



***Torridge District Council
Annual Status Report 2018***







Bureau Veritas

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2018 Air Quality Annual Status Report (ASR)

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

June 2018

Torrige District Council

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Executive Summary: Air Quality in Our Area

Air Quality in Torrige

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

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

The area is predominantly rural and largely agricultural with most of the population living in the towns of Bideford, Northam, Holsworthy and Torrington. Industry is also mainly located within these towns.

The district covers an area of 984sq Km (380sq miles). The northern edge of the district is designated as a coastal area of outstanding natural beauty (AONB) with a significant stretch of the south west coastal footpath running along its length.

The main pollutant of concern is nitrogen dioxide (NO₂) arising from vehicular traffic on major roads in Bideford, Torrington and Holsworthy notably the A39, A386, A3072 and A388. As a result, monitoring of NO₂ is completed within Torrige using a network of 15 passive diffusion tubes with 8 of these locations at roadside sites and the remaining 2 being urban background sites.

Within the last five years there hasn't been any exceedances of the AQS annual mean objective for NO₂ recorded by the current monitoring network across Torrige. As a result, no AQMA's have been declared within the jurisdiction of Torrige District Council.

During 2017 there were no exceedances of the NO₂ annual mean objective which meant Torrige District Council retained its achievement of not recording any exceedances within the past 5 years. The highest NO₂ annual mean concentration in

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

2017 was recorded at H16 (Chapel Street, Holsworthy), with a concentration of $28.6\mu\text{g}/\text{m}^3$, which is well below the annual mean AQS objective of $40\mu\text{g}/\text{m}^3$.

Results from 2017 remain unchanged compared to those in 2016, reporting a minimal decrease on average, with seven out of twelve sites reporting a decrease in concentrations. The largest reduction observed was $2.3\mu\text{g}/\text{m}^3$ at T11.

In comparison to 2013, the 2017 NO_2 annual mean concentrations remain stable with a slight average overall decrease of $1.2\mu\text{g}/\text{m}^3$ observed. Nine out of the ten sites with available data reported a decrease in concentrations. In addition, improvements to air quality were made at key locations, with T11 (located along the A386 – a main arterial road) reporting a 21.4% reduction in NO_2 annual mean concentrations compared to 2013.

Overall, 2017 annual mean NO_2 concentrations in Torrige seem to be stable at a safe level continuing on from previous years with a gradual decrease. However, H16 has reported concentrations which are gradually increasing since 2015, from $23.7\mu\text{g}/\text{m}^3$ to $28.6\mu\text{g}/\text{m}^3$. This diffusion tube is reporting the highest concentration within Torrige. H16 is a relatively new site located along a main arterial where vehicular traffic will most likely be the main cause for elevated NO_2 levels. Options will be explored to prevent these levels increasing further and monitoring in the area will be maintained. In December 2017, Devon County Council put in place a parking order to restrict parking along part of Chapel Street which will reduce waiting vehicles in this uphill section.

There are no sites where the NO_2 annual mean is greater than $60\mu\text{g}/\text{m}^3$, therefore in accordance with Defra LAQM.TG(16) there are no sites likely to be at risk of exceeding the 1-hour mean AQS objective.

Actions to Improve Air Quality

There are no monitored exceedances of the air quality objectives in Torrige District Council's jurisdiction and therefore no air quality management areas have been declared. As such, a formal action plan has not been required however the following illustrate some of ways the Council is ensuring that good air quality in the district is maintained.

Electric Vehicle Charging Points – Two electric vehicle charging points have been installed at Council buildings for the use of staff within Torrige District Council.

Approval has also been issued for electric vehicle charging points to be installed in Council car parks in Bideford, Holsworthy, Torrington and Westward Ho! in 2018.

New Development - Air Quality is a material consideration when assessing planning applications and an air quality assessment is required for all major developments. Detailed construction management plans are required from developers to ensure dust is kept to a minimum during the construction phase. The Council will also review its monitoring programme to add more monitoring sites as a result of new developments where appropriate (evidenced by the introduction of DT13 and DT14 last year to accommodate the introduction of new receptors associated with a proposed housing development at Buckleigh Road, Bideford and the effect of development at Atlantic Village, Bideford).

Council Vehicle Fleet - All new vehicles purchased by the local authority comply with the latest emission levels, refuse vehicles are Euro 6 compliant and have electric bin lifts fitted to further reduce emissions. The Council will also work with local businesses to encourage the use of low emission vehicles where possible.

Taxis - Taxi drivers are encouraged to use newer less polluting vehicles and operators can get discounts if their vehicles are using green fuels such as liquid petroleum gas (LPG), biodiesel or are hybrid/electric vehicles. The Council operates a point based system when issuing new taxi licences and operators can obtain more points for low emission vehicles.

Promoting Alternative Forms of Transport – The Council provides the Cycle-to-Work scheme for its employees to help make purchasing a bicycle affordable and to reduce the dependency on private cars for commuting. The Council also provides a homeworking policy whereby employees can request to work from home, limiting the need to travel to work. In scenarios where working from home is not achievable, the council facilitates car sharing through enhanced mileage rates.

Conclusions and Priorities

The results from 2017 show NO₂ annual mean concentrations within Torrige to be well below the relative AQS objective, with concentrations showing a gradual decrease over a five year period. Improvements to air quality have been made at key locations along arterial routes within the region, reflecting the Council's continued commitment to improving air quality.

Torrige District Council will continue to monitor NO₂ concentrations at existing locations throughout the district and will also review monitoring sites for NO₂ with consideration given to the draft local plan. This will ensure Torrige District Council monitoring programme remains effective in identifying areas of potential concern and facilitating accurate mitigation measures to provide safe levels of air quality to its residents.

The following actions are considered to be key priorities in ensuring reductions continue:

- Continue to deploy the current network of monitoring stations in Torrige
- Consider relocating and/or add monitoring stations to areas representative of exposure especially focussing on the introduction of new receptors through proposed housing developments to keep up with the demands of air quality;
- Continue to use diffusion tubes as the main form of monitoring within Torrige;
- Continue the efforts in extending the network of electric vehicle charging points in Torrige;
- Continue to work with planning to ensure that planning applications maintain or improve air quality in the area.

