TORBAY COUNCIL

# 2021 Air Quality Annual Status Report (ASR)

## In fulfilment of Part IV of the Environment Act 1995

## Local Air Quality Management

Date: June 2021

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|---|---|
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# Executive Summary: Air Quality in Our Area

## Air Quality in Torbay

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, the elderly, and those with existing heart and lung conditions. There is also often a strong correlation with equalities issues because areas with poor air quality are also often less affluent areas[1,2].

The mortality burden of air pollution within the UK is equivalent to 28,000 to 36,000 deaths at typical ages[3], with a total estimated healthcare cost to the NHS and social care of £157 million in 2017[4].

Following a series of Local Air Quality assessments, Torbay Council declared an Air Quality Management Area (AQMA) around Hele Road in 2005. Further, in 2006, Torbay Council declared a second Air Quality Management Area (AQMA) by Brixham Town Hall. In both cases the subsequent investigations confirmed that the pollution was from road transport. The main pollutant being nitrogen dioxide, caused by emissions from road transport, due to low vehicle speeds and as a result of localised congestion within both AQMA's.

A number of actions have been put in place along Hele Road such as changing the parking layout at the bottom end to try and ease the flow of traffic. Signage has been increased and further signage put up diverting HGVs along an alternative route. Since the implementation of the AQMA pollution levels have steadily improved and the majority of the area has met the required objective for nitrogen dioxide over the last few years. Community Safety has worked closely with Highways to achieve the reduction in pollution.

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[1] Public Health England. Air Quality: A Briefing for Directors of Public Health, 2017

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

[3] Defra. Air quality appraisal: damage cost guidance, July 2020

[4] Public Health England. Estimation of costs to the NHS and social care due to the health impacts of air pollution: summary report, May 2018

The AQMA in Brixham was also due to road transport. The junction within the Brixham AQMA has been realigned, this was originally due to coincide with the development of a large retail complex and car park. However, the planning application was withdrawn and the development has not taken place. There is no current plan for the car park to be developed. The pollution levels have met the objectives for a number of years. We continue to monitor the development proposals for the area and provide consultation responses to the Planning process.

Further information can be found at https://uk-air.defra.gov.uk/aqma/local-authorities?la_id=284

## Actions to Improve Air Quality

Whilst air quality has improved significantly in recent decades and will continue to improve due to national policy decisions, there are some areas where local action is needed to improve air quality further.

The 2019 Clean Air Strategy[5] sets out the case for action, with goals even more ambitious than EU requirements to reduce exposure to harmful pollutants. The Road to Zero[6] sets out the approach to reduce exhaust emissions from road transport through a number of mechanisms; this is extremely important given that the majority of Air Quality Management Areas (AQMAs) are designated due to elevated concentrations heavily influenced by transport emissions.

The pollution levels have continued to fall year on year within both the AQMA's. Therefore, the actions carried out by Torbay Council have been minimal.

Within the Hele AQMA the undergrowth at the bottom of the road continues to be cleared. This is to allow better air flow.

The road realignment within the Brixham AQMA has meant that the area has been opened up and that the increased air flow has improved the air quality.

[5] Defra. Clean Air Strategy, 2019

[6] DfT. The Road to Zero: Next steps towards cleaner road transport and delivering our Industrial Strategy, July 2018

## Conclusions and Priorities

There were no exceedances identified within Torbay, neither within or outside the current AQMA's. The overall trend has been that the air quality within Torbay has improved slightly year on year.

Since the air quality within Torbay has met the objectives for a number of years, it would be Torbay Councils intention to revoke the Brixham AQMA and reconsider the relevance of the Hele Rd AQMA in the near future. Torbay Council's priorities for the coming year are to continue monitoring within the Hele AQMA, revoke the Brixham AQMA, and to ensure that the air quality objectives continue to be met.

## Local Engagement and How to get Involved

Torbay Council would like to ensure that the air quality continues to improve within the bay and therefore any small changes that residents can make to help with this helps. For example, walking or taking the bus instead of using the car for short journeys. Finding alternative routes when cycling and walking away from busy roads can help reduce the pollution that is breathed in.

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## Figures



## Tables

# 1 Local Air Quality Management

This report provides an overview of air quality in Torbay during 2020. 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 Torbay Council to improve air quality and any progress that has been made.

The statutory air quality objectives applicable to LAQM in England are presented in Table E.1.

# 2 Actions to Improve Air Quality

## 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 should prepare an Air Quality Action Plan (AQAP) within 12 months setting out measures it intends to put in place in pursuit of compliance with the objectives.

A summary of AQMAs declared by Torbay Council can be found in Table 2.1. The table presents a description of the two AQMAs that are currently designated within Torbay Appendix D: Map(s) of Monitoring Locations and AQMAs provides maps of AQMAs and also the air quality monitoring locations in relation to the AQMAs.

Torbay Council propose to revoke Brixham AQMA and review Hele AQMA (see monitoring section).

**Table 2.1 – Declared Air Quality Management Areas**

**INSTRUCTIONS**

Please fill in Table 2.1 as per the following:

- AQMA Name = Official declared name of AQMA.
- Date of Declaration = The date of the original declaration, and of any subsequent amendments. Revoked AQMAs do not require inclusion within Table 2.1, however they may be discussed within Section 0.
- Pollutants and Air Quality Objectives = The pollutant for which the AQMA is declared, and the objective for that pollutant against which it is declared. If an AQMA is declared for multiple pollutants and/or objectives, please include details of each pollutant/objective on a new row.
- One Line Description = A brief description of the characteristics and location of the AQMA.
- Is air quality within the AQMA influenced by Highways England roads? = Yes/No. This may include emissions from Motorways, Urban Expressways, Dual carriageways, major trunk roads.
- Level of Exceedance = Highest pollutant concentration and/or number of exceedances at point of relevant exposure, i.e. following $NO_2$ fall off with distance correction (if applicable). The units presented should be relevant to the AQMA designation, i.e. for an AQMA designated for 1-hour the units should be hours (x hours were concentrations exceeded 200µg/$m^3$):
  - At Declaration – Monitored/modelled information that led to a declaration.
  - Now – Latest Monitored/modelled information of current situation in AQMA for that pollutant.
- Name of AQAP and Date of Designation = Name/Title of action plan and the date it was published.
- Web Link to AQAP = Where relevant, include a link to where the public can attain this plan. Ensure this hyperlink is completed to meet accessibility standards.

