

2023 Air Quality Annual Status Report (ASR)

In fulfilment of Part IV of the Environment Act 1995 Local Air Quality Management, as amended by the Environment Act 2021

Date: September 2023

South Hams District Council and West Devon Borough Council

Information	<local authority="" name=""> Details</local>
Local Authority Officer	Sarah Harcombe
Department	Environmental Health
Address	Follaton House, Plymouth Road, Totnes, TQ9 5NE
Telephone	01803 861164
E-mail	Sarah.harcombe@swdevon.gov.uk
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Executive Summary: Air Quality in Our Area

Air Quality in South Hams and West Devon

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 29,000 to 43,000 deaths at typical ages³, with a total estimated healthcare cost to the NHS and social care of £157 million in 2017⁴.

This Annual Status Report (ASR) on Air Quality serves to provide a picture of air quality in South Hams and West Devon in recent years. Our websites also give information on air quality in our areas see;

www.southhams.gov.uk

www.westdevon.gov.uk

Monitoring of air quality within both Council areas is for Nitrogen Dioxide (NO₂) using diffusion tubes. This is the only monitoring currently undertaken but the aim has always been to select the worst-case relevant locations for monitoring so that officers can screen out areas where necessary and remain attentive to those where there are problems.

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, January 2023

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

There are three Air Quality Management Areas (AQMAs) in the South Hams, the first of these was declared in 2005 and constitutes just one residential property which is situated immediately next to the A38 Devon Expressway.

The other two are both in market towns (Ivybridge and Totnes). These were declared in 2009 though the Totnes one was extended due to new monitoring data in 2016.

All of the South Hams AQMAs were declared because of the exceedance of the annual average Nitrogen Dioxide (NO₂) objective of 40ug/m³ at relevant receptors, and the main source of this pollutant at all locations is road traffic.

In general, Nitrogen Dioxide levels both in AQMAs and in areas outside AQMAs in our council areas have shown a recent, very noticeable decline – particularly in the three years prior to last year (2022). The decline could have been related partly to reductions in travel caused by the Covid pandemic and subsequent related changes in travel to work patterns etc; as well as to improvements in vehicle technology and initiatives to encourage people to use active travel. For the last year (2021 to 2022), Nitrogen Dioxide levels appear to have remained quite stable at the reduced concentrations, so it is to be hoped that the pollutant concentrations will at least remain relatively low (if not fall further) in the future (see Appendix A of this report).

Levels in the original Totnes AQMA had hovered around the 40ug/m³ level at the original worst case location for many years with no obvious decline until 2019 when they reduced to 37ug/m³. They were lower again in 2020, which may have been because of Covid and reduced traffic levels. However, in 2021 the appropriately adjusted result for the worst case location was just 29.5 ug/m³, whilst last year (2022) the level was 31.7ug/m³.

When the Totnes AQMA was extended, it was to include a newly found pollution hotspot at True Street junction. Levels there were still exceeding the objective level for annual average NO₂ in recent years. For example, levels of around 48ug/m³ were monitored there in 2018 and 2019 though this was substantially lower than the 56ug/m³ monitored in 2017. The appropriately adjusted 2021 level was 33.7 ug/m³ and in 2022 it was 35.1ug/m³ bringing this location below the annual mean NO₂ objective for the last two consecutive years.

The Ivybridge AQMA now has hopefully been resolved because of recently completed changes in the road layout and parking arrangements undertaken by Devon County Council (DCC) in response to the air quality and traffic issues there which had been the subject of discussions between South Hams District Council Environmental Health officers

and DCC traffic planners for some time. These changes were only implemented partway through 2020 so it is still too early to say for sure but Nitrogen Dioxide levels at receptors along this road appear to have dropped quite dramatically and are now around 26 ug/m³ (appropriately adjusted 2022 data). In 2020 and 2021 levels were just over 31ug/m³ and 27ug/m³ respectively, whilst before this the worst case levels at this AQMA had hovered around the 40ug/m³ level.

At Dean Prior the appropriately adjusted diffusion tube result from a tube located at the worst (highest NO₂ concentration) position declined from 69ug/m³ in 2016 to a level of 61ug/m³ in 2019, then to between 48 and 49 ug/m³ in the last two years (2021 and 2022).

There are no declared AQMAs in the West Devon area. One slight 'hot spot' of pollution at Exeter Road, Okehampton appears to have experienced declining levels of NO₂ since it was first monitored in 2016, (eg from 42.4 ug/m³ in 2017 to 33 ug/m³ in 2021 and then 31.4ug/m³ in 2022) and additional monitoring close to this location has found no further problems there.

There are no other apparent problems in West Devon although monitoring is carried out at locations in Tavistock as well as those in Okehampton noted above. Monitoring results at Tavistock show levels well below the objective; for example at Dolvin Road, Tavistock appropriately adjusted levels in 2022 were 27.8 ug/m³. Dolvin Road is probably the worst-case location in Tavistock judging by local knowledge and observation. However, additional monitoring sites will be installed there to check.

Apart from Nitrogen Dioxide, there are no other pollutants of concern (ie. pollutants at or approaching the objective levels) in the South Hams and West Devon areas. This is known from screening exercises and some limited previous monitoring of PM₁₀ and PM_{2.5} undertaken at worst case and background locations in the South Hams area by the Council and by developers (see earlier annual Air Quality Reports, available on request from South Hams District Council, contact environmental.health@swdevon.gov.uk).

In addition to the work on air quality summarised above; the Council is pursuing measures to limit climate change. The councils have declared a Climate Emergency and have appointed a dedicated climate change officer who will be working through partnership with the Devon Climate Emergency as a member of the response group and tactical group. Clearly there may be links between work undertaken to limit global warming emissions and work done to improve air quality and Environmental Health officers will seek to further engage with the climate change officer in order to share and thereby strengthen any measures which may both improve air quality and reduce greenhouse emissions.

The Council also has a commitment to improve biodiversity and Environmental Health will seek to push forward that agenda, particularly where there will also be benefits for air quality.

Actions to Improve Air Quality

Whilst air quality has improved significantly in recent decades, there are some areas where local action is needed to protect people and the environment from the effects of air pollution.

The Environmental Improvement Plan⁵ sets out actions that will drive continued improvements to air quality and to meet the new national interim and long-term PM_{2.5} targets. The National Air Quality Strategy, 2023, will provide more information on local authorities' responsibilities to work towards these new targets and reduce PM_{2.5} in their areas. The Road to Zero⁶ details 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.

South Hams District and West Devon Borough councils are taking active measures to reduce pollution to below current objective levels (see section 2 below). In addition to consultation with Devon County Council over the traffic flow changes in Ivybridge outlined above and now completed, the Councils have also included requirements within their Local Plan (Plymouth and South West Devon 2019) to ensure that Air Quality Assessments and a variety of air quality measures are included for any new significant developments that could impact on any of our AQMAs, and in particular for the two AQMAs in market towns (Ivybridge and Totnes),. The measures requested are detailed in section 2 and include ensuring that greener travel options and the use of Low Emission Vehicles are encouraged. Would-be developers are also asked to help to identify and tackle any air pollution problems that might arise from their proposed development as part

⁵ Defra. Environmental Improvement Plan 2023, January 2023

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

of the planning process (see also Appendix F.) All of these measures relate primarily to AQMAs on roads managed by Devon County Council, and we are keen to continue to work with our partners at DCC.