Local Engagement and How to get Involved

Everyone can make a small difference to improve air quality in the area for example:

- Walk or cycle instead of taking the car
- Switch off your car engine while stuck in traffic or while stationary to reduce emissions and save you fuel
- Consider car sharing with work colleagues
- Use public transport where possible
- Consider a “greener” vehicle with reduced emissions when replacing your car

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- Avoid having garden bonfires, use alternative methods of disposal e.g. composting green waste, using recycling centres, or the Council's green waste collection service.
- If you have an open fire consider using smokeless fuels wherever possible
- Layer up - if you get cold put on an extra layer instead of switching on the heating, this will reduce emissions from heating sources and lower emissions from the UK's power stations.
- Reduce energy consumption - turn off lights when you leave the room, turn off TVs and laptops when not in use instead of leaving them on standby, turn off electrical appliances at the wall when not in use. This will reduce the amount of energy you are using therefore saving you money as well as reducing emissions from power stations.
- Check your boiler – old boilers release more pollutants than newer cleaner boilers. Upgrading or simply servicing your existing boiler will help to reduce household emissions and save you money on heating bills. Further advice on energy efficiency and help available can be found on the Council's website at <https://www.torridge.gov.uk/article/11066/Energy-efficiency-advice>.

Further information on local air quality can be found on Defra's air quality management website <https://uk-air.defra.gov.uk>

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1 Local Air Quality Management

This report provides an overview of air quality in Torridge District Council 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 Torridge 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.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.

Previous air quality reports have concluded that none of the air quality objectives were being breached in Torridge district and therefore no AQMAs have been declared for any pollutant.

Previous air quality reports for Torridge can be found at <https://www.torridge.gov.uk/article/11236/Pollution>.

For reference, a map of Torridge District Council's monitoring locations is available in Appendix D.

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

Defra's appraisal of last year's ASR concluded the council's findings of no exceedances of the AQS objective occurred at areas of relevant exposure based on monitoring data from 12 diffusion tubes.

We agree with the points regarding reviewing the current monitoring programme in line with planned residential and commercial developments which may affect local air quality. Torridge District Council will review current planning schemes and judge whether the current network is sufficient to monitor relevant exposure at the locations of proposed developments, and consequently relocate and/or add new diffusion tubes, ensuring all residents have access to safe levels of air quality.

We have also taken on board the feedback issued regarding the maps located in Appendix D. From 2018, we have published new maps in line with the appraisal comments to aide interpretation.

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.

Currently there is no monitoring of PM_{2.5} or PM₁₀ completed within TorrIDGE therefore no concentration values can be reported or estimated using the method described in Box 7.7 of LAQM.TG(16).

The Defra 2017 background maps for TorrIDGE (2015 based)⁴ show that all background concentrations of PM_{2.5} are far below the 2020 annual mean AQS objective for PM_{2.5}. The highest concentration is predicted to be 11.2µg/m³ within the 1 x 1km grid square with the centroid grid reference of 245500, 126500. This grid square is located within the centre of Bideford, which has a section of the A386 running through it.

There are currently no designated smoke control areas within TorrIDGE, information is given for the public within the air quality section of the Council's website with regard to potential nuisances from bonfire smoke. In addition a link to guidance published by Defra relating to open fires and stoves can also be found here <http://www.torrIDGE.gov.uk/article/11236/Pollution>.

The Public Health Outcomes Framework data tool⁵ compiled by Public Health England quantifies the mortality burden of PM_{2.5} within England on a county and local authority scale. The 2016 fraction of mortality attributable to PM_{2.5} pollution in TorrIDGE is 3.5%, which is below South West's average of 5.3% and national average of 4.5%.

Where required, TorrIDGE District Council will review any proposed actions to be implemented with the Public Health team to consider the potential impact of the actions and whether any further action is required.

⁴ Defra Background Mapping data for local authorities (2015-based), available online at <https://uk-air.defra.gov.uk/data/laqm-background-maps?year=2015>

⁵ Public Health Outcomes Framework, Public Health England. data tool available online at <http://www.phoutcomes.info/public-health-outcomes-framework#page/0/gid/1000043/pat/6/par/E12000009/ati/102/are/E06000028>

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Particulate emissions are controlled from certain potentially polluting premises by conditions applied under the LAPC regime. There are currently 21 authorised processes regulated by the Local Authority in the District.

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

Torridge District Council does not have any automatic monitoring sites within its area.

3.1.2 Non-Automatic Monitoring Sites

Torridge District Council undertook non- automatic (passive) monitoring of NO₂ at 15 sites during 2017. Table A.1 in Appendix A shows the details of the sites. Three new sites were added to the monitoring network in 2017 (DT13, DT14 and DT14). DT13 was added on Clovelly Road alongside the Atlantic Village – a retail development including a new petrol station and proposed housing development. DT14 was added adjacent to a proposed significant housing development at Buckleigh Road, Bideford to accommodate the introduction of new receptors. Lastly, DT15 was introduced at Torrington School, to monitor exposure of sensitive receptors.

Maps showing the location of the monitoring sites are provided in Appendix D: Map of Monitoring Locations. Further details on Quality Assurance/Quality Control (QA/QC) for the diffusion tubes, including bias adjustments and annualisation are included in Appendix C.

3.2 Individual Pollutants

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

3.2.1 Nitrogen Dioxide (NO₂)

Table A.2 in Appendix A compares the ratified and adjusted monitored NO₂ annual mean concentrations for the past 5 years with the air quality objective of 40µg/m³.

For diffusion tubes, the full 2017 dataset of monthly mean values is provided in Appendix B.

Diffusion tube data capture for 2017 was greater than 75% at all the monitoring locations except for DT13, DT14 and DT15. Defra issued guidance in LAQM TG(16)

states that annualisation can only be completed if there is 3 months of monitoring data present. DT15 has only one month of data available therefore this is deemed insufficient and has consequently not been included in the analysis. As a result, DT13 and DT14 have been annualised according to the method set out in LAQM TG(16) box 7.9. Details of the annualisation are provided in Appendix C.

Results for 2017 have been bias adjusted using a national bias adjustment factor of 0.89. Full details of the bias adjustment and QA/QC procedure are provided in Appendix C: Supporting Technical Information / Air Quality Monitoring Data QA/QC.

Table B.1 below provides a summary of measured annual mean concentrations (annualised and bias adjusted) that were recorded for 2017. During 2017 there were no exceedances of the NO₂ annual mean objective. The highest NO₂ annual mean concentration in 2017 was recorded at H16 (Chapel Street, Holsworthy) with a concentration of 28.6µg/m³, which is still well below the annual mean AQS objective of 40µg/m³. In accordance with Defra LAQM.TG(16) there are no sites likely to be at risk of exceeding the 1-hour mean AQS objective.