**Delete this box when the document is finished**

| AQMA Name | Date of Declaration | Pollutants and Air Quality Objectives | One Line Description | Is air quality in the AQMA influenced by roads controlled by Highways England? | Level of Exceedance: Declaration | Level of Exceedance: Current Year | Name and Date of AQAP Publication | Web Link to AQAP |
|---|---|---|---|---|---|---|---|---|
| AQMA Hele Road | Declared April 2005 | $NO_2$ annual mean | An area of Hele Road, between junctions with Teignmouth Road and Barton Road including residential properties and part of Orchard road. | No | 58µg/m$^3$ | 28µg/m$^3$ | Action Plan for AQMA Hele Road (2006) | See Appendix F |
| AQMA Brixham Town Hall | Declared May 2006 | $NO_2$ annual mean | An area of Brixham Town Centre,centred around the Town Hall. | No | 48µg/m$^3$ | 17.9µg/m$^3$ | Action Plan for AQMA Brixham (2007) | |

☒ **Torbay Council confirm the information on UK-Air regarding their AQMA(s) is up to date (confirm by selecting in box).**

☒ **Torbay Council confirm that all current AQAPs have been submitted to Defra (confirm by selecting in box).**

## Progress and Impact of Measures to address Air Quality in Torbay.

Torbay Council has taken forward a number of direct measures during the current reporting year of 2021 in pursuit of improving local air quality. Details of all measures completed, in progress or planned are set out in Table 2.2.

More detail on these measures can be found in their respective Action Plans. Key completed measures are:

- An on-street parking assessment was carried out at Hele Road and the parking location was relocated to the other side of the road to easy traffic movement.
- Torbay council has made amendments to the local signing strategy to divert unnecessary traffic away from the Hele Road, including HGVs.

Due to the fact that the objective has been met within both AQMA's Torbay Council's priorities for the coming year are to continue monitoring within the AQMAs and to ensure that the air quality objectives continue to be met.

Progress on the following measures has been slower than expected and unlikely to be fulfilled due to financial and officer time restraints.

- Torbay Council shall consider a review of the potential for restrictions on types of vehicle based upon emission standards
- Torbay Council shall consider assessing the potential of junction design and management, to enable easier traffic flows out of Hele Road at each end of the critical eastern half of the road.
- Undertake vehicle emissions testing

As most of the measures within the Action Plan have been implemented and that the objectives have been met Torbay Council anticipates that no further measures will be implemented at this stage.

Some of the measures stated above and in **Error! Reference source not found.** will continue to be implemented to ensure continued compliance.

## Table 2.2 – Progress on Measures to Improve Air Quality

| Measure No. | Measure | EU Category | EU Classification | Organisations involved and Funding Source | Planning Phase | Implementation Phase | Key Performance Indicator | Reduction in Pollutant / Emission from Measure | Progress to Date | Estimated / Actual Completion Date | Comments / Barriers to implementation |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Travel Plans | Promoting Travel Alternatives | School Travel Plans | Torbay Council | N/A | N/A | | Yes | Travel plans Updated Jan 14. | Completed | All schools in area have TPs |
| 2 | Signage for HGVs | Traffic Management | Other | Torbay Council | N/A | N/A | | Yes | Signs have been changed. | Completed | |
| 3 | Vegetation clearance | | | Torbay Council | N/A | N/A | | Yes | Vegetation cleared on a regular basis | Ongoing | |
| 4 | Reduction of HGV movements | Traffic Management | Other | Torbay Council | N/A | N/A | | Yes | Coach companies and hauliers using route contacted | Complete | |

## $PM_{2.5}$ – 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.

Torbay council have as part of the measures to reduce other pollutants already progressed reducing PM2.5s. Initiatives such as green travel plans for schools, park and ride schemes, cleaner vehicle technology and road realignments to ease traffic flow and reduce congestion have been implemented in regard to reducing other pollutants.

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

This section sets out the monitoring undertaken within 2020 by Torbay Council and how it compares with the relevant air quality objectives. In addition, monitoring results are presented for a five-year period between 2016 and 2020 to allow monitoring trends to be identified and discussed.

## 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.

Due to a number of problems with the continuous analysers in both Hele and Brixham, Torbay Council have ceased monitoring with continuous analysers.

National monitoring results are available at: https://uk-air.defra.gov.uk/interactive-map

### 3.1.2 Non-Automatic Monitoring Sites

Torbay Council undertook non- automatic (passive) monitoring of $NO_2$ at 19 sites during 2019/20. **Error! Reference source not found.** 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.

## Individual Pollutants

The air quality monitoring results presented in this section are, where relevant, adjusted for bias, annualisation (where the annual mean data capture is below 75% and greater than 25%), and distance correction. Further details on adjustments are provided in Appendix C.

### 3.1.3 Nitrogen Dioxide ($NO_2$)

Table A.3 and Table A.4 in Appendix A compare the ratified and adjusted monitored $NO_2$ annual mean concentrations for the past five years with the air quality objective of 40µg/m$^3$. Note that the concentration data presented represents the concentration at the location of the monitoring site, following the application of bias adjustment and annualisation, as required (i.e. the values are exclusive of any consideration to fall-off with distance adjustment).

For diffusion tubes, the full 2020 dataset of monthly mean values is provided in Appendix B. Note that the concentration data presented in Table B.1 includes distance corrected values, only where relevant.

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

### 3.1.4 Particulate Matter ($PM_{10}$)

Table A.6 in Appendix A: Monitoring Results compares the ratified and adjusted monitored $PM_{10}$ annual mean concentrations for the past five years with the air quality objective of 40µg/m$^3$.

**Error! Reference source not found.** in Appendix A compares the ratified continuous monitored $PM_{10}$ daily mean concentrations for the past five years with the air quality objective of 50µg/m$^3$, not to be exceeded more than 35 times per year.

### 3.1.5 Particulate Matter ($PM_{2.5}$)

**Error! Reference source not found.** in Appendix A presents the ratified and adjusted monitored $PM_{2.5}$ annual mean concentrations for the past five years.

### 3.1.6 Sulphur Dioxide ($SO_2$)

Table A.7 in Appendix A compares the ratified continuous monitored $SO_2$ concentrations for 2020 with the air quality objectives for $SO_2$.