Previously, it was found that reducing speed on the A38 trunk road at Dean Prior (due to lengthy road works and an enforced speed limit) was correlated with a notable decrease in Nitrogen Dioxide levels monitored at the AQMA there. This finding has been discussed with Highways England, but introducing permanent speed limits on this stretch of road was not seen as a realistic solution at that time. However, Highways England has now been designated by defra as an Air Quality Partner under the Environment Act 2021, and South Hams District Council will therefore seek to re-engage with them to further reduce Nitrogen Dioxide levels in our Dean Prior AQMA.

1 Conclusions and Priorities

Levels of Nitrogen Dioxide monitored via diffusion tubes throughout South Hams and West Devon areas appear to have stabilised for the last two years but they are at significantly lower levels than they were in 2017 (see Appendix A). It is possible that some of the decline was due to reduced traffic levels because of various Covid restrictions at times throughout 2020 and 2021. However, these restrictions were fewer in 2021 and indeed it is possible that holiday traffic in Devon increased that year due to limitations on overseas travel. The council does not currently have access to traffic flow data but will seek to obtain it as it would be helpful to know whether the reduced pollutant levels (compared to pre Covid years) are due to reduced traffic flow and/or improved emissions controls in vehicles.

In 2022 (as was also the case in 2021) the only location, including the three AQMAs, still showing an exceedance of the NO₂ annual mean objective was the one on the A38 Devon Expressway at Dean Prior. It is too early to revoke the other two AQMAs but monitoring will be continued at all of them to see if this is possible in the near future.

The only developments that are known about that might have an impact on air quality in the future are;

 A general increase in house building – there has been a fairly extensive increase in house building over the last few years and this is expected to continue in line with national priorities. South Hams is also the location for the construction of an entire new settlement called Sherford. All substantial new developments are obliged by our Local Plan to undertake air quality assessments and to mitigate any potential impacts (Plymouth and South West Devon, 2019, and see Appendix F). The Sherford developers have a programme, agreed with the Council, of monitoring Nitrogen Dioxide and particulate matter.

• The possible re-opening of a large open-cast tungsten mine on the edge of Dartmoor. This could result in increases in NO₂ (from increased traffic) and of PM₁₀ and PM_{2.5}. However, the mine is the subject of intense scrutiny by the Environment Agency, South Hams District Council and Devon County Council via its applications for Environmental Permits and Minerals planning permissions and these issues will be thoroughly checked. The mine company will also be obliged to undertake its own monitoring for particulate matter if and when it re-opens.

Our Air Quality Action Plans will shortly be updated in line with the requirements of the Environment Act 2021 (defra 2022). The revised Air Quality Action Plans will be incorporated into a revised Air Quality Strategy which will also include West Devon. We are hopeful that there will continue to be no need to declare any AQMAs in West Devon although the concentrations in Exeter Road Okehampton in particular will continue to be carefully monitored. Also the new Environment Act requirement to take measures to generally reduce PM_{2.5} levels will apply to *all* areas (whether designated AQMAs or not), and this will be a key part of our revised Air Quality Strategy.

A new strategy should also seek to better understand recent and future traffic levels in Devon. That will be important for all of our AQMAs, including the A38 one which may be the only place still exceeding NO₂ objective levels in future years. We will therefore seek information on traffic levels and trends from Devon County Council and Highways England for our new Air Quality Strategy.

2 Local Engagement and How to get involved

Officers at the Councils believe that all Nitrogen Dioxide pollutant hot spots throughout South Hams and West Devon areas have been, or are being monitored. However, if you think that your area is suffering from significant Nitrogen Dioxide air pollution, please contact us and we will consider undertaking monitoring at that location. If you are concerned about other types of air pollution, also contact Environmental Health and we will investigate your concerns.

Details of the Councils' policies and previous years' monitoring data can be found on our websites at:

https://www.southhams.gov.uk/article/3902/Air-Quality

https://www.westdevon.gov.uk/article/4594/Air-Quality

3 Local Responsibilities and Commitment

This ASR was prepared by the Environmental Health Department of South Hams and West Devon Councils with the support and agreement of the following officers and departments:

Anita Kidby, Environmental Health SHWD

Sarah Harcombe, Environmental Health SHWD

Janet Wallace, Environmental Health contractor

This ASR has been approved by:

Ian Luscombe, Head of Environmental Health, SHWD

Adam Williams, climate change officer SHWD

This ASR has been signed off by a Director of Public Health.

If you have any comments on this ASR please send them to Sarah Harcombe at:

Address: Follaton House, Plymouth Road, Totnes, TQ9 5NE

Telephone: 01803 861234

Email; environmental.health@swdevon.gov.uk

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4 Local Air Quality Management

This report provides an overview of air quality in South Hams and West Devon during 2022. It fulfils the requirements of Local Air Quality Management (LAQM) as set out in Part IV of the Environment Act (1995), as amended by the Environment Act (2021), 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 order to achieve and maintain the objectives and the dates by which each measure will be carried out. This Annual Status Report (ASR) is an annual requirement showing the strategies employed by South Hams and West Devon 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 18 months. The AQAP should specify how air quality targets will be achieved and maintained, and provide dates by which measures will be carried out.

A summary of AQMAs declared by South Hams District Council can be found in Table 2.1. The table presents a description of the three AQMA(s) that are currently designated within South Hams. Appendix D: Map(s) of Monitoring Locations and AQMAs provides maps of the AQMAs and also the air quality monitoring locations in relation to the AQMAs. The air quality objectives pertinent to the current AQMA designations are as follows:

NO₂ annual mean;

West Devon Borough Council currently does not have any declared AQMAs.

Table 2.1 – Declared Air Quality Management Areas

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	Number of Years Compliant with Air Quality Objective	Name and Date of AQAP Publication	Web Link to AQAP
A38 Dean Prior AQMA	03.03.2005	NO2 Annual Mean	single residential property immediately adjacent to A38	YES	70	49.2	none	Clean Air Strategy for South Hams and West Devon, 2019	www.southhams.gov.uk
lvybridge Western Road AQMA	17.07.2009	NO2 Annual Mean	an area encompassing all properties fronting Western Road, Ivybridge	NO	55	25.6	three	Clean Air Strategy for South Hams and West Devon, 2019	www.southhams.gov.uk
Totnes AQMA	declared 13/07/2009; amended on 08.06.2016	NO2 Annual Mean	An area encompassing properties fronting a stretch of the A385 in Totnes between True Street junction and the junction of Clay Lane	NO	28	35.1	three	Clean Air Strategy for South Hams and West Devon, 2019	www.southhams.gov.uk

- ☑ South Hams/West Devon councils **confirm the information on UK-Air regarding their AQMA(s) is up to date.**
- ☑ South Hams/West Devon Councils confirm that all current AQAPs have been submitted to Defra

2.2 Progress and Impact of Measures to address Air Quality in South Hams and West Devon Council areas

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

The report is well structured, detailed, and provides the information specified in the Guidance. The following comments are designed to help inform future reports:

