.3	µg/m <sup>3</sup>

Diffusion tube numbers 44 (roadside site on pavement on the opposite side of the road to residential dwellings), 8 (roadside site on the façade of a commercial premises), 46 (roadside site on the façade of a commercial premises) and 51 (roadside site on the façade of a commercial premises) are not at a relevant exposure location and the annual bias adjusted mean for these locations is below the objective.







Figure D.2 Map of Rodwell Road Automatic Monitoring Site





Figure D.3 Map of Non-Automatic Monitoring Sites – Rodwell Road (Boot Hill)



Figure D.4 Map of Non-Automatic Monitoring Sites – King Street

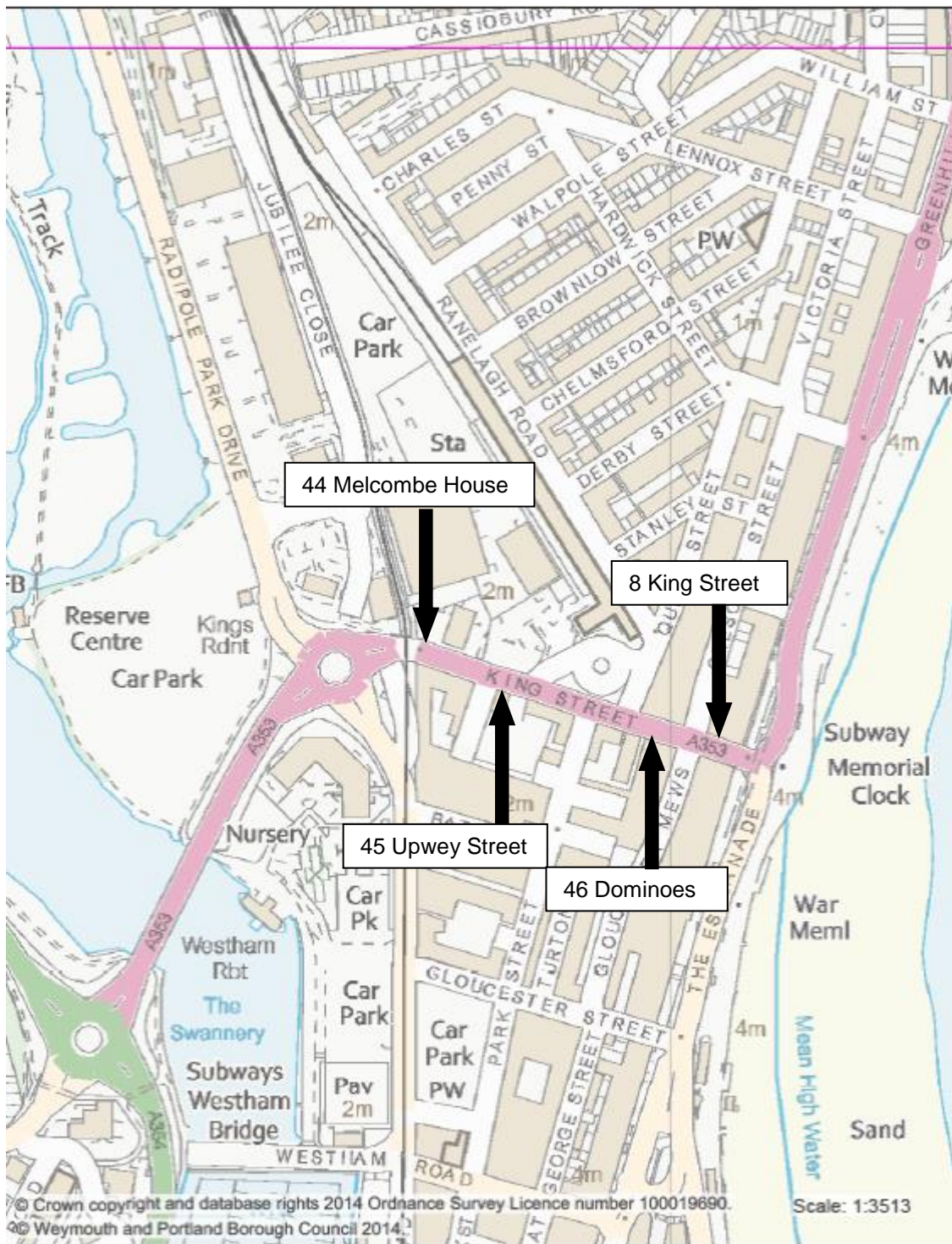




Figure D.5 Other Diffusion Tube Locations



## Appendix E: Summary of Air Quality Objectives in England

Table E.1 – Air Quality Objectives in England

Pollutant	Air Quality Objective <sup>4</sup>	
	Concentration	Measured as
Nitrogen Dioxide (NO <sub>2</sub> )	200 µg/m <sup>3</sup> not to be exceeded more than 18 times a year	1-hour mean
	40 µg/m <sup>3</sup>	Annual mean
Particulate Matter (PM <sub>10</sub> )	50 µg/m <sup>3</sup> , not to be exceeded more than 35 times a year	24-hour mean
	40 µg/m <sup>3</sup>	Annual mean
Sulphur Dioxide (SO <sub>2</sub> )	350 µg/m <sup>3</sup> , not to be exceeded more than 24 times a year	1-hour mean
	125 µg/m <sup>3</sup> , not to be exceeded more than 3 times a year	24-hour mean
	266 µg/m <sup>3</sup> , not to be exceeded more than 35 times a year	15-minute mean

<sup>4</sup> The units are in microgrammes of pollutant per cubic metre of air (µg/m<sup>3</sup>).

## Appendix F: Summary of Previous Review and Assessment

Title of Report	Date Produced	Outcome
<b>Updating and Screening Assessment</b>	Nov 2003	Accepted by Defra
<b>Progress Report</b>	May 2004	Accepted by Defra – To proceed to a Detailed Assessment for NO <sub>2</sub>
<b>Detailed Assessment</b>	Sept 2004	Accepted by Defra – No requirement to proceed to declare an AQMA
<b>Progress Report</b>	June 2005	Accepted by Defra
<b>Updating and Screening Assessment</b>	2006	Accepted by Defra – To proceed to a Detailed Assessment for NO <sub>2</sub>
<b>Detailed Assessment</b>	June 2007	Accepted by Defra – No requirement to proceed to declare an AQMA
<b>Progress Report</b>	May 2008	Accepted by Defra
<b>Updating and Screening Assessment</b>	June 2009	Accepted by Defra – To proceed to a Detailed Assessment for NO <sub>2</sub> 'Boot Hill'