# Appendix A: Monitoring Results

## Table A.1 – Details of Automatic Monitoring Sites

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

**There are currently no automatic monitoring sites in Torbay.**

**Notes:**

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

(2) N/A if not applicable

## Table A.2 – Details of Non-Automatic Monitoring Sites

| Diffusion Tube ID | Site Name | Site Type | X OS Grid Ref (Easting) | Y OS Grid Ref (Northing) | Pollutants Monitored | In AQMA? Which AQMA? | Distance to Relevant Exposure (m) (1) | Distance to kerb of nearest road (m) (2) | Tube Co-located with a Continuous Analyser? | Tube Height (m) |
|---|---|---|---|---|---|---|---|---|---|---|
| DT1 | 1 Brx- Bolton Street | Roadside | 292418 | 55814 | NO2 | YES - Brixham | 2.0 | 1.0 | No | 1.5 |
| DT2 | 2 Brx – Brewery Lane | Roadside | 292392 | 56063 | NO2 | YES - Brixham | 4.0 | 3.0 | No | 1.5 |
| DT3 | 3 Brx - Town Hall | Roadside | 292335 | 56040 | NO2 | YES - Brixham | 4.0 | 2.0 | No | 2.0 |
| DT4 | 8 Tqy - 33 Hele Rd | Roadside | 291153 | 66003 | NO2 | YES - Hele | 0.0 | 6.0 | No | 2.0 |
| DT5 | 9 Tqy - conservative Club Hele Rd | Roadside | 290995 | 66080 | NO2 | YES - Hele | 0.0 | 6.0 | No | 2.0 |
| DT6 | 10 Tqy -17 Hele Rd | Roadside | 291198 | 65972 | NO2 | YES - Hele | 0.0 | 5.0 | No | 2.0 |
| DT7 | 11 Tqy - Orchard Rd | Roadside | 290870 | 66135 | NO2 | YES - Hele | 2.0 | 2.0 | No | 2.2 |
| DT8 | 12 Tqy - 103 Hele Rd | Roadside | 290987 | 66170 | NO2 | YES - Hele | 0.0 | 4.0 | No | 2.0 |
| DT9 | 13 Tqy - 156 Hele Rd (opp Co-op) | Roadside | 290708 | 66133 | NO2 | YES - Hele | 0.0 | 6.0 | No | 2.0 |
| DT10 | 14 Tqy Baptist Church Hele Rd | Roadside | 291118 | 66018 | NO2 | YES - Hele | 2.0 | 4.0 | No | 2.0 |
| DT11 | 15 Paignton – 182 Kings Ash | Roadside | 287289 | 60824 | NO2 | NO | 1.0 | 8.0 | No | 1.5 |
| DT12 | 16 Paignton – 194 Kings Ash | Roadside | 287237 | 60891 | NO2 | NO | 2.0 | 11.0 | No | 1.5 |

| Diffusion Tube ID | Site Name | Site Type | X OS Grid Ref (Easting) | Y OS Grid Ref (Northing) | Pollutants Monitored | In AQMA? Which AQMA? | Distance to Relevant Exposure (m) (1) | Distance to kerb of nearest road (m) (2) | Tube Co-located with a Continuous Analyser? | Tube Height (m) |
|---|---|---|---|---|---|---|---|---|---|---|
| DT13 | 17 Paignton – 202Kings Ash | Roadside | 287206 | 60940 | NO2 | NO | 1.0 | 14.0 | No | 1.5 |
| DT14 | 18 Brx Town Hall AQU | Roadside | 292335 | 56040 | NO2 | YES - Brixham | 4.0 | 2.0 | No | 1.6 |
| DT15 | 19 Tweenaways Junction | Roadside | 287241 | 59923 | NO2 | NO | 3.0 | 2.0 | No | 1.5 |
| DT16 | Longstone Flats (2) | Roadside | 287249 | 59977 | NO2 | NO | 3.5 | 4.0 | No | 2.0 |
| DT17 | 20 Brixham Rd/Bookers | Roadside | 287239 | 59941 | NO2 | NO | 3.0 | 2.0 | No | 2.0 |
| DT18 | 21 Middle Street, Brix | Roadside | 292455 | 56170 | NO2 | YES - Brixham | 6.0 | 1.5 | No | 2.2 |
| DT19 | Old Mill Road | Roadside | 290477 | 64187 | NO2 | NO | 15.0 | 1.0 | No | 2.0 |
| DT20 | Rae Barn Road, Brixham | Roadside | 292853 | 55707 | NO2 | NO | 6.0 | 2.5 | No | 2.0 |
| DT21 | Avenue Road, Torquay | Roadside | 290551 | 64191 | NO2 | NO | 10.0 | 2.0 | No | 1.8 |

**Notes:**

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

(2) N/A if not applicable.

## Table A.3 – Annual Mean $NO_2$ Monitoring Results: Automatic Monitoring (µg/m$^3$)

| Site ID | X OS Grid Ref (Easting) | Y OS Grid Ref (Northing) | Site Type | Valid Data Capture for Monitoring Period (%) (1) | Valid Data Capture 2020 (%) (2) | 2016 | 2017 | 2018 | 2019 | 2020 |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | |
| | | | | | | | | | | |

**There are currently no automatic monitoring sites in Torbay.**

☐ **Annualisation has been conducted where data capture is <75% and >33% in line with LAQM.TG16 (confirm by selecting in box).**

☐ **Reported concentrations are those at the location of the monitoring site (annualised, as required), i.e. prior to any fall-off with distance correction (confirm by selecting in box).**

**Notes:**

The annual mean concentrations are presented as µg/m$^3$.

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

All means have been "annualised" as per LAQM.TG16 if valid data capture for the full calendar year is less than 75%. See Appendix C for details.

Concentrations are those at the location of monitoring and not those following any fall-off with distance adjustment.

(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%).

## Table A.4 – Annual Mean $NO_2$ Monitoring Results: Non-Automatic Monitoring (µg/m$^3$)

**Data submitted via LAQM Portal.**

☒ **Annualisation has been conducted where data capture is <75% and >33% in line with LAQM.TG16 (confirm by selecting in box).**

☒ **Diffusion tube data has been bias adjusted (confirm by selecting in box).**

☒ **Reported concentrations are those at the location of the monitoring site (bias adjusted and annualised, as required), i.e. prior to any fall-off with distance correction (confirm by selecting in box).**

**Notes:**

The annual mean concentrations are presented as µg/m$^3$.