- 1. The Council have considered the comments made during previous appraisals and addressed some outstanding issues in this year's ASR. This is commended and the Council is encouraged to continue with this approach in future.
- 2. As stressed in previous appraisals, the council is recommended to continue to review their current monitoring regime, specifically the addition of several new non-automatic monitoring sites (diffusion tubes) across the region. This is important as additional sites will help to identify whether there are other key areas of relevant exposure where there may be exceedances and the appropriate measures can be adopted accordingly.
- 3. The Councils have provided clear evidence of several key actions to improve air quality during 2021 and meet with local and national organisations in the district (i.e., National Highways) to ensure that local concerns are being addressed. The Councils are encouraged to keep pursuing measures to limit Climate Change as this benefits air quality in the region.
- 4. The Council have provided good mapping of all monitoring locations within the district and included a map clearly showing AQMA boundaries. However, the labelling is not entirely clear against the base mapping. The Council is highly encouraged to update the labelling to improve readability.
- 5. Good Trend graphs have been provided for all monitoring data. The council have provided a detailed analysis of NO₂ level trends over the past few years.
- 6. The council is commended for their extensive measures to reduce PM_{2.5} emissions in the district.
- 7. There are several formatting errors in the report including standard red text being

present in the report and misalignment of Table A.4. Please could these be corrected in future reports.

The councils have addressed the above points by;

- Adding some additional diffusion tube monitoring points though these were implemented only late in 2022 and so results have not been included in this ASR.
 This will be addressed next year and new maps will be produced to include the new monitoring points and the labels suggested above.
- More efforts will be made to work with Highways England (HE) in the coming year
 following the formal incorporation of the role of HE as partners in AQAM by the
 Government; we have recently obtained a contact address for Highways England to
 be able to act on this.
- The climate change work has continued with an additional member of staff taking on some of this work.
- Formatting errors have been corrected.

South Hams/West Devon councils have taken forward a number of direct measures during the current reporting year of 2022 in pursuit of improving local air quality. Details of all measures completed, in progress or planned are set out in Table 2.2. Seven measures are included there, with the type of measure and the progress South Hams/West Devon Councils have made during the reporting year of 2022 presented. Where there have been, or continue to be, barriers restricting the implementation of the measure, these are also presented within Table 2.2.

More detail on these measures can be found in their respective Action Plans and our previous Air Quality Strategy (SHDC/WDBC, 2019). Key completed measures are

- Changes to parking and road layout in Western Road, lvybridge
- Requirements for developers' Air Quality Assessments and any necessary mitigation specified in our Local Plan and Planning Validation checklist (Plymouth and South West Devon, 2019, Appendix F).
- Significant new developments which could impact on AQMAs have included
 measures to improve green travel planning, infrastructure and incentives within their
 planning applications (eg. planned developments at Dartington, Ivybridge and
 Sherford). Similar measures have already been implemented where new
 developments have been built (eg at Steamer Quay, Totnes). At this latter site, a

- green travel coordinator has also been appointed via S106 monies. This coordinator is employed by Totnes town council.
- PJA and Cycling UK have recently been appointed to produce a Local Cycling and Walking Infrastructure plan for both councils (LCWIP). Part of this will feature a behaviour change study to identify ways to increase cycling uptake

South Hams and West Devon councils expect the following measures to be completed over the course of the next reporting year:

- A Continuation of planning measures as new developments likely to impact on our AQMAs go through the planning application process, and as developments are actually built.
- The LCWIP should be completed.

The two councils' priorities for the coming year are;

- To implement the requirements of the Environment Act 2021, to engage with defra's new Environment Strategy for England (defra 2023) and then to update our own Air Quality Plans and strategy accordingly.
- To form and foster partnership working with bodies such as DCC and Highways
 England and to strengthen internal working relationships, notably with the climate
 change work being done within the Councils.
- To continue and extend NO₂ monitoring of any areas where we are concerned about pollution levels.
- To monitor whether the traffic changes in Ivybridge continue to result in reduced NO₂ levels with a view to revoking the AQMA if the objective continues to be met there.
- To continue and extend NO₂ monitoring in the Totnes AQMA to see if the objective continues to be met in all locations there, ultimately with a view to revoking that AQMA if possible.
- To specifically discuss the Dean Prior AQMA and possible solutions to it, with Highways England.
- To ensure that any new developments that meet the criteria specified in our Local Plan undertake Air Quality Assessments as necessary and, where they may have an impact, that the developers include, and ultimately act upon, mitigation measures with their proposals.
- To review the Air Quality Strategy for both councils.

 To make available Climate Awareness (Literacy) training for all staff who are interested.

The principal challenges and barriers to implementation that the Councils anticipate facing are limited staff resources. However, it is hoped that the Council's stated climate change emergency and biodiversity agendas will allow additional resources that can be used to also improve air quality in future

We have already implemented a strong policy basis for air quality in our Local Plan, but we would like to develop other low resource options to promote air quality awareness elsewhere, such as councillor training and information sessions, raising awareness and behaviour changes via nudges. This has begun with the climate awareness training noted above.

South Hams District Council anticipates that the measures stated above and in Table 2.2 will achieve compliance in Ivybridge AQMA from now onwards. It is also possible, looking at the 2021 and 2022 results that the extended Totnes AQMA will be compliant in future years with the measures already undertaken and the continued roll-out, in the national fleet, of low and zero emission vehicles.

South Hams District Council worked to implement these measures in partnership with the following stakeholders during 2022:

- Developers
- Devon County council
- Consultants

Whilst the measures stated above and in Table 2.2 will help to contribute towards compliance, South Hams District Council anticipates that further additional measures agreed with Highways England not yet prescribed will be required in subsequent years to achieve compliance and enable the revocation of the Dean Prior AQMA.

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Table 2.2 – Progress on Measures to Improve Air Quality

Measure No.	Measure	Category	Classification	Year Measure Introduced in AQAP	Estimated / Actual Completion Date	Organisations Involved	Funding Source	Defra AQ Grant Funding	Funding Status	Estimated Cost of Measure	Measure Status	Reduction in Pollutant / Emission from Measure	Key Performance Indicator	Progress to Date	Comments / Barriers to Implementation
1	information/education	Public Information	Via the Internet	2018	2024	Local Authority Environmental Health, climate change officer, Local Authority Transport Dept. (DCC)	s106/CIL monies	NO	Partially Funded	< £10k	Implementation	0.02	not measurable	implementation on-going	limited impact
2	Transport (Ivybridge)	Transport Planning and Infrastructure	Other	2020	2021	DCC transport section	s106/CIL monies	NO	Funded	£50k - £100k	Implementation	5ug/m3	to meet AQO	completed	done
3	promoting technology	Promoting Low Emission Transport	Procuring alternative Refuelling infrastructure to promote Low Emission Vehicles, EV recharging, Gas fuel recharging	2018	2025	Local Authority Environmental Health and climate change officer, Local Authority Transport Dept	s106/CIL monies	NO	Partially Funded	£1 million - £10 million	Implementation	reduced vehicle emssions	Measured Concentration at AQMAs within towns- aim to be below AQO	implementation on-going	ongoing as new developments built, new charging points are installed
4	Transport	Promoting Travel Alternatives	Promotion of cycling	2018	2025	Local Authority Environmental Health and climate change officer, Local Authority Transport Dept	s106/CIL monies	NO	Funded	< £10k	Implementation	reduced vehicle emssions	Measured Concentration at AQMAs within towns- aim to be below AQO	implementation on-going	ongoing as new developments built, cycling initiatives are built in where possible. LCWIP being developed
5	transport	Promoting Travel Alternatives	Encourage / Facilitate home-working	2018	2025	Local Authority Environmental Health and climate change officer, Local Authority Transport Dept	s106/CIL monies	NO	Funded	< £10k	Implementation	reduced vehicle emssions	Measured Concentration at AQMAs within towns- aim to be below AQO	implementation on-going	ongoing as new developments built, facilities for home working are built in where possible
6	transport	Promoting Travel Alternatives	Promotion of walking	2018	2025	Local Authority Environmental Health and climate change officer, Local Authority Transport Dept	s106/CIL monies	NO	Funded	< £10k	Implementation	reduced vehicle emssions	Measured Concentration at AQMAs within towns- aim to be below AQO	implementation on-going	ongoing as new developments built, walking initiatives are built in where possible LCWIP being developed
7	transport	Promoting Travel Alternatives	Workplace Travel Planning	2018	2025	Local Authority Environmental Health and climate change officer, Local Authority Transport Dept	s106/CIL monies	NO	Funded	< £10k	Implementation	reduced vehicle emssions	Measured Concentration at AQMAs within towns- aim to be below AQO	implementation on-going	ongoing as significant new developments built, developers are asked to produce green travel plans