Compared to the 2016 monitoring results, the 2017 data shows a slight decrease in NO₂ concentrations (Figure A.1). Seven out of twelve sites with available data reported a decrease in concentrations. T11, a roadside site located along the A386 within the centre of Great Torrington experienced the largest reduction of 2.3µg/m³ - demonstrating progress in key areas. B1, a roadside site located along Clovelly Road within the centre of Handy Cross, reported the largest increment at 2.1µg/m.

In comparison to 2013, NO₂ annual mean concentrations have decreased at nine out of the ten sites (Figure A.2). T11 experienced the largest reduction at 4.0µg/m³, and B8 located on High Street, Bideford the only increment at 2.5µg/m³.

NO₂ concentrations at H16 (Chapel Street) increased by 18.4% to 28.6µg/m³ from 2015 to 2017. H16 is located in Holsworthy along Chapel Street – a main arterial route, where vehicular traffic will be the cause for elevated NO₂ levels.

Overall, 2017 annual mean NO₂ concentrations in Torridge seem to be stable at a safe level continuing on from previous years with a gradual decrease (Figure A.2.) However, efforts need to be prioritised within the surrounding area of H16 to avoid any further increase.

Appendix A: Monitoring Results

Table A.1 – 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)
B1	Clovelly Road	Roadside	244810	126253	NO2	NO	3	2	NO	2
B3	Bideford Hospital	Urban Background	244928	126641	NO ₂	NO	0	N/A	NO	2
B4	Clovelly Close	Urban Background	244428	126073	NO2	NO	N/A	1	NO	2
B5	A39 Heywood roundabout	Roadside	244940	127917	NO2	NO	40	0.5	NO	3
B6	Torrington Lane ETW	Roadside	245899	126235	NO2	NO	0	1	NO	2.5
B8	High Street	Roadside	245419	126597	NO2	NO	0	2	NO	2.5
T10	Calf Street	Roadside	249707	119315	NO2	NO	0	1.5	NO	2
T11	Health Centre	Roadside	249792	119156	NO2	NO	0	1.5	NO	2.5
H12	Holsworthy Square	Roadside	234352	103882	NO2	NO	0	1.5	NO	2.5
T14	Eskill Place	Urban Background	249346	119549	NO2	NO	N/A	1.5	NO	2
T15	Torrington Square	Kerbside	249559	119092	NO2	NO	0	0	NO	2
H16	Chapel Street	Roadside	234361	103532	NO2	NO	0	1.5	NO	1.5

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DT13	Clovelly Road Atlantic Village	Roadside	243008	125649	NO2	NO	8	1	NO	2
DT14	Buckleigh Road	Roadside	243260	128824	NO2	NO	1	0.5	NO	2
DT15	Torrington School	Roadside	250303	119596	NO2	NO	1	0.5	NO	1

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.2 – Annual Mean NO₂ 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⁾				
					2013	2014	2015	2016	2017
B1	Roadside	Diffusion Tube	92	92	20.6	20.7	18.2	18.3	20.4
B3	Urban Background	Diffusion Tube	100	100	8.4	7.5	6.9	7.1	6.0
B4	Urban Background	Diffusion Tube	100	100	7.1	5.8	6.6	6	5.8
B5	Roadside	Diffusion Tube	100	100	22.6	22	21.6	21.5	21.1
B6	Roadside	Diffusion Tube	92	92	27.1	25.5	23.1	24.4	24.8
B8	Roadside	Diffusion Tube	100	100	22.3	26.5	23.9	26.3	24.8
T10	Roadside	Diffusion Tube	83	83	24.9	23.6	19.1	23.9	24.1
T11	Roadside	Diffusion Tube	100	100	18.9	17.6	15.1	17.2	14.9
H12	Roadside	Diffusion Tube	100	100	19.5	19.1	17.5	18.9	18.8
T14	Urban Background	Diffusion Tube	100	100	7.5	7.1	7.1	7	6.6
T15	Kerbside	Diffusion Tube	83	83	-	-	16.2	15.5	15.5
H16	Roadside	Diffusion Tube	100	100	-	-	23.7	26.4	28.6
DT13	Roadside	Diffusion Tube	100	25	-	-	-	-	17.0
DT14	Roadside	Diffusion Tube	100	25	-	-	-	-	17.4
DT15	Roadside	Diffusion Tube	100	8	-	-	-	-	-

DT13, DT14 and DT15 were added in 2017

- ☒ Diffusion tube data has been bias corrected
- ☒ Annualisation has been conducted where data capture is <75%

Notes:

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

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

- (1) Data capture for the monitoring period, in cases where monitoring was only carried out for part of the year.
- (2) Data capture for the full calendar year (e.g. if monitoring was carried out for 6 months, the maximum data capture for the full calendar year is 50%).
- (3) Means for diffusion tubes have been corrected for bias. All means have been “annualised” as per Boxes 7.9 and 7.10 in LAQM.TG16 if valid data capture for the full calendar year is less than 75%. See Appendix C for details.
- (4) DT15 has not been annualised and does not represent the annual mean concentration for 2017 as there is only one month of data available for the monitoring year, as per LAQM.TG16 if valid data capture for full calendar year is less than three months. See Appendix C for details.

Figure A.1 - Trends in Annual Mean NO₂ Concentrations (2016 – 2017)