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

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

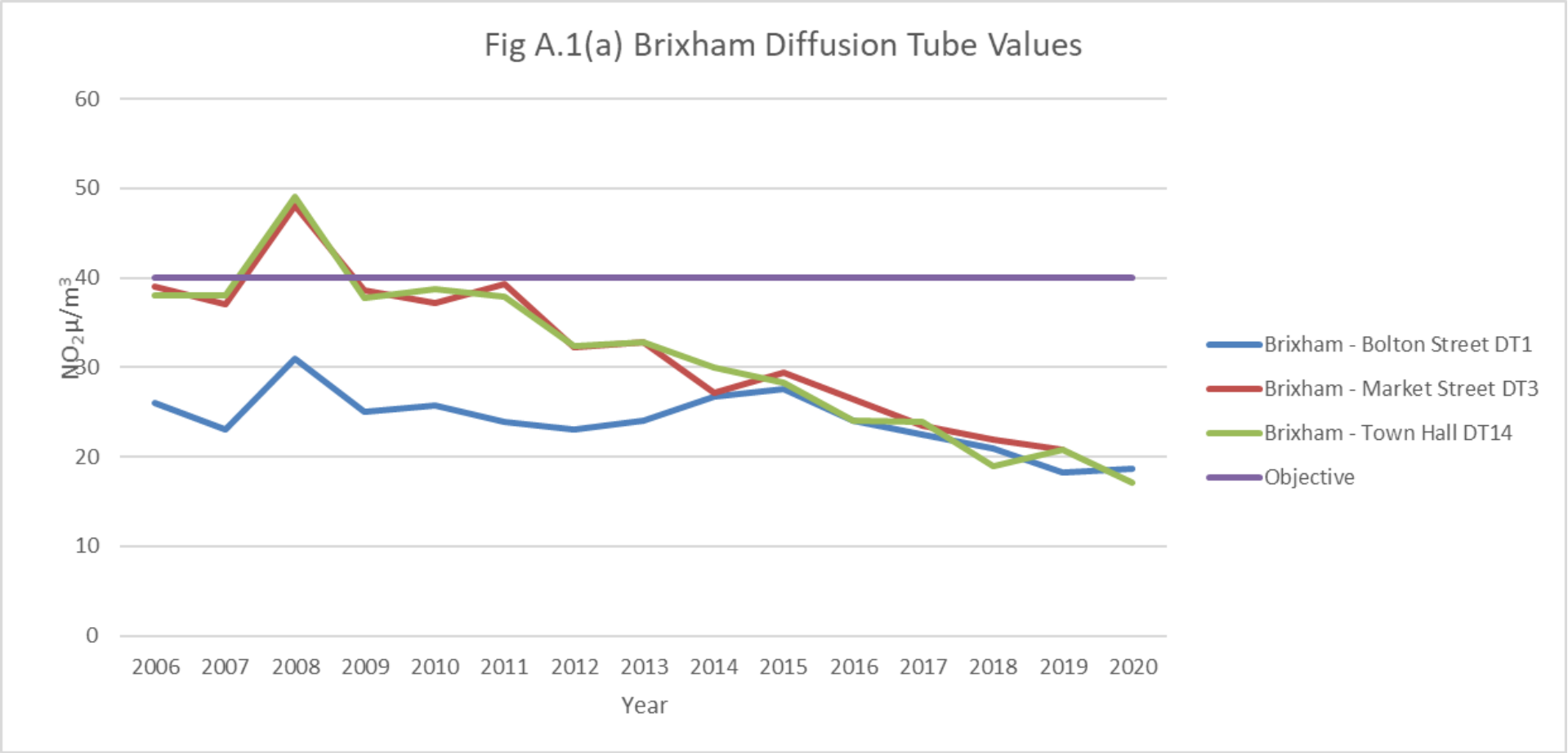
Means for diffusion tubes have been corrected for bias. All means have been “annualised” as per LAQM.TG16 if valid data capture for the full calendar year is less than 75%. See Appendix C for details.

Concentrations are those at the location of monitoring and not those following any fall-off with distance adjustment.

(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%).