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2.3 PM_{2.5} – Local Authority Approach to Reducing Emissions and/or Concentrations

As detailed in Policy Guidance LAQM.PG22 (Chapter 8), 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.

South Hams District and West Devon Borough councils are taking the following measures to address PM_{2.5};

All measures identified in the section above to reduce Nitrogen Dioxide within AQMAs and elsewhere are aimed at reducing all emissions from transport sources. As these are also a source of PM₁₀ and PM_{2.5}, they should also help to reduce levels of these pollutants.

The Councils have drawn up a leaflet on how to use wood burning stoves correctly so as to reduce emissions from them as far as possible. Such stoves are quite popular in our relatively rural districts, so aiming at this source is important. This leaflet will be made available on the website and to any stove owners who are the subject of smoke complaints. The councils will seek to work with others, such as Public Health at DCC, to alert residents to the issues of smoke from any domestic wood burning appliances and bonfires and how best to control emissions. However it is recognised that this may be a problem during this coming winter because of the high cost of energy and people with fire places and solid fuel burners may see the burning of cheap wood as a way to deal with the high costs.

The Councils will control all particulate emissions from building works throughout the areas by ensuring that Construction Environment Management Plans (CEMPs) are drawn up, agreed and implemented for all major developments. These CEMPs will include conditions to ensure that nuisance dust and smaller particulate matter is monitored routinely by the developers and controlled through dampening and other means as necessary.

The Councils will ensure that significant new developments that may increase particulate matter emissions such as the tungsten mine, will have a robust monitoring programme for PM₁₀ and PM_{2.5} and will control the emissions of such pollutants carefully.

Complaints of smoke from bonfires or other sources will be investigated under our nuisance procedure and appropriate information provided or enforcement action undertaken where necessary. We will also work closely with our internal partners to encourage recycling and with the Environment Agency in cases of commercial waste burning.

There are a number of permitted processes within the two council areas where the emissions of particulate matter are controlled via permit conditions. These include;

- A clay calcining process (A2 permit)
- A clay drying process
- A powder paint spray process
- Mobile crushing processes
- Cement batching processes
- Non-ferrous foundry process

For all of the above, permit conditions are carefully enforced by regular site visits to check for compliance and (where applicable) emissions tests are undertaken and checked by the Councils.

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

This section sets out the monitoring undertaken within 2022 by South Hams and West Devon Councils and how it compares with the relevant air quality objectives. In addition, monitoring results are presented for a five year period between 2018 and 2022 to allow monitoring trends to be identified and discussed.

Summary of Monitoring Undertaken

3.1.1 Automatic Monitoring Sites

Neither of the councils have any automatic air monitoring sites for any pollutants.

3.1.2 Non-Automatic Monitoring Sites

South Hams and West Devon Councils undertook non- automatic (i.e. passive) monitoring of NO₂ at 19 sites during 2022. Table A.1 in Appendix A presents the details of the non-automatic 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.

3.2 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.

3.2.1Nitrogen Dioxide (NO₂)

Table A.2 in Appendix A compares the ratified and adjusted monitored NO₂ annual mean concentrations for the past five years with the air quality objective of 40μg/m³. 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 2022 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.

The only exceedance of the Nitrogen Dioxide annual mean objective (the only objective for which the Councils do monitoring) in 2022 was at the Dean Prior AQMA. This has always been our most polluted site as the monitoring tube is located next to a property wall on the verge of the A38 Devon Expressway just where vehicles accelerate to climb a hill. In recent years (before the Covid pandemic) NO₂ levels here were always more than 60ug/m³ which would also indicate a breach in the hourly mean objective for NO₂, according to the defra guidance (LAQM 2016). However in 2020, the level recorded was just 53.3ug/m³ and in 2021 it had reduced further to 46.9ug/m3 while last year it was 49.2ug/m3. Therefore it appears that reductions that occurred in the three years prior to 2021 may have stabilised now (at a level which still exceeds the annual mean objective) but at a significantly lower level than they were before the Covid pandemic.

3.2.2 Particulate Matter (PM₁₀)

No monitoring of PM₁₀ was undertaken in South Hams/West Devon areas in the year 2022

3.2.3 Particulate Matter (PM_{2.5})

No monitoring of PM_{2.5} was undertaken in South Hams/West Devon areas in the year 2022

3.2.2 Sulphur Dioxide (SO₂)

No monitoring of SO₂ was undertaken in South Hams/West Devon areas in the year 2022

Appendix A: Monitoring Results

Table A.1 – 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)
TSH1	Queens Terrace	Roadside	280085	60765	NO2	Totnes	0.0	3.0	No	2.0
TSH3	Puddavine	Roadside	279612	61407	NO2	Totnes	5.0	1.0	No	2.0
TSH5	Bridgetown Hill Terrace	Roadside	281097	60510	NO2	Totnes	0.0	1.0	No	3.0
TSH6	Bridgetown Hill bottom	Roadside	280920	60387	NO2	Totnes	0.0	1.0	No	3.0
TSH9	Bridgetown Hill busstop	Roadside	281063	60493	NO2	Totnes	0.0	1.0	No	3.0
TSH10	Bridgetown corner	Roadside	280742	60285	NO2	Totnes	0.0	1.0	No	3.0
TSH12	True Street	Kerbside	282103	60609	NO2	Totnes	2.0	1.0	No	1.0
TSH13	Candletree	Kerbside	282066	60579	NO2	Totnes	10.0	1.0	No	2.0
ISH1	End Western Road	Roadside	263192	56011	NO2	lvybridge	0.0	1.0	No	3.0
ISH5	Western Road Terrace	Roadside	263192	55989	NO2	lvybridge	0.0	1.0	No	2.0