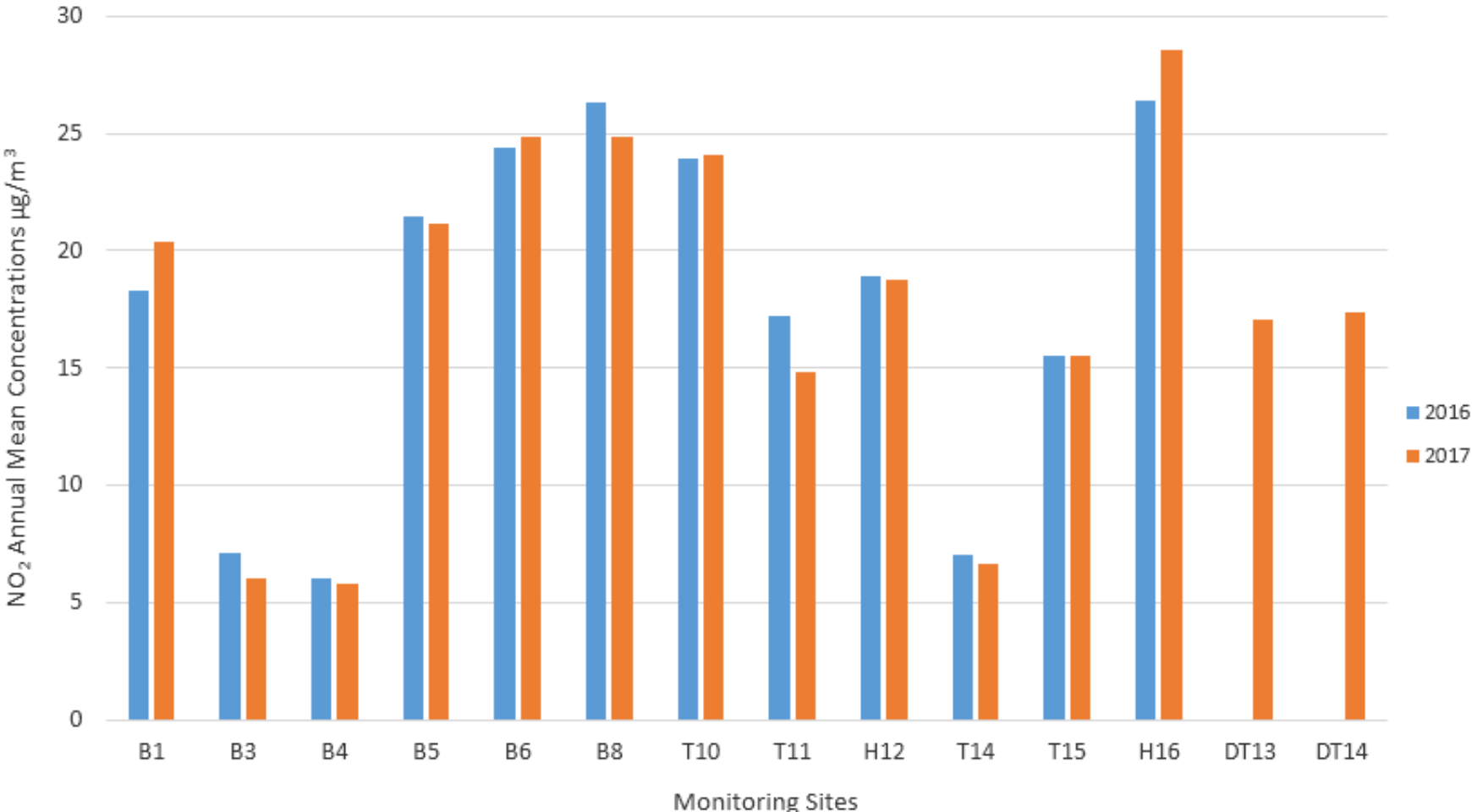
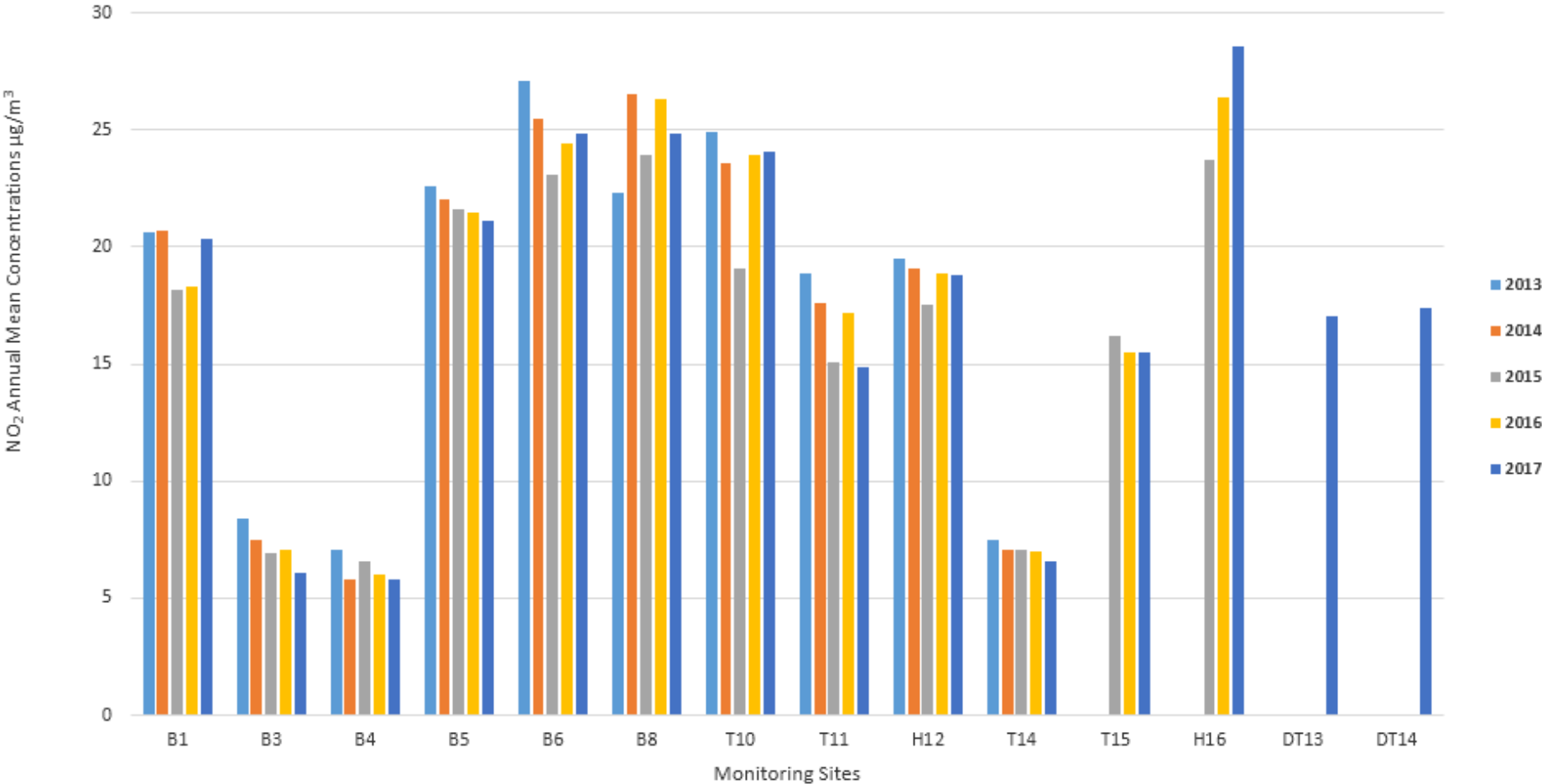


Figure A.2 - Trends in Annual Mean NO₂ Concentrations (2013 – 2017)