**Figure A.1 – Trends in Annual Mean $NO_2$ Concentrations**



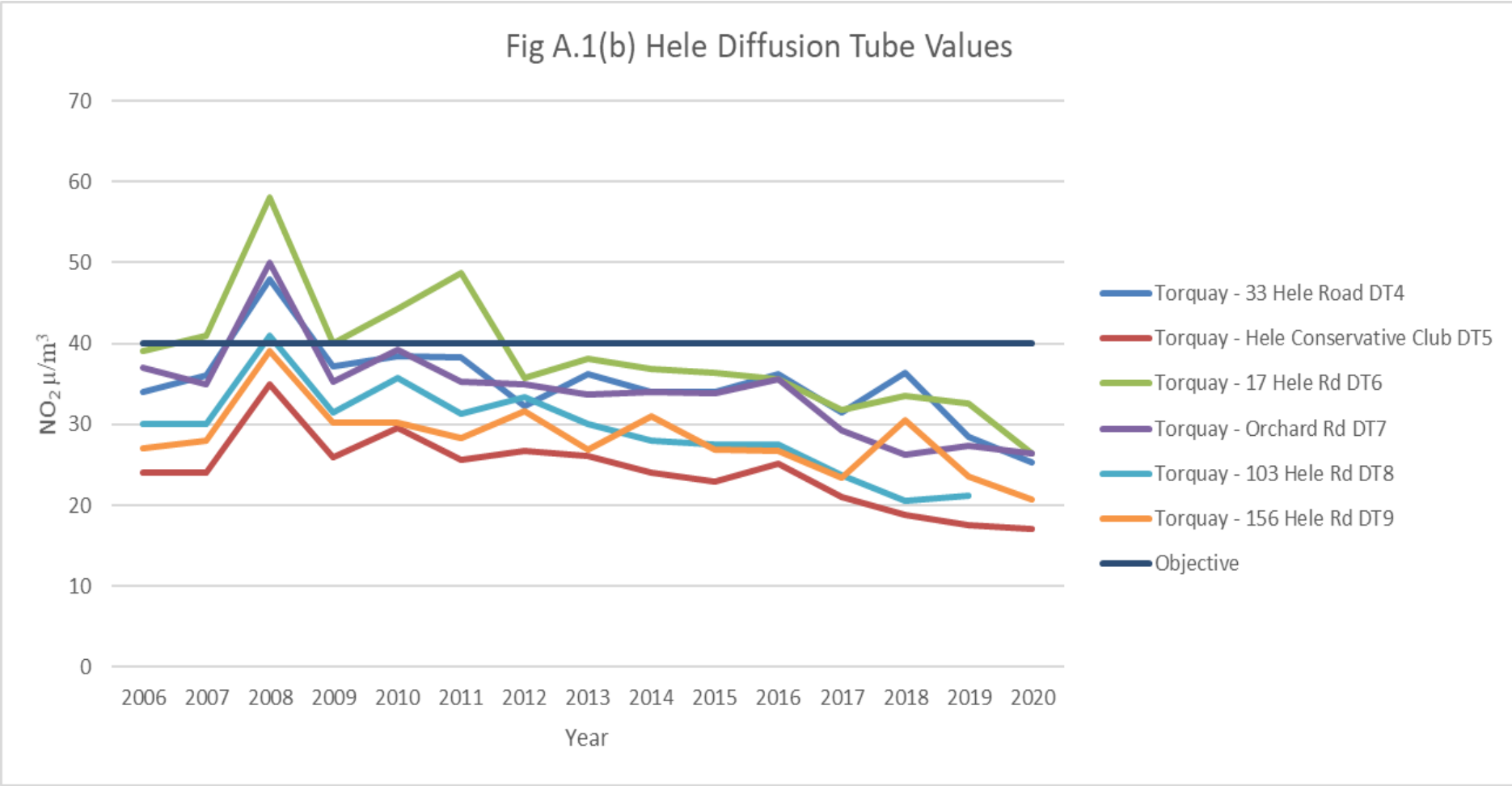


Fig A.1(b) Hele Diffusion Tube Values
70
60
50
40
30
20
10
0
$NO_2$ µ/m$^3$
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020
Year
Torquay - 33 Hele Road DT4
Torquay - Hele Conservative Club DT5
Torquay - 17 Hele Rd DT6
Torquay - Orchard Rd DT7
Torquay - 103 Hele Rd DT8
Torquay - 156 Hele Rd DT9
Objective

## Table A.5 – 1-Hour Mean $NO_2$ Monitoring Results, Number of 1-Hour Means > 200µg/$m^3$

| Site ID | X OS Grid Ref (Easting) | Y OS Grid Ref (Northing) | Site Type | Valid Data Capture for Monitoring Period (%) (1) | Valid Data Capture 2020 (%) (2) | 2016 | 2017 | 2018 | 2019 | 2020 |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | |
| | | | | | | | | | | |

**There are currently no automatic monitoring sites in Torbay.**

**Notes:**

Results are presented as the number of 1-hour periods where concentrations greater than 200µg/$m^3$ have been recorded.

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

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

(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%).

## Table A.6 – Annual Mean $PM_{10}$ Monitoring Results ($\mu g/m^3$)

| Site ID | X OS Grid Ref (Easting) | Y OS Grid Ref (Northing) | Site Type | Valid Data Capture for Monitoring Period (%) (1) | Valid Data Capture 2020 (%) (2) | 2016 | 2017 | 2018 | 2019 | 2020 |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | |
| | | | | | | | | | | |

☐**Annualisation has been conducted where data capture is <75% and >33% in line with LAQM.TG16 (confirm by selecting in box).**

**There is currently no $PM_{10}$ monitoring carried out in Torbay.**

**Notes:**

The annual mean concentrations are presented as $\mu g/m^3$.

Exceedances of the $PM_{10}$ annual mean objective of $40\mu g/m^3$ are shown in **bold**.

All means have been "annualised" as per LAQM.TG16 if valid data capture for the full calendar year is less than 75%. See Appendix C for details.

(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%).

## Table A.7 – $SO_2$ 2020 Monitoring Results, Number of Relevant Instances

| Site ID | X OS Grid Ref (Easting) | Y OS Grid Ref (Northing) | Site Type | Valid Data Capture for Monitoring Period (%) (1) | Valid Data Capture 2020 (%) (2) | Number of 15-minute Means > 266µg/m$^3$ | Number of 1-hour Means > 350µg/m$^3$ | Number of 24-hour Means > 125µg/m$^3$ |
|---|---|---|---|---|---|---|---|---|
| | | | | | | | | |
| | | | | | | | | |

**There is currently no $SO_2$ monitoring carried out in Torbay.**

**Notes:**

Results are presented as the number of instances where monitored concentrations are greater than the objective concentration.

Exceedances of the $SO_2$ objectives are shown in **bold** (15-min mean = 35 allowed a year, 1-hour mean = 24 allowed a year, 24-hour mean = 3 allowed a year).

If the period of valid data is less than 85%, the relevant percentiles are provided in brackets.

(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%).

# Appendix B: Full Monthly Diffusion Tube Results for 2020

### Table B.1 – $NO_2$ 2020 Diffusion Tube Results ($\mu g/m^3$)

**Data submitted via DTDES**.

☒ **All erroneous data has been removed from the $NO_2$ diffusion tube dataset presented in Table B.1 (confirm by selecting in box).**

☒ **Annualisation has been conducted where data capture is <75% and >33% in line with LAQM.TG16 (confirm by selecting in box).**

☐ **Local bias adjustment factor used (confirm by selecting in box).**

☒ **National bias adjustment factor used (confirm by selecting in box).**

☒ **Where applicable, data has been distance corrected for relevant exposure in the final column (confirm by selecting in box).**

☒ **Torbay Council confirm that all 2020 diffusion tube data has been uploaded to the Diffusion Tube Data Entry System (confirm by selecting in box).**

**Notes:**

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

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

See Appendix C for details on bias adjustment and annualisation.

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

## New or Changed Sources Identified Within Torbay During 2020

Torbay Council has not identified any new sources relating to air quality within the reporting year of 2020.

## Additional Air Quality Works Undertaken by Torbay Council During 2020

Torbay Council has not completed any additional works within the reporting year of 2020.

## QA/QC of Diffusion Tube Monitoring

All tubes used in the monitoring of Nitrogen Dioxide supplied and analysed by Gradko international and operate a Workplace Analysis Scheme for Proficiency (WASP). All tubes deployed in the monitoring surveys undertaken by Torbay Council are currently done so following guidance in chapter 3 of TG(09). As Torbay Council no longer have continuous analysers the bias adjustment factor used was the national value.

## Diffusion Tube Annualisation

All diffusion tube monitoring locations within Torbay recorded data capture of 75% therefore it was not required to annualise any monitoring data. In addition, any sites with a data capture below 33% do not require annualisation.