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)
ISH6	Sportsmans Ivybridge	Roadside	263220	55981	NO2	lvybridge	0.0	2.0	No	2.0
DPSH1	Dean Prior Farm	Roadside	263784	56276	NO2	Dean Prior	3.0	1.0	No	3.0
DPSH2	Dean Prior Road	Roadside	272956	56273	NO2	Dean Prior	0.0	1.0	No	2.0
DPSH3	Dean Prior Sign	Roadside	272665	63484	NO2	Dean Prior	0.0	5.0	No	2.0
TWD1	Dolvin Road Tavistock	Roadside	273005	63496	NO2	no aqma	0.0	1.0	No	3.0
TWD4	Plymouth Road, Tavistock	Roadside	248421	74556	NO2	no aqma	2.0	1.0	No	2.0
OWD2	Exeter Road Oke 1	Roadside	259066	95233	NO2	no aqma	0.0	1.0	No	3.0
OWD3	Exeter Road Oke 2	Roadside	25906	95222	NO2	no aqma	0.0	1.0	No	2.0
OWD4	Exeter Road Oke opp	Roadside	259196	95213	NO2	no aqma	0.0	1.0	No	2.0

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 – Annual Mean NO₂ Monitoring Results: Non-Automatic Monitoring (µg/m³)

Diffusion Tube ID	X OS Grid Ref (Easting)		Site Type	Valid Data Capture for Monitoring Period (%) ⁽¹⁾	Valid Data Capture 2022 (%) (2)	2018	2019	2020	2021	2022
TSH1	280085	60765	Roadside	100	100.0	32.7	29.8	24.2	23.7	24.6
TSH3	279612	61407	Roadside	83	82.7	21.4	17.6	15.1	15.8	14.0
TSH5	281097	60510	Roadside	100	100.0	41.4	37.0	30.5	29.5	31.7
TSH6	280920	60387	Roadside	100	100.0	37.9	35.7	28.4	26.4	24.7
TSH9	281063	60493	Roadside	100	100.0	36.7	28.9	25.1	27.2	27.3
TSH10	280742	60285	Roadside	100	100.0	22.8	19.7	15.9	17.4	20.1
TSH12	282103	60609	Kerbside	75	73.1	48.7	47.7	38.7	33.7	35.1
TSH13	282066	60579	Kerbside	100	100.0	31.2	23.7	22.8	23.8	23.5
ISH1	263192	56011	Roadside	100	100.0	31.8	29.5	22.9	20.2	20.5
ISH5	263192	55989	Roadside	83	84.6	41.4	39.4	31.4	27.3	25.6
ISH6	263220	55981	Roadside	100	100.0	27.6	22.0	20.6	19.3	20.7
DPSH1	263784	56276	Roadside	83	84.6	28.1	21.7	17.5	17.4	19.2
DPSH2	272956	56273	Roadside	92	92.3	<u>64.1</u>	61.2	53.3	48.1	49.2
DPSH3	272665	63484	Roadside	92	92.3	37.2	33.9	26.2	26.9	29.4

Diffusion Tube ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing)	Site Type	Valid Data Capture for Monitoring Period (%) ⁽¹⁾	Valid Data Capture 2022 (%) ⁽²⁾	2018	2019	2020	2021	2022
TWD1	273005	63496	Roadside	75	73.1	30.9	31.4	26.1	26.0	27.8
TWD4	248421	74556	Roadside	83	80.8	27.6	25.4	21.5	23.3	22.4
OWD2	259066	95233	Roadside	92	90.4	41.6	39.1	28.4	33.0	31.4
OWD3	25906	95222	Roadside	92	90.4	32.1	29.8	19.3	18.2	17.7
OWD4	259196	95213	Roadside	83	82.7	24.7	20.7	21.9	23.8	20.0

- ☑ Annualisation has been conducted where data capture is <75% and >25% in line with LAQM.TG22
- ☑ Diffusion tube data has been bias adjusted
- 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

Notes:

The annual mean concentrations are presented as µg/m³.

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

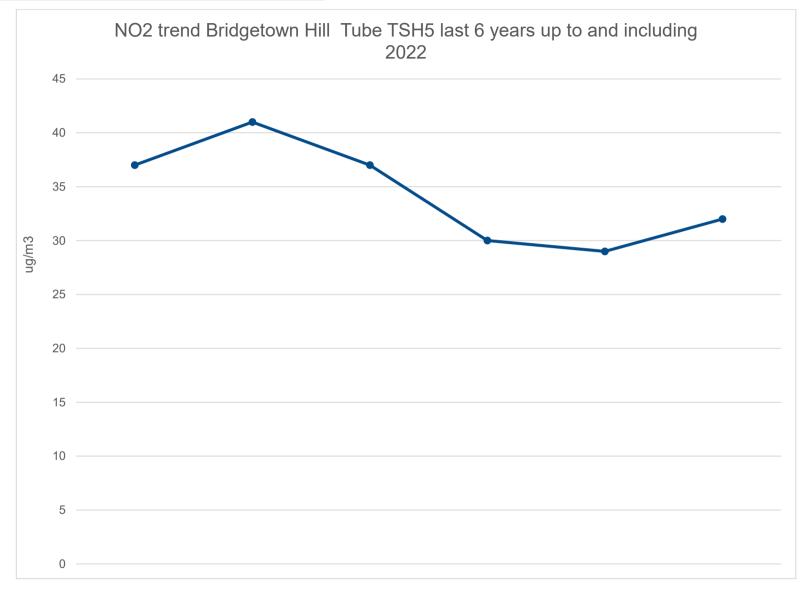
 NO_2 annual means exceeding $60\mu g/m^3$, indicating a potential exceedance of the NO_2 1-hour mean objective are shown in **bold and underlined**.

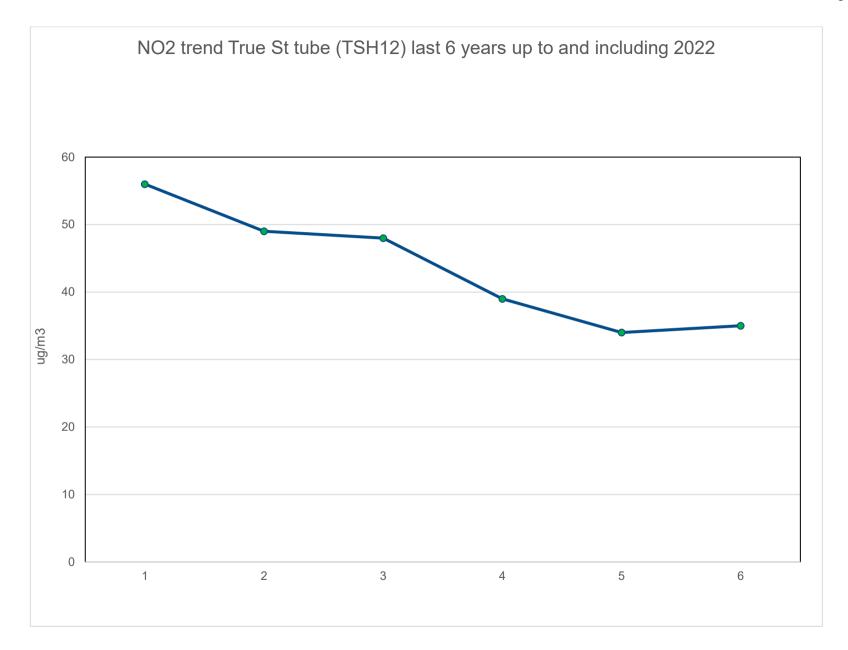
Means for diffusion tubes have been corrected for bias. All means have been "annualised" as per LAQM.TG22 if valid data capture for the full calendar year is less than 75%. See Appendix C for details.