Appendix B: Full Monthly Diffusion Tube Results for 2016

Table B.1 – NO₂ 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 (0.89) and Annualised ⁽¹⁾	Distance Corrected to Nearest Exposure ⁽²⁾
B1	30.6	24.5	20.3	20.1	21.0	22.3	-	19.0	20.0	24.2	26.0	23.5	22.9	20.4	-
B3	9.7	11.0	7.8	5.8	6.1	5.7	4.0	4.7	4.4	6.2	9.4	6.9	6.8	6.0	-
B4	12.0	10.0	6.0	5.9	6.2	6.6	3.7	4.3	4.0	5.8	7.0	6.1	6.5	5.8	-
B5	26.4	23.1	24.0	22.2	18.7	31.0	18.3	24.8	21.5	25.7	26.1	23.0	23.7	21.1	-
B6	19.2	32.2	24.9	32.8	26.1	-	43.1	23.5	26.4	23.5	31.3	23.8	27.9	24.8	-
B8	36.3	30.1	30.0	28.6	27.1	26.5	22.4	25.3	26.5	25.2	30.1	26.7	27.9	24.8	-
T10	32.7	29.8	-	-	25.1	28.5	21.6	24.0	27.9	26.2	28.8	26.3	27.1	24.1	-
T11	23.1	18.0	13.4	22.6	14.0	16.7	15.5	17.3	15.7	17.1	9.3	17.5	16.7	14.9	-
H12	22.5	20.6	15.2	24.4	16.2	19.8	20.7	22.3	21.1	21.1	28.4	20.7	21.1	18.8	-
T14	12.3	11.6	7.5	5.1	6.6	6.7	5.4	6.0	4.5	7.3	8.6	7.6	7.4	6.6	-
T15	22.3	19.2	18.8	13.9	17.0	15.8	13.2	-	-	16.2	18.6	19.1	17.4	15.5	-
H16	36.2	29.6	27.2	29.7	24.6	31.1	29.7	32.0	37.6	35.8	39.4	32.2	32.1	28.6	-
DT13	-	-	-	-	-	-	-	-	-	17.8	19.1	19.1	18.7	17.0	-
DT14	-	-	-	-	-	-	-	-	-	18.6	20.7	17.9	19.1	17.4	-
DT15	-	-	-	-	-	-	-	-	-	-	-	11.5	-	-	-

- Local bias adjustment factor used
- National bias adjustment factor used
- Annualisation has been conducted where data capture is <75%

Notes:

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

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

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

(2) Distance corrected to nearest relevant public exposure.

(3) DT15 has not been annualised and does not represent the annual mean concentration for 2017 as there is only one month of data available for the monitoring year, as per LAQM.TG16 if valid data capture for full calendar year is less than three months then this is insufficient to annualise. See Appendix C for details.

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

Diffusion Tube Bias Adjustment Factors

The diffusion tubes are supplied and analysed by Gradko utilising the 20% triethanolamine (TEA) in water preparation method. A bias adjustment of 0.89 for the year 2017 (based on 34 studies) has been derived from the national bias adjustment calculator⁶.

QA/QC of Diffusion Tube Monitoring

Gradko International Ltd (Gradko) is a UKAS accredited laboratory and participates in the AIR-PT Scheme² (a continuation of the Workplace Analysis Scheme for Proficiency (WASP) for NO₂ tube analysis and the Annual Field Inter-Comparison Exercise. These provide strict performance criteria for participating laboratories to meet, thereby ensuring NO₂ concentrations are reported to a high level of accuracy. The lab follows the procedures set out in the Harmonisation Practical Guidance.

In the 2017 AIR-PT results, AIR-PT AR018 (January to February 2017), AIR PT AR019 (April to May 2017), AIR PT AR021 (July to August 2017) and AIR PT AR022 (September to October 2017), Gradko scored 100%. The percentage score reflects the results deemed to be satisfactory based upon the z-score of $< \pm 2$.

Short-term to Long-term Data Adjustment

Diffusion tube data capture for 2017 was greater than 75% at all the monitoring locations except for DT13, DT14 and DT15. Defra issued guidance in LAQM TG(16) states that annualisation can only be completed if there is 3 months of monitoring data present. DT15 has only one month of data available therefore this is deemed insufficient. As a result, DT13 and DT14 have been annualised according to the method set out in LAQM TG(16) box 7.9 Table C.1 displays the annualisation factor for both DT13 and DT14, as data capture for both tubes is identical (by duration and months spanned), with details of the annualisation provided in Table C.2 and Table C.3.

⁶ National Diffusion Tube Bias Adjustment Factor Spreadsheet, version 03/18 published in March 2018.

Table C.1 - Annualisation of Data from Nearby Continuous Monitoring Sites for Sites 13 and 14

Site 13 and 14				
Site	Site Type	Annual Mean (µg/m ³)	Period Mean (µg/m ³)	Ratio Annual Mean / Period Mean
Honiton	Urban Background	7.70	9.56	0.806
Plymouth Centre	Rural Background	19.47	22.43	0.868
Yarner Wood	Rural Background	3.22	2.30	1.401
Average Ratio				1.025

Table C.2 Annualisation for Site 13

Site	Uncorrected Diffusion Tube Mean (µg/m ³)	Honiton AF	Plymouth Centre AF	Yarner Wood AF	Average AF	Annualised Data Average µg/m ³	Bias Adjusted (0.89) µg/m ³
DT13	18.7	0.806	0.868	1.401	1.025	19.1	17.0

Table C.3 - Annualisation for Site 14

Site	Uncorrected Diffusion Tube Mean (µg/m ³)	Honiton AF	Plymouth Centre AF	Yarner Wood AF	Average AF	Annualised Data Average µg/m ³	Bias Adjusted (0.89) µg/m ³
DT14	19.1	0.806	0.868	1.401	1.025	19.5	17.4

ADMS Screen for Biomass Boiler in Torridge District Council

In 2017, planning permission was granted for a new biomass boiler at the Big Sheep Abbotsham, Bideford. The biomass boiler was assessed using the biomass emission screening tool, however due to stack height restrictions, this couldn't be screened out, requiring the need for a further assessment using the ADMS-Screen software.

The input parameters for the ADMS screening assessment are summarised in Table C.4. Background pollutant concentrations for 2017 were obtained from Defra's 2015-reference year background maps for the 1km grid square within which the biomass boiler is located.