<b>Progress Report</b>  <b>Incorporating Air Quality Updating and Screening Assessment and Detailed Assessment, for 'Boot Hill', Weymouth.</b>	June 2013	Accepted by Defra no requirement to proceed to declare an AQMA
<b>Progress Report and Updating and Screening Assessment</b>	Dec 2015	Accepted by Defra
<b>Annual Status Report</b>	Dec 2016	Accepted by Defra
<b>Annual Status Report</b>	Jan 2018	Accepted by Defra

## Appendix G: Part B Permitted Installations in Weymouth and Portland

<b>Name and Address</b>	<b>Process type</b>
Weymouth Service Station, King Street, Weymouth	Petrol Vapour Recovery
Malthurt Retail Ltd, Easton Lane, Portland, DT5 1BW	Petrol Vapour Recovery
Morrisons, Dorchester Road, Weymouth	Petrol Vapour Recovery
Esso, Lanehouse Rocks Road, Weymouth	Petrol Vapour Recovery
BP, Dorchester Road, Weymouth	Petrol Vapour Recovery
Sainsbury, Mercery Road, Weymouth	Petrol Vapour Recovery
Hi Tech, Lanehouse Rocks Road, Weymouth	Dry Cleaners
Park Laundry, Brownlow Street, Weymouth	Dry Cleaners
Morrisons, Dorchester Road, Weymouth	Dry Cleaners
Portland Stone Limited, 26 Tradecroft Industrial Estate, Wide Street, Portland	Mobile Crushing Plant
Weymouth Crematorium, Quibo Lane, Weymouth	Crematorium
Dragon Portland Cement Facility, Portland Port, Castletown, Portland	Bulk Cement

## Glossary of Terms

Abbreviation	Description
AQAP	Air Quality Action Plan – A detailed description of measures, outcomes, achievement dates and implementation methods, showing how the local authority intends to achieve air quality limit values'
AQMA	Air Quality Management Area – An area where air pollutant concentrations exceed / are likely to exceed the relevant air quality objectives. AQMAs are declared for specific pollutants and objectives
ASR	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
LAQM TG(16)	Local Air Quality Management, Technical Guidance (16)
NO <sub>2</sub>	Nitrogen Dioxide
NO <sub>x</sub>	Nitrogen Oxides
PM <sub>10</sub>	Airborne particulate matter with an aerodynamic diameter of 10µm (micrometres or microns) or less
PM <sub>2.5</sub>	Airborne particulate matter with an aerodynamic diameter of 2.5µm or less
QA/QC	Quality Assurance and Quality Control
SO <sub>2</sub>	Sulphur Dioxide

## References

1. Local Air Quality Management Technical Guidance LAQM.TG(16).
2. AEA Energy and Environment Precision and Accuracy Spreadsheets.
3. [www.laqmsupport.org.uk](http://www.laqmsupport.org.uk)
4. WPBC 2017 ASR