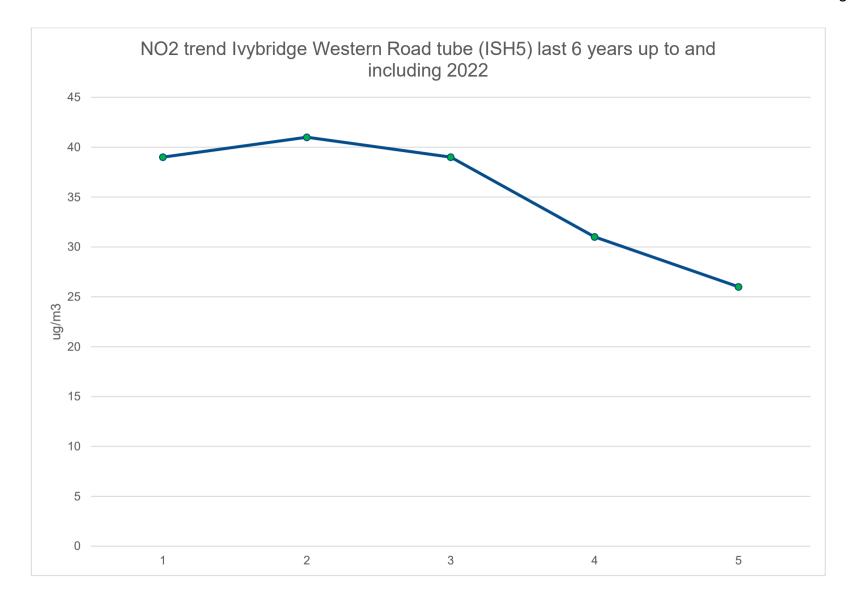
Concentrations are those at the location of monitoring and not those following any fall-off with distance adjustment.

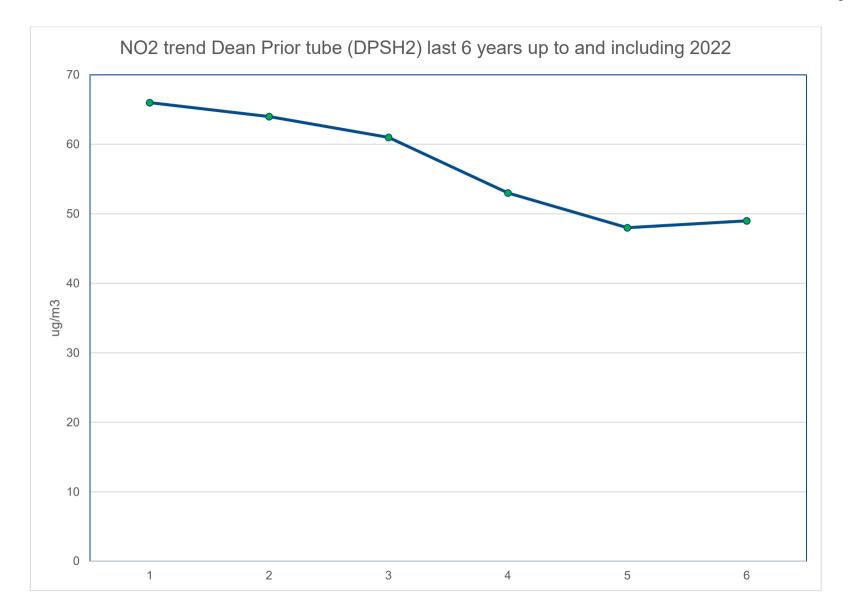
- (1) Data capture for the monitoring period, in cases where monitoring was only carried out for part of the year.
- (2) Data capture for the full calendar year (e.g. if monitoring was carried out for 6 months, the maximum data capture for the full calendar year is 50%).

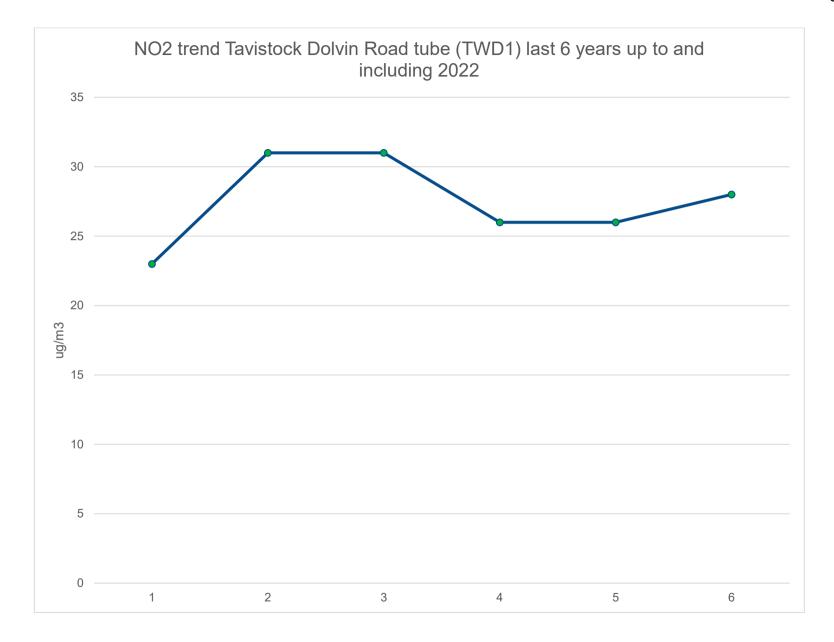
Figure A.1 – Trends in Annual Mean NO₂ Concentrations

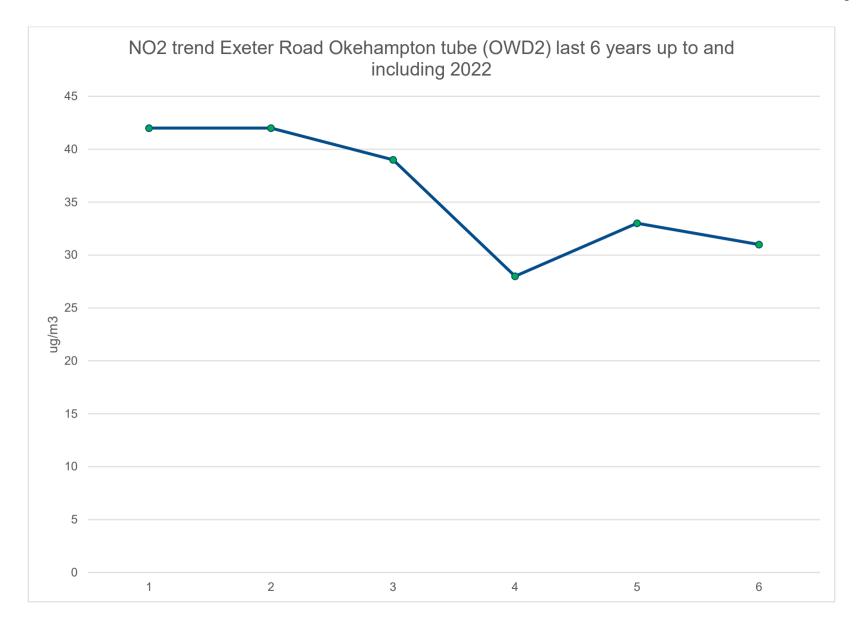












Appendix B: Full Monthly Diffusion Tube Results for 2022

Table B.1 - NO₂ 2022 Diffusion Tube Results (µg/m³)