As not all the input parameters were available at the time of preparing this report the ADMS screening assessment has not yet been carried out. Once the missing data has been collated the screening assessment will be completed and a detailed assessment prepared if the air quality impacts cannot be scoped out.

Table C.4 - Input Parameters for ADMS-Screen Screening Assessment

Parameter	Big Sheep Abbotsham
Site Location	The Big Sheep Abbotsham Bideford Devon EX39 5AP
Biomass unit(s)	1 x Kostrzewa Maxi bio 285
Thermal output (kWth)	270
Single stack internal diameter at exit point (m)	0.25
Stack release height (m)	6.2
Temperature of release (°C)	85
Location (OS co-ordinates) of the emissions stack	242758, 126518
Co-ordinates of centre of building within 5 stack heights (m)	242758, 126518
Height, length and Width of any building within 5 stack heights (m)	12x2.4x2.5
Angle of length of building from North (°)	83
NOx (mg/m ³)	Still awaiting information
PM (mg/m ³)	Still awaiting information
NOx (g/s)	0.0425
PM (g/s)	0.008556
Number of Stacks	1
NOx (g/s) X Stacks	0.0425
PM (g/s) X Stacks	0.008556
Internal diameter of X stacks at exit point (m)	0.25
Efflux velocity (m/s)	Still awaiting information
2016 NO ₂ annual mean Background (µg/m ³)	4.7
2016 PM ₁₀ annual mean Background (µg/m ³)	11.2
2016 NO ₂ short-term Background (µg/m ³)	9.4
2016 PM ₁₀ short-term Background (µg/m ³)	22.4

Planning Permissions

1/0039/2014/OUTM

Outline planning application for up to 550 dwellings, a 1.9ha primary school site (including neighbourhood building), highway accesses (including the rerouting of Littleham Lane) public open space and other associated infrastructure on land located to the south of Clovelly Road, Bideford. An air quality assessment was required and confirmed pollutants of concern (NO₂ and PM₁₀) to be well below the annual mean AQS objectives as a result of the proposed development.

1/0301/2017/FUL

Planning application for the installation of a petrol filling station, kiosk and associated works at Asda Stores on Clovelly Road, Bideford. No air quality assessment is required as part of the submission.