## Diffusion Tube Bias Adjustment Factors

The diffusion tube data presented within the 2020 ASR have been corrected for bias using an adjustment factor. Bias represents the overall tendency of the diffusion tubes to under or over-read relative to the reference chemiluminescence analyser. LAQM.TG16 provides guidance with regard to the application of a bias adjustment factor to correct diffusion tube monitoring. Triplicate co-location studies can be used to determine a local bias factor based on the comparison of diffusion tube results with data taken from $NO_x$/$NO_2$ continuous analysers. Alternatively, the national database of diffusion tube co-location surveys provides bias factors for the relevant laboratory and preparation method.

Torbay Council have applied a national bias adjustment factor of **0.81** to the 2020 monitoring data. A summary of bias adjustment factors used by Torbay Council over the past five years is presented in Table C.1.

### Table C.1 – Bias Adjustment Factor

| Year | Local or National | If National, Version of National Spreadsheet | Adjustment Factor |
|---|---|---|---|
| **2020** | National | 04/21 | 0.81 |
| **2019** | National | 09/20 | 1.01 |
| **2018** | National | 06/19 | 1.05 |
| **2017** | National | 09/18 | 1.07 |
| **2016** | National | 06/17 | 1.08 |

## $NO_2$ Fall-off with Distance from the Road

Wherever possible, local authorities should ensure that monitoring locations are representative of exposure. However, where this is not possible, the $NO_2$ concentration at the nearest location relevant for exposure should be estimated using the Diffusion Tube Data Processing Tool/$NO_2$ fall-off with distance calculator available on the LAQM Support website. Where appropriate, non-automatic annual mean $NO_2$ concentrations corrected for distance are presented in Table B.1.

No diffusion tube $NO_2$ monitoring locations within Torbay Council required distance correction during 2021.

### $NO_2$ Fall-off with Distance from the Road

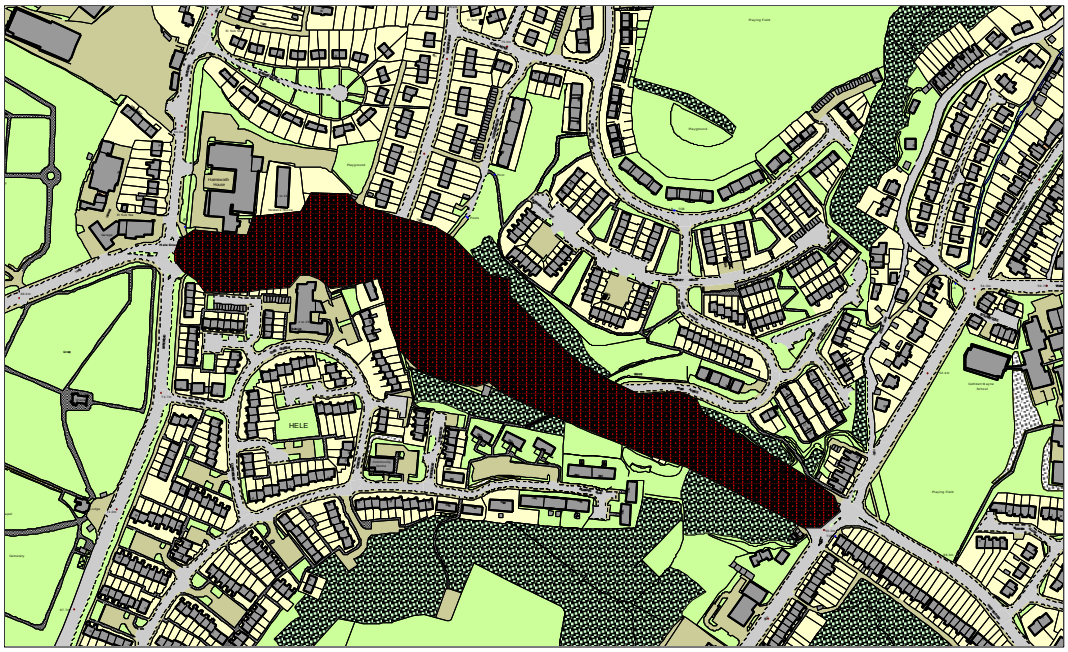
Wherever possible, local authorities should ensure that monitoring locations are representative of exposure. However, where this is not possible, the $NO_2$ concentration at the nearest location relevant for exposure should be estimated using the $NO_2$ fall-off with distance calculator available on the LAQM Support website. Where appropriate, non-automatic annual mean $NO_2$ concentrations corrected for distance are presented in Table B.1.

No automatic $NO_2$ monitoring locations within Torbay required distance correction during 2020.

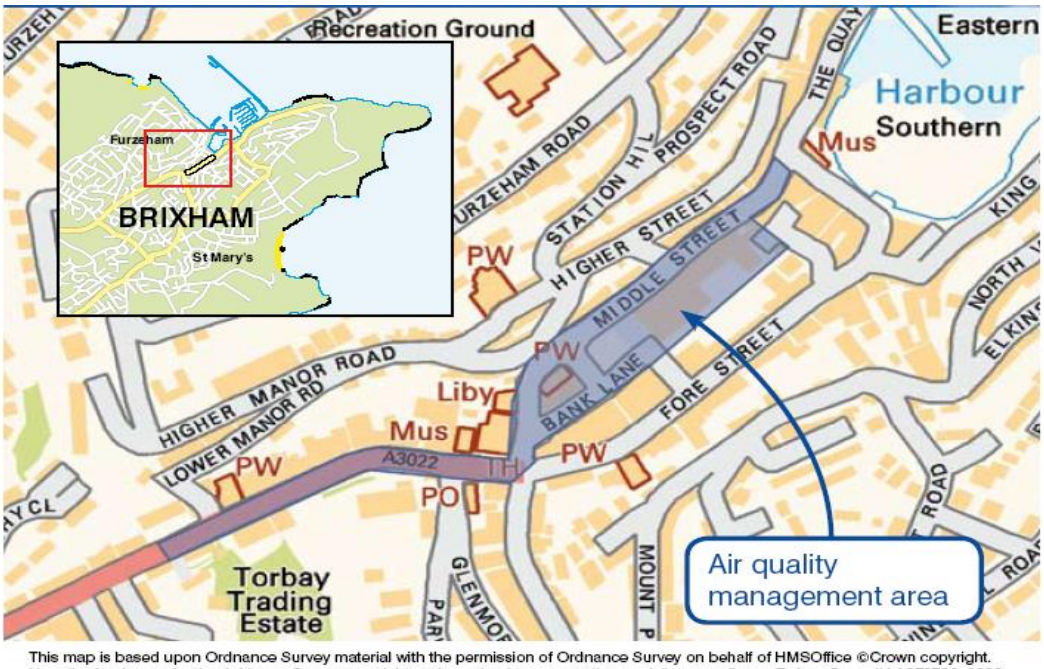
# Appendix D: Map(s) of Monitoring Locations and AQMAs

## Figure D.1 – Map of Non-Automatic Monitoring Site

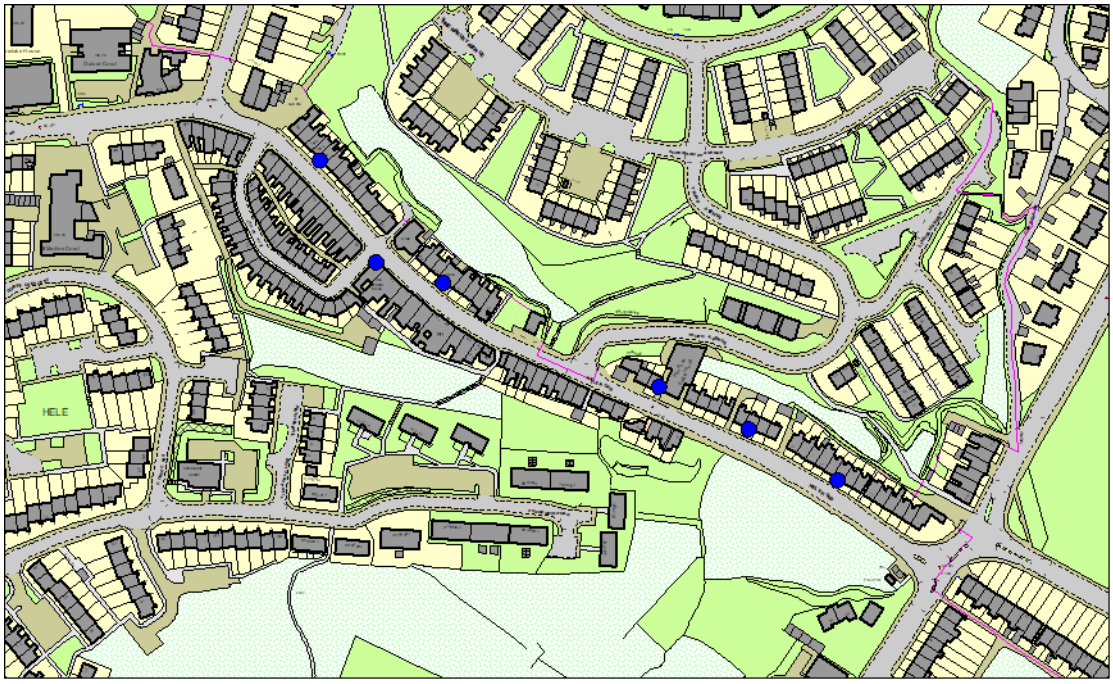
Map to the show the extent of AQMA at Hele Road



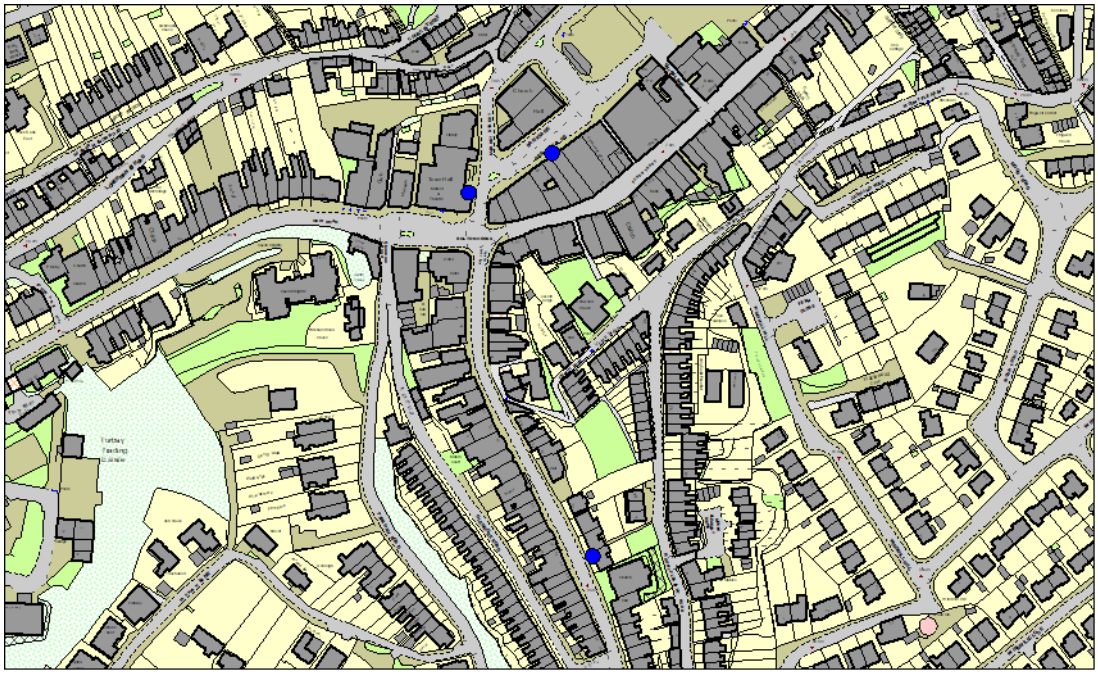
Location and extent of the AQMA in Brixham



Location of diffusion tube monitoring at Hele Road




Location of diffusion tube monitoring at Brixham Town Centre.



# Appendix E: Summary of Air Quality Objectives in England

### Table E.1 – Air Quality Objectives in England[7]

| Pollutant | Air Quality Objective: Concentration | Air Quality Objective: Measured as |
|---|---|---|
| Nitrogen Dioxide ($NO_2$) | 200µg/$m^3$ not to be exceeded more than 18 times a year | 1-hour mean |
| Nitrogen Dioxide ($NO_2$) | 40µg/$m^3$ | Annual mean |
| Particulate Matter ($PM_{10}$) | 50µg/$m^3$, not to be exceeded more than 35 times a year | 24-hour mean |
| Particulate Matter ($PM_{10}$) | 40µg/$m^3$ | Annual mean |
| Sulphur Dioxide ($SO_2$) | 350µg/$m^3$, not to be exceeded more than 24 times a year | 1-hour mean |
| Sulphur Dioxide ($SO_2$) | 125µg/$m^3$, not to be exceeded more than 3 times a year | 24-hour mean |
| Sulphur Dioxide ($SO_2$) | 266µg/$m^3$, 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/$m^3$).

# Appendix F: Impact of COVID-19 upon LAQM

COVID-19 has had a significant impact on society. Inevitably, COVID-19 has also had an impact on the environment, with implications to air quality at local, regional and national scales.

COVID-19 has presented various challenges for Local Authorities with respect to undertaking their statutory LAQM duties in the 2021 reporting year. Recognising this, Defra provided various advice updates throughout 2020 to English authorities, particularly concerning the potential disruption to air quality monitoring programmes, implementation of Air Quality Action Plans (AQAPs) and LAQM statutory reporting requirements. Defra has also issued supplementary guidance for LAQM reporting in 2021 to assist local authorities in preparing their 2021 ASR. Where applicable, this advice has been followed.

Despite the challenges that the pandemic has given rise to, the events of 2020 have also provided Local Authorities with an opportunity to quantify the air quality impacts associated with wide-scale and extreme intervention, most notably in relation to emissions of air pollutants arising from road traffic. The vast majority (>95%) of AQMAs declared within the UK are related to road traffic emissions, where attainment of the annual mean objective for nitrogen dioxide ($NO_2$) is considered unlikely. On 23rd March 2020, the UK Government released official guidance advising all members of public to stay at home, with work-related travel only permitted when absolutely necessary. During this initial national lockdown (and to a lesser extent other national and regional lockdowns that followed), marked reductions in vehicle traffic were observed; Department for Transport (DfT) data[8] suggests reductions in vehicle traffic of up to 70% were experienced across the UK by mid-April, relative to pre COVID-19 levels.

This reduction in travel in turn gave rise to a change of air pollutant emissions associated with road traffic, i.e. nitrous oxides ($NO_x$), and exhaust and non-exhaust particulates (PM). The Air Quality Expert Group (AQEG)[9] has estimated that during the initial lockdown period in 2020, within urbanised areas of the UK reductions in $NO_2$ annual mean concentrations were between 20 and 30% relative to pre-pandemic levels, which

[8] Prime Minister's Office, COVID-19 briefing on the 31st of May 2020

[9] Air Quality Expert Group, Estimation of changes in air pollution emissions, concentrations and exposure during the COVID-19 outbreak in the UK, June 2020

represents an absolute reduction of between 10 to 20µg/$m^3$ if expressed relative to annual mean averages. During this period, changes in $PM_{2.5}$ concentrations were less marked than those of $NO_2$. $PM_{2.5}$ concentrations are affected by both local sources and the transport of pollution from wider regions, often from well beyond the UK. Through analysis of AURN monitoring data for 2018-2020, AQEG have detailed that $PM_{2.5}$ concentrations during the initial lockdown period are of the order 2 to 5µg/$m^3$ lower relative to those that would be expected under business-as-usual conditions.

As restrictions are gradually lifted, the challenge is to understand how these air quality improvements can benefit the long-term health of the population.

## Impacts of COVID-19 on Air Quality within Torbay

There were no identifiable impacts as a consequence of COVID-19 upon air quality within Torbay.

## Opportunities Presented by COVID-19 upon LAQM within Torbay

No LAQM related opportunities have arisen as a consequence of COVID-19 within Torbay.

## Challenges and Constraints Imposed by COVID-19 upon LAQM within Torbay

No challenges or constraints relating to LAQM have arisen during 2020 as a consequence of COVID-19 within Torbay.

## Table F 1 – Impact Matrix

| Category | Impact Rating: None | Impact Rating: Small | Impact Rating: Medium | Impact Rating: High |
|---|---|---|---|---|
| Automatic Monitoring – Data Capture (%) | More than 75% data capture | 50 to 75% data capture | 25 to 50% data capture | Less than 25% data capture |
| Automatic Monitoring – QA/QC Regime | Adherence to requirements as defined in LAQM.TG16 | Routine calibrations taken place frequently but not to normal regime. Audits undertaken alongside service and maintenance programmes | Routine calibrations taken place infrequently and service and maintenance regimes adhered to. No audit achieved | Routine calibrations not undertaken within extended period (e.g. 3 to 4 months). Interruption to service and maintenance regime and no audit achieved |
| Passive Monitoring – Data Capture (%) | More than 75% data capture | 50 to 75% data capture | 25 to 50% data capture | Less than 25% data capture |
| Passive Monitoring – Bias Adjustment Factor | Bias adjustment undertaken as normal | <25% impact on normal number of available bias adjustment colocation studies (2020 vs 2019) | 25-50% impact on normal number of available bias adjustment studies (2020 vs 2019) | >50% impact on normal number of available bias adjustment studies (2020 vs 2019) and/or applied bias adjustment factor studies not considered representative of local regime |
| Passive Monitoring – Adherence to Changeover Dates | Defra diffusion tube exposure calendar adhered to | Tubes left out for two exposure periods | Tubes left out for three exposure periods | Tubes left out for more than three exposure periods |
| Passive Monitoring – Storage of Tubes | Tubes stored in accordance with laboratory guidance and analysed promptly. | Tubes stored for longer than normal but adhering to laboratory guidance | Tubes unable to be stored according to be laboratory guidance but analysed prior to expiry date | Tubes stored for so long that they were unable to be analysed prior to expiry date. Data unable to be used |
| AQAP – Measure Implementation | Unaffected | Short delay (<6 months) in development of a new AQAP, but is on-going | Long delay (>6 months) in development of a new AQAP, but is on-going | No progression in development of a new AQAP |
| AQAP – New AQAP Development | Unaffected | Short delay (<6 months) in development of a new AQAP, but is on-going | Long delay (>6 months) in development of a new AQAP, but is on-going | No progression in development of a new AQAP |

# 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 | 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 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.TG16. April 2021. 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.PG16. May 2016. Published by Defra in partnership with the Scottish Government, Welsh Assembly Government and Department of the Environment Northern Ireland.