DT ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean: Raw Data	Annual Mean: Annualised and Bias Adjusted (06/23)	Annual Mean: Distance Corrected to Nearest Exposure	Comment
TSH1	280085	60765	33.4	31.2	27.6	30.8	25.4	27.7	27.1	32.1	28.2	30.1	31.1	27.0	29.3	24.6	-	
TSH3	279612	61407		16.1	16.3	18.4	17.0	15.0	16.7	18.5	19.5		16.4	13.2	16.7	14.0	-	
TSH5	281097	60510	41.5	30.4	35.7	41.2	37.6	34.0	36.4	43.4	34.5	37.7	42.4	38.2	37.8	31.7	-	
TSH6	280920	60387	44.4	31.7	33.7	33.6	17.4	13.2	34.0	22.2	19.6	31.3	39.9	31.2	29.4	24.7	-	
TSH9	281063	60493	40.5	26.4	33.0	38.9	32.2	26.2	30.3	40.4	30.2	32.2	32.5	26.7	32.5	27.3	-	
TSH1 0	280742	60285	27.7	15.8	20.3	21.1	31.0	27.2	17.6	34.0	36.6	16.4	22.4	17.2	23.9	20.1	-	
TSH1 2	282103	60609	49.5	42.5	38.5	47.9	38.8	44.1	46.2		37.3		31.8		41.8	35.1	-	
TSH1 3	282066	60579	36.0	22.4	30.2	34.4	30.1	24.8	28.4	37.1	25.5	19.8	25.7	21.3	28.0	23.5	-	
ISH1	263192	56011	34.9	24.5	23.8	25.7	22.9	17.9	18.5	25.1	21.5	23.5	29.7	25.2	24.4	20.5	-	
ISH5	263192	55989		28.2		25.4	32.2	27.8	25.6	33.7	26.8	29.6	39.2	36.6	30.5	25.6	-	
ISH6	263220	55981	36.2	21.0	22.1	23.3	22.9	20.4	19.0	23.7	22.1	28.2	28.5	28.4	24.7	20.7	-	
DPSH 1	263784	56276		14.7	22.7	23.7	19.0		23.7	31.0	23.3	26.8	25.7	18.4	22.9	19.2	-	
DPSH 2	272956	56273	65.6		53.3	63.4	60.4	49.7	53.5	67.1	57.4	60.1	53.3	60.4	58.6	49.2	_	
DPSH 3	272665	63484	37.7		31.7	34.4	36.7	28.9	32.9	40.5	31.7	39.2	37.5	34.3	35.0	29.4	-	
TWD1	273005	63496	36.7		46.1			27.5	22.6	33.3	27.3	33.0	40.1	31.0	33.1	27.8	-	
TWD4	248421	74556	33.9	21.3	28.8			23.3	23.3	32.4	24.8	21.5	32.4	25.2	26.7	22.4	-	
OWD2	259066	95233	54.2	35.1	37.8	37.4		19.6	41.5	46.3	37.3	33.9	41.9	26.5	37.4	31.4	-	

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DT ID	X OS Grid Ref (Easting)	Y OS Grid Ref (Northing	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Mean: Raw Data	Annual Mean: Annualised and Bias Adjusted (06/23)	Annual Mean: Distance Corrected to Nearest Exposure	Comment
OWD3	25906	95222	29.8	19.9	23.6	23.9		15.5	19.6	26.8	18.4	16.2	23.7	13.8	21.0	17.7	-	
OWD4	259196	95213	37.8	30.3	29.0	29.5		9.7	27.6	27.1		18.9	12.8	15.0	23.8	20.0	-	

- ☑ All erroneous data has been removed from the NO₂ diffusion tube dataset presented in Table B.1
- ☑ Annualisation has been conducted where data capture is <75% and >25% in line with LAQM.TG22
- National bias adjustment factor used
- ☑ Where applicable, data has been distance corrected for relevant exposure in the final column (though none needed such correction)
- ☑ South Hams and West Devon councils confirm that all 2022 diffusion tube data has been uploaded to the Diffusion Tube Data Entry System

Notes:

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

 NO_2 annual means exceeding $60\mu g/m^3$, 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.

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

New or Changed Sources Identified Within South Hams/West Devon During 2022

South Hams/ West Devon councils have not identified any new sources of air pollution relating to air quality within the reporting year of 2022.

Additional Air Quality Works Undertaken by South Hams/West Devon During 2022

South Hams/ West Devon councils have not completed any additional works within the reporting year of 2022.

QA/QC of Diffusion Tube Monitoring

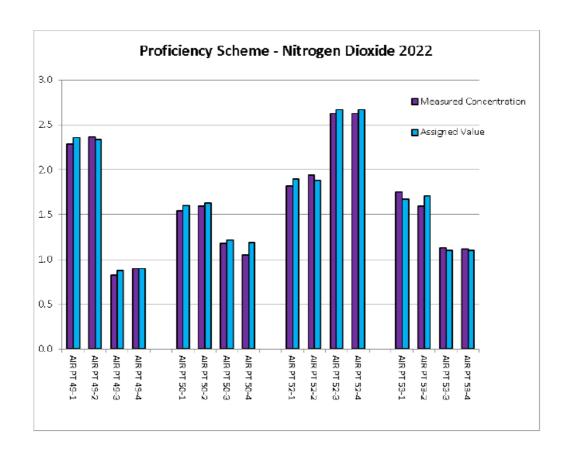
The councils use Gradko diffusion tubes 20% TEA in water. These are provided and analysed by Gradko International Ltd. (trading as Gradko Environmental) and a copy of their accreditation certificate has been provided to us. This was issued on 19.12.22 by UKAS, accreditation is to standard ISO/IEC 17025:2017.

Gradko proficiency scheme results for Nitrogen Dioxide are shown in the table and charts below.

AIR PT Nitrogen Dioxide Proficiency Scheme Results 2022

Methods: GLM 7 - CARY 60 Spectrophotometer

AIR PT Proficiency Scheme - Nitrogen Dioxide 2022								
			Procedure GLM 7					
Date	Round	Assigned value	Measured concentration	z-Score	% Bias			
Feb-22	AIR PT 49-1	2.36	2.29	-0.4	-3.0%			
Feb-22	AIR PT 49-2	2.34	2.37	0.2	1.3%			
Feb-22	AIR PT 49-3	0.88	0.83	-0.65	-5.7%			
Feb-22	AIR PT 49-4	0.9	0.9	0.0	0.0%			
		31						
May-22	AIR PT 50-1	1.6	1.54	-0.5	-3.8%			
May-22	AIR PT 50-2	1.63	1.59	-0.29	-2.5%			
May-22	AIR PT 50-3	1.22	1.18	-0.44	-3.3%			
May-22	AIR PT 50-4	1.19	1.05	-1.48	-11.8%			
	The second secon				18.12.77.22			
Aug-22	AIR PT 52-1	1.90	1.82	-0.56	-4.2%			
Aug-22	AIR PT 52-2	1.88	1.94	0.43	3.2%			
Aug-22	AIR PT 52-3	2.67	2.63	-0.2	-1.5%			
Aug-22	AIR PT 52-4	2.67	2.63	-0.2	-1.5%			
Oct-22	AIR PT 53-1	1.67	1.75	0.64	4.8%			
Oct-22	AIR PT 53-2	1.71	1.59	-0.94	-7.0%			
Oct-22	AIR PT 53-3	1.1	1.13	0.36	2.7%			
Oct-22	AIR PT 53-4	1.1	1.12	0.24	1.8%			



Diffusion Tube Annualisation

All diffusion tube monitoring locations within South Hams/West Devon Council areas recorded data capture of 75% or more, therefore it was not required to annualise any monitoring data.