Appendix D: Map of Monitoring Locations

Figure D.1 - Map of Non-Automatic Monitoring Sites: Great Torrington

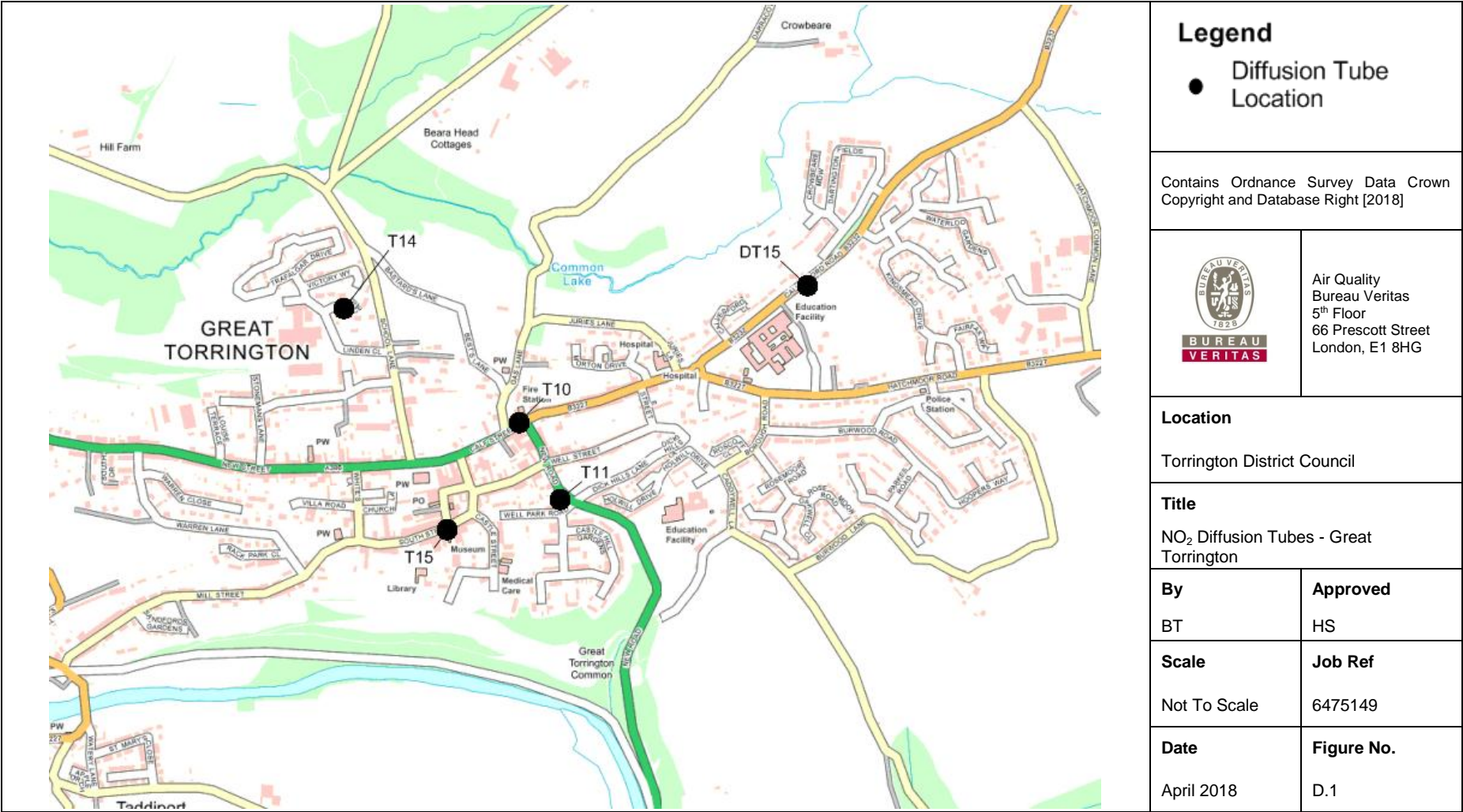


Figure D.2 - Map of Non-Automatic Monitoring Sites: Holsworthy

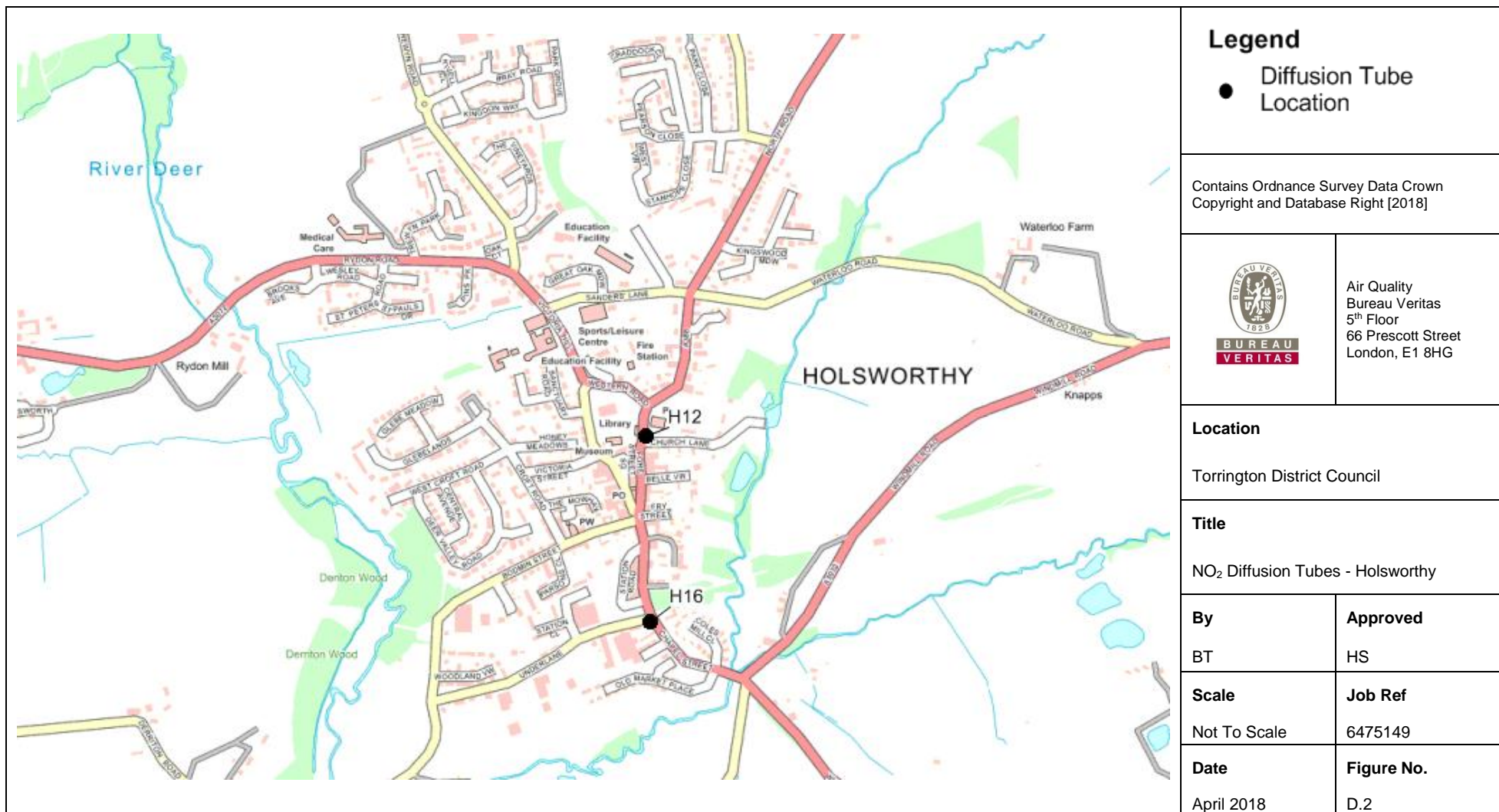


Figure D.3 - Map of Non-Automatic Monitoring Sites: Northam

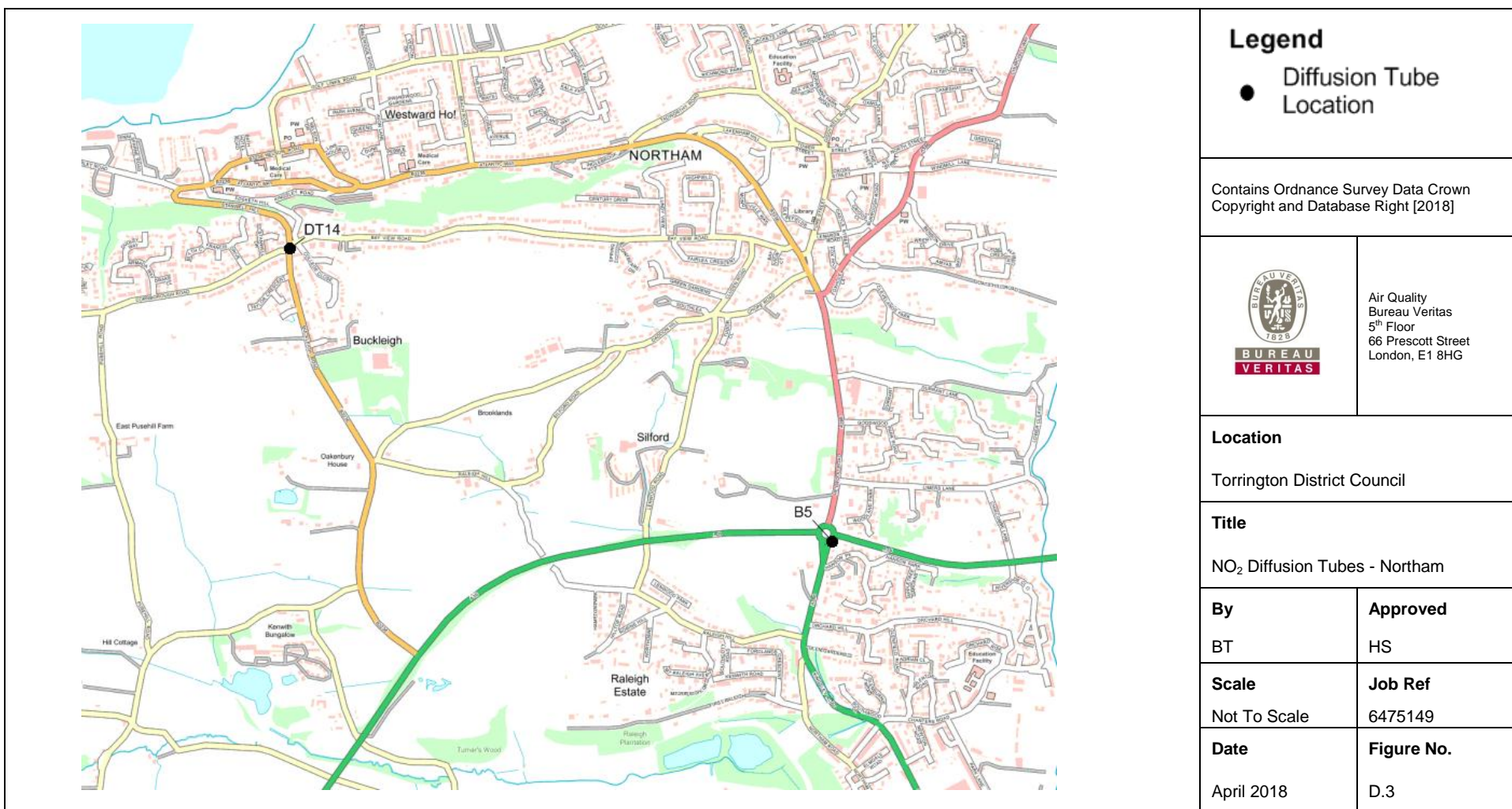
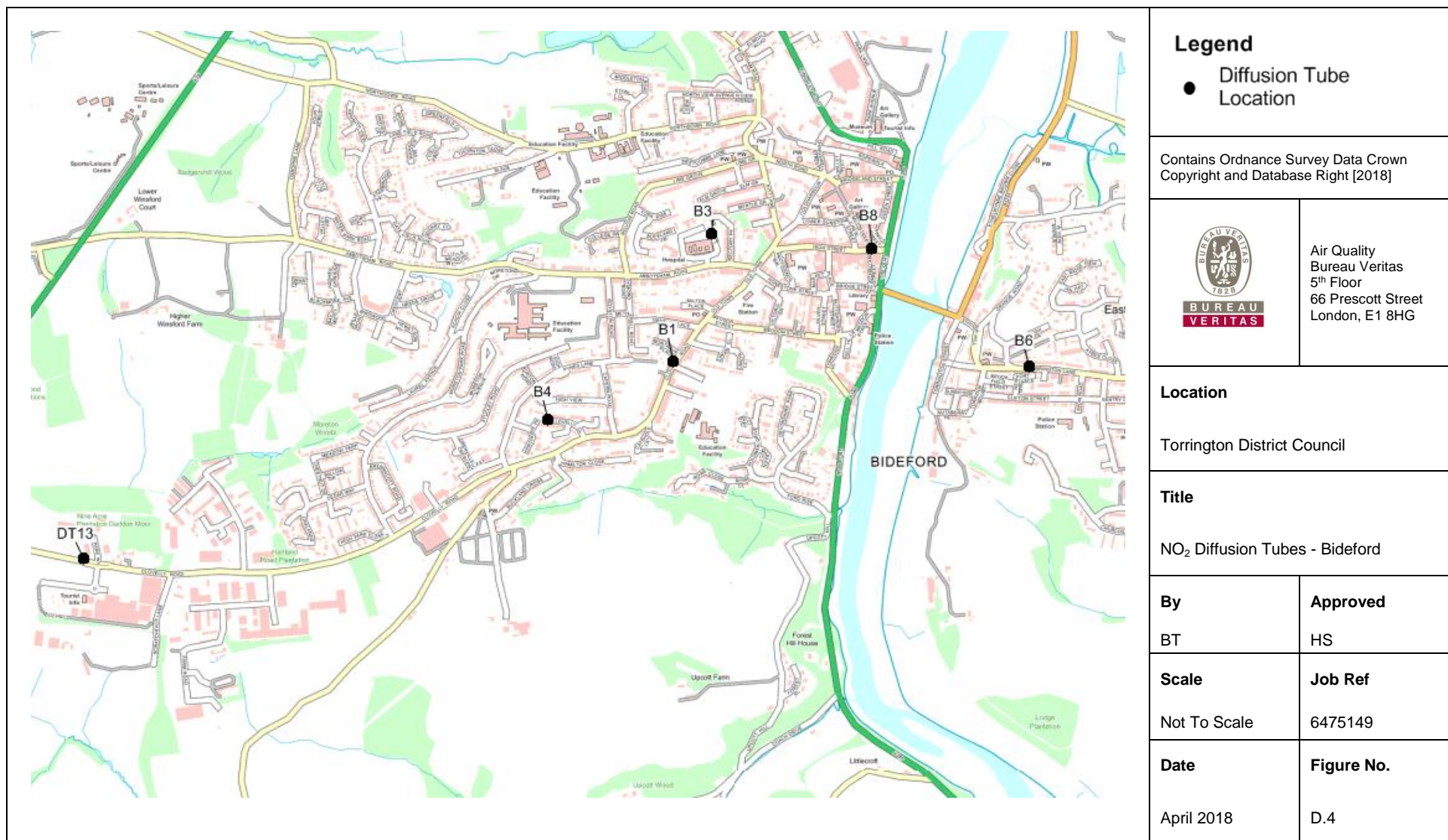


Figure D.4 - Map of Non-Automatic Monitoring Sites: Bideford



Appendix E: Summary of Air Quality Objectives in England

Table E.1 – Air Quality Objectives in England

Pollutant	Air Quality Objective ⁷	
	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

⁷ The units are in microgrammes of pollutant per cubic metre of air (µg/m³).

Glossary of Terms

Abbreviation	Description
AQAP	Air Quality Action Plan - A detailed description of measures, outcomes, achievement dates and implementation methods, showing how the local authority intends to achieve air quality limit values'
AQMA	Air Quality Management Area – An area where air pollutant concentrations exceed / are likely to exceed the relevant air quality objectives. AQMAs are declared for specific pollutants and objectives
ASR	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

References

- Local Air Quality Management Technical Guidance LAQM.TG(16). February 2018. Published by Defra in partnership with the Scottish Government, Welsh Assembly Government and Department of the Environment Northern Ireland.
- Local Air Quality Management Policy Guidance LAQM.PG(16). May 2016. Published by Defra in partnership with the Scottish Government, Welsh Assembly Government and Department of the Environment Northern Ireland.
- National Diffusion Tube Bias Adjustment Factor Spreadsheet, version 03/18 published in March 2018.
- QA QC Framework Diffusion Tubes - AIR-PT-Rounds 13 to 24 (Apr 2016 – Feb 2018). March 2018. Reports are prepared by LGC for BV/NPL on behalf of Defra and the Devolved Administrations.
- Torridge District Council 2016 Air Quality Annual Status Report.
- Torridge District Council 2017 Air Quality Annual Status Report.