Tube Bias Adjustment Factors

The diffusion tube data presented within the 2023 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.TG22 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 NOx/NO2 continuous analysers. Alternatively, the national database of diffusion tube co-location surveys provides bias factors for the relevant laboratory and preparation method.

South Hams/West Devon councils have applied a national bias adjustment factor of 0.84 to the 2022 monitoring data. A summary of bias adjustment factors used by South Hams/West Devon councils over the past five years is presented in Table C.1.

Table C.1 – Bias Adjustment Factor

Monitoring Year	Local or National	If National, Version of National Spreadsheet	Adjustment Factor
2022	National	06/23	0.84
2021	National	09/22	0.84
2020	National	6/21	0.81
2019	National	03/20	0.93
2018	National	9/19	0.92

NO₂ Fall-off with Distance from the Road

No diffusion tube NO₂ monitoring locations within South Hams/West Devon areas required distance correction during 2022 as all are located at relevant receptor locations.

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

Figure D.1 Totnes AQMA

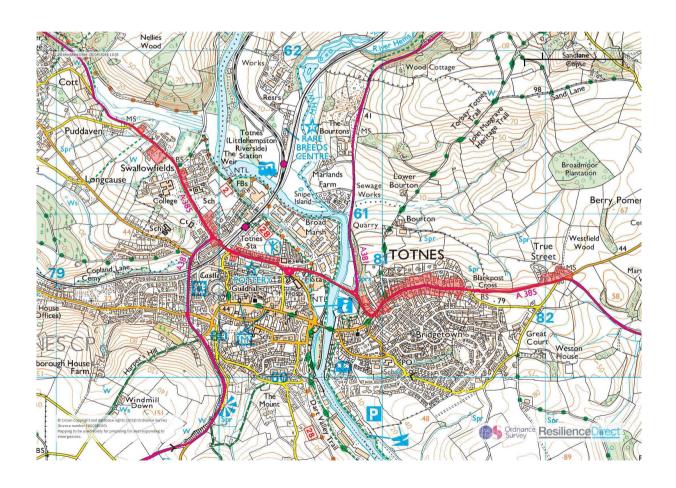


Figure D2; Locations of NO₂ diffusion tubes in Bridgetown, Totnes AQMA



Figure D3: Locations of NO₂ diffusion tubes in True Street, Totnes AQMA



Figure D4; Ivybridge Western Road AQMA

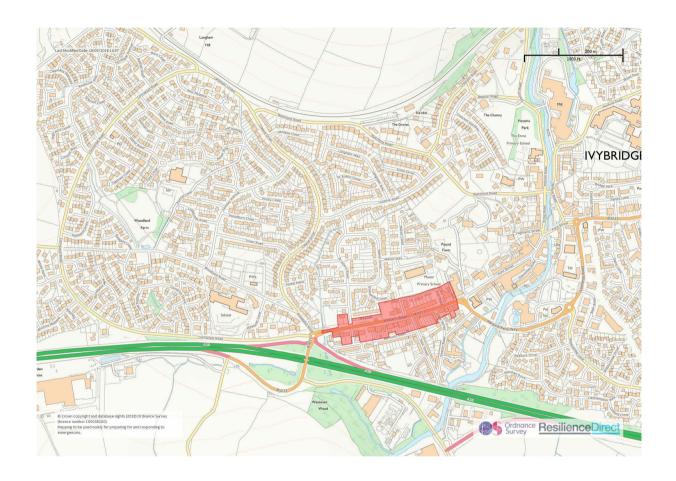


Figure D5; Locations of NO₂ diffusion tubes in Ivybridge Western Road AQMA



Figure D6; Dean Prior AQMA



Figure D7; Locations of NO₂ diffusion tubes in Dean Prior AQMA



Appendix E: Summary of Air Quality Objectives in England

Table E.1 – Air Quality Objectives in England⁷

Pollutant	Air Quality Objective: Concentration	Air Quality Objective: Measured as
Nitrogen Dioxide (NO ₂)	200μg/m³ not to be exceeded more than 18 times a year	1-hour mean
Nitrogen Dioxide (NO ₂)	40μg/m³	Annual mean
Particulate Matter (PM ₁₀)	50µg/m³, not to be exceeded more than 35 times a year	24-hour mean
Particulate Matter (PM ₁₀)	40μg/m³	Annual mean
Sulphur Dioxide (SO ₂)	350μg/m³, not to be exceeded more than 24 times a year	1-hour mean
Sulphur Dioxide (SO ₂)	125μg/m³, not to be exceeded more than 3 times a year	24-hour mean
Sulphur Dioxide (SO ₂)	266μg/m³, 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 ($\mu g/m^{3}$).

APPENDIX F; Air Quality Assessment Requirements specified in Planning Validation Checklist for SHDC/WDBC

Air Quality Assessment

Information required and when required	Information Required/Guidance
Required for: Major dwellings	
Major dwellings Major heavy industry/ storage/ warehousing Large scale major offices, industry and retail in excess of 10,000m2 Within 1km of a sensitive area, for example an Air Quality Management Area or an Air Quality Area of Concern (AQMA/AQAC) Car parking more than 100 spaces Introduces new exposure to existing sources of air pollutants such as busy roads Will have a significant impact on traffic in terms of volume or change of vehicle composition Will include biomass boilers, combined heat and power plants, short Term Operating Reserve electricity generating systems Major road infrastructure changes Will introduce its own potentially polluting source, for example power plants, mineral sites, spraying processes or	There are AQMAs within South Hams; Ivybridge, Totnes and Dean Prior. There are none within West Devon. Proposals that impact upon air quality or are potential pollutants must be supported by an air quality assessment. This should indicate the change in air quality resulting from the proposed development and outlining appropriate mitigation measures as necessary. An Air Quality Assessment must be prepared by a suitably qualified expert, in accordance with the latest guidance from the Institute of Air Quality Management available. Development may result in the need for a Section 106 contribution to mitigate impacts on air quality and where the presence of a source of odour and/or dust that may affect amenity for future occupants of the development. Pre-application advice should be sought from the
manufacturing Will involve significant dust emissions	Environmental Health Team in order to determine the level of assessment required.

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 National Highways
EU	European Union
FDMS	Filter Dynamics Measurement System
LAQM	Local Air Quality Management
NO ₂	Nitrogen Dioxide
NOx	